

https://dspace.org/

Entrepreneurial orientation and financial performance in the South African construction and materials sector: a focus on bricolage capability and absorptive capacity

Kanguwe, David Fikile

2024

University of the Witwatersrand, Johannesburg Date of Issue *

https://hdl.handle.net/10539/44534

Kanguwe, David Fikile. (2024). Entrepreneurial orientation and financial performance in the South African construction and materials sector: a focus on bricolage capability and absorptive capacity [Master's dissertation PhD thesis, University of the Witwatersrand, Johannesburg].WireDSpace.https://hdl.handle.net/10539/44534

Downloaded from a DSpace repository. https://dspace.org/

ENTREPRENEURIAL ORIENTATION AND FINANCIAL PERFORMANCE IN THE SOUTH AFRICAN CONSTRUCTION AND MATERIALS SECTOR: A FOCUS ON BRICOLAGE CAPABILITY AND ABSORPTIVE CAPACITY

by

David Fikile Kanguwe

Student Number: 2096337

Thesis Submitted in Partial Fulfilment of the Requirements

for the Degree of Doctor of Philosophy in Management
at the University of the Witwatersrand

Supervisor: Professor Boris Urban

DECLARATION

I, DAVID FIKILE KANGUWE, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Management at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: DAVID FIKILE KANGUWE Signature: 

Signed at KIMBERLEY On the 26th day of July 2024

ACKNOWLEDGEMENTS

I am the product of many interventions and therefore it would be unfair to omit anyone in this section of my work. These acknowledgements are by no means exhaustive of the many stakeholders who formed me until this level of my education. However, I deem it necessary to first acknowledge and thank my Lord and my God YHWH for His grace and mercy throughout my life. Secondly, I would like to thank my parents and especially my maternal grandparents and family at large for raising and caring for me throughout, despite the many hardships we endured together.

Thirdly, I would like to acknowledge the Roman Catholic Church for their academic support throughout my pre-tertiary education as well as for their continued interpersonal formation.

Fourth, I would like to thank my beloved wife and children for the unceasing support throughout this journey. Without their sacrifice, I would never have reached this point of my academic journey.

Lastly, there is a Setswana saying that says: “Moja morago ke kgosi”, this means, the one who comes last is king. It is in this spirit that I would like to thank my supervisor Professor Boris Urban for his great guidance and support. I thank him for the freedom and autonomy that he allowed me throughout this journey.

TE DEUM

ABSTRACT

This thesis investigates the relationship between the entrepreneurial orientation (EO) and the sustainable financial performance of the South African construction and materials sector during the 2008-2019 period. In addition, it respectively investigates the moderating effects of environmental hostility on this relationship. Furthermore, in the context of environmental hostility, it investigates the respective moderating effects of the bricolage capability and the absorptive capacity on the same relationship. Moreover, it respectively investigates the moderating effects of organisational identity on the bricolage capability and absorptive capacity as well as the respective moderating effects of the bricolage capability-organisational identity and absorptive capacity-organisational identity interactions on this relationship.

This research used a two-study approach to investigate this relationship and its moderating effects. The primary study collected survey data from 126 randomly selected firms in this sector. The secondary study collected secondary sustainable financial performance data from a purposively selected significant group of publicly listed firms. In both cases, data underwent analysis of variance and hierarchical regression. Post hoc analyses using the Tukey honest significance difference (HSD) test, slope analysis, and effect sizes were also used to complement these techniques.

The results of the primary study indicate that the EO-sustainable financial performance relationship of this sector exhibited nonlinear, J-shaped behaviour. Furthermore, consistent with the EO-As-Experimentation perspective, the RBV and contingency theory, the results for the moderating effects do not support the hypotheses but rather indicate that all the moderating effects on this relationship were nonlinear suggesting that different configurations of these interactions, yielded different sustainable financial performance outcomes for different levels of EO. The results of the secondary study affirm those of the primary study.

By using the theoretical framework of the resource-based and contingency theories, this thesis advances knowledge about the EO-firm performance relationship in the largely under-researched EO-As-Experimentation perspective by contributing a novel conceptual model. Through this conceptual model, this study contributes a unique managerial orientation to the persisting EO-ambidexterity debate in strategic entrepreneurship as well as to the South African construction and materials literature.

Table of Contents

List of Abbreviations **1**

Definition of Terms **2**

Chapter 1: Introduction **3**

1.1 Practical Context of the Study 3

1.2 Theoretical Context of the Study 6

1.2.1 Sustainable Financial Performance 6

1.2.2 Entrepreneurial Orientation 7

1.2.3 Environmental hostility 9

1.2.4 Bricolage Capability 10

1.2.5 Absorptive Capacity 11

1.2.6 Organisational Identity 11

1.2.7 Entrepreneurial Orientation and Firm Performance 12

1.2.8 Resource-Based View and Contingency Theories 13

1.3 Problem Statement 15

1.4 Purpose of the Study 17

1.5 Research Questions 17

1.6 Significance of the study 18

1.6.1 To Strategic Entrepreneurship Literature 18

1.6.2 To South African Construction and Materials Sector 20

1.7 Delimitations of the Study 21

1.8 Assumptions of the Study 22

1.9 Thesis Structure 22

Chapter 2: Literature Review **23**

2.1. Introduction 23

2.2. Internal resources and Capabilities versus Firm Performance in the south african construction and material sector 24

2.3. Definition of Key Concepts 31

2.3.1. Sustainable Financial Performance 31

2.3.2. Entrepreneurial Orientation 33

2.3.3. Environmental Hostility 36

2.3.4. Bricolage Capability 37

2.3.5. Absorptive Capacity 39

2.3.6. Organisational Identity Construct 42
2.4. Review of EO-Firm Performance Relationship 44
2.4.1. The EO-As-Advantage and EO-As-Experimentation Perspectives 44
2.4.2. EO- Firm Performance in the EO-As-Experimentation Perspective 45
2.4.3. Synthesis of EO-As-Experimentation Empirical Research and Literature Gap Establishment 56
2.4.4. Implications on Research Questions 61
2.5. Development of Hypotheses 62
2.5.1. Contingency Theory 62
2.5.2. The Resource-Based Theory 63
2.5.3. Hypotheses 65
2.6. Research Conceptual Model 75
2.7. Conclusion 76
Chapter 3: Research Methodology **77**
3.1. Introduction 77
3.2. Research Philosophy 77
3.3. Research Design and Methodology 79
3.3.1. Research Design 79
3.3.2. Research Methodology 80
3.3.3. Time Horizon 80
3.4. Data Collection 81
3.4.1. Sampling strategies 81
3.4.2. Research Instruments 83
3.4.3. Data Collection Approach 88
Data Analysis 89
3.5. 89
3.5.1. Data Analysis Tools 89
3.5.2. Data Preparation 89
3.5.3. Hypothesis Testing 89
3.6. Validity and Reliability 93
3.6.1. Validity 93
3.6.2. Reliability 96
3.6.3. Research Bias Considerations 97
3.6.4. Research Instrument Reliability and Validity Results 98

3.7. Ethical Considerations 118
3.8. Conclusion 118
Chapter 4: Presentation of Results 119
4.1. Introduction 119
4.2. Sample demographic Characteristics 119
4.3. Response Rate 121
4.4. Correlations and collinearity diagnostics 122
4.5. Hypothesis testing 124
4.5.1. EO-Sustainable Financial Performance with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effect 125
4.5.2. EO–Sustainable Financial Performance with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects 160
Chapter 5: Discussion Of Results 180
5.1. Introduction 180
5.2. Hypothesis Testing 181
5.3. concluding Summary 242
Chapter 6: Conclusion 244
6.1. Introduction 244
6.2. Summary of Main Findings 244
6.3. Limitations of the study and Recommendations for future research 245
6.4. Contributions and Significance to literature 247
6.4.1. Methodological Contributions 247
6.4.2. Empirical and Theoretical Contributions 249
6.5. Concluding Summary 254
Reference List 255
Appendix A: Survey Questionnaires 277

278
Appendix B: Normality Q-Q Plots 284
Appendix C: Ethical Clearance Certificate 286
Appendix D: Complementary Results to Hypothesis H1, h2, h3 and h5(a) 287
Appendix E: Complementary Results to Hypothesis H1, h2, h4 and h5(b) 293
Appendix F: Complementary Results to Hypothesis H1, h2, H3, h4 and h5(b) and h5(a) with secondary data for sustainable financial performace 299

Appendix G: TUKEY HSD Mean differences **303**

APPENDIX H: Certificate of Editing **305**

List of Appendix Tables

Appendix Table 1: *Analysis of Variance results for the Innovativeness-Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.* 287

Appendix Table 2: *Hierarchical Regression for the Innovativeness –-Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.* 288

Appendix Table 3: *Analysis of Variance results for the Proactiveness – Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.* 289

Appendix Table 4: *Hierarchical Regression for the Proactiveness-Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.* 290

Appendix Table 5: *Analysis of Variance results for the Risk-Taking-Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.* 291

Appendix Table 6: *Hierarchical Regression for the Risk-Taking – Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.* 292

Appendix Table 7: *Analysis of Variance results for the Innovativeness-Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.* 293

Appendix Table 8: *Hierarchical Regression for the Innovativeness – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity, and Organisational Identity Moderating Effects.* 294

Appendix Table 9: *Analysis of Variance results for the Proactiveness – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.* 295

Appendix Table 10: *Hierarchical Regression for the Proactiveness – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.* 296

Appendix Table 11: *Analysis of Variance results for the Risk-Taking – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.* 297
Appendix Table 12: *Hierarchical Regression for the Risk-taking – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.* 298
Appendix Table 13: *Analysis of Variance results for hypotheses H1, H2, H3 and H5(a) with Sustainable Financial Performance measured objectively with secondary data.* 299
Appendix Table 14:*Hierarchical Regression for hypothesis H1, H2, H3 and H5(a) with Sustainable Financial Performance measured objectively with secondary data.* 300
Appendix Table 15: *Analysis of Variance results for hypotheses H1, H2, H4 and H5(b) with Sustainable Financial Performance measured objectively with secondary data.* 301
Appendix Table 16:*Hierarchical Regression for hypothesis H1, H2, H4 and H5(b) with Sustainable financial Performance measured objectively with secondary data.* 302
Appendix Table 17 *Mean Difference for Hypotheses H1, H2, H3 and H5(a)* 303
Appendix Table 18 *Mean Differences for Hypotheses H4 and H5(b)* 304

List of Tables

Table 1: *Normality Test of Survey Constructs Using Z-Scores* 91
Table 2:*Component Matrix for Sustainable Financial Performance* 99
Table 3: *Model Fit Indices for Sustainable Financial Performance* 100
Table 4:*Construct Reliability and Validity for Sustainable Financial Performance* 101
Table 5:*Rotated Component Matrix for Entrepreneurial Orientation* 102
Table 6: *Model Fit Indices for Entrepreneurial Orientation* 104
Table 7:*Construct Reliability and Validity for Entrepreneurial Orientation* 104
Table 8*: Component Matrix for Environmental* 105
Table 9: Model Fit Indices for Environmental Hostility 107
Table 10:*Construct Reliability and Validity for Environmental Hostility* 107
Table 11: Component Matrix for Bricolage Capability 108
Table 12: *Model Fit Indices for Bricolage Capability* 109
Table 13: Construct Reliability and Validity for Bricolage Capability 110
Table 14: *Rotation Component Matrix for Absorptive Capacity* 111
Table 15: *Model Fit Indices for Absorptive Capacity* 113
Table 16: Construct Validity and Composite Reliability of Absorptive Capacity 113
Table 17:*Rotated Component Matrix for Organisational Identity* 114

Table 18: *Model Fit Indices for Organisational Identity*..... 116
Table 19:*Construct Reliability and Validity for Organisational Identity*..... 116
Table 20: Sample Characteristics 120
Table 21: *Mean values, standard deviations and correlations among the constructs and control variables.* 123
Table 22: *Multicollinearity Diagnostics*..... 124
Table 23: *Analysis of Variance results for hypotheses H1, H2, H3 and H5(a).* 126
Table 24: *Hierarchical Regression Analyses for hypotheses H1, H2, H3 and H5(a).* 127
Table 25: *Analysis of Variance results for hypotheses, H4 and H5(b).*..... 160
Table 26 *Hierarchical regression analysis for the EO – Sustainable Financial Performance Relationship for hypotheses H4 and H5(b)* 161
Table 27: *Summary of results for main hypotheses* 179

List of Figures

Figure 1: *The conceptual model of the study.*..... 75
Figure 2:*CFA structure for Sustainable Financial Performance* 100
Figure 3:*CFA structure for Entrepreneurial Orientation*..... 103
Figure 4: *CFA factor structure for Environmental Hostility* 106
Figure 5:CFA structure for Bricolage Capability 109
Figure 6: *CFA structure for Absorptive Capacity* 112
Figure 7: CFA factor structure for Organisational Identity..... 115
Figure 8: *EO-Sustainable Financial Performance Relationship* 131
Figure 9:*Innovativeness-Sustainable Financial Performance* 132
Figure 10:*Proactiveness-Sustainable Financial Performance*..... 133
Figure 11:*Risk-Taking-Sustainable Financial Performance* 135
Figure 12:*EO-Sustainable Financial Performance Graph with Environmental Hostility Moderating Effects*..... 137
Figure 13: *Innovativeness-Sustainable Financial Performance Rerlationship with Environmental Hostility Moderating Effects* 139
Figure 14*:Proactiveness-Sustainable Financial Performance Graph with Environmental Hostility Moderating Effects* 140
Figure 15*: Risk-Taking-Sustainable Financial Performance Graph with Environmental Hostility Moderating Effects* 142

Figure 16: *EO-Sustainable Financial Performance Relationship with Environmental Hostility Moderating Effects* 143
Figure 17:*EO-Sustainable Financial Performance Relationship with Environmental Hostility and Bricolage Capability interactions*..... 145
Figure 18:*Innovativeness-Sustainable Financial Performance with Environmental Hostility and Bricolage Capability interactions*..... 147
Figure 19: *Proactiveness – Sustainable Financial Performance relationship with with Environmental Hostility and Bricolage Capability interactions* 148
Figure 20: *Risk-Taking – Sustainable Financial Performance Relationship with Environmental Hostility and Bricolage Capability interactions* 149
Figure 21 *EO–Sustainable Financial Performance with Environmental Hostility and Bricolage Capability interactions* 151
Figure 22*: EO–Sustainable Financial Performance with Environmental Hostility-Bricolage Capability-Organisational identity Interactions.* 153
Figure 23 *Innovativeness–Sustainable Financial Performance Relationship with Environmental Hostility-Bricolage Capability-Organisational identity interactions.* 154
Figure 24: *Proactiveness Sustainable Financial Performance with Environmental Hostility-Bricolage Capability-Organisational Identity interactions.* 156
Figure 25: *Risk-taking – Sustainable Financial Performance Relationship with Environmental Hostility-Bricolage Capability-Organisational Identity interactions.* 157
Figure 26 *EO-Sustainable Financial Performance Relationship with Environmental Hostility-Bricolage Capability and Organisational identity interactions.* 159
Figure 27 *EO-Sustainable Financial Performance Relationship with Environmental Hostility-Absorptive Capacity Interactions.* 164
Figure 28 *Innovativeness – Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity interactions.*..... 166
Figure 29 *Proactiveness–Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity interactions.* 167
Figure 30 *Risk-Taking–Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity interactions.* 168
Figure 31 *EO–Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity Interactions.* 170
Figure 32 *EO-Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.* 172

Figure 33 *Innovativeness–Sustainable Financial Performance with Absorptive Capacity-Environmental Hostility-Organisational Identity interactions.*..... 174
Figure 34 *Proactiveness – Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.*..... 175
Figure 35 *Risk-Taking – Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.*..... 176
Figure 36 *EO–Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.*..... 178
Figure 37: *Sustainable Financial Performance changes at various EO-Environmental Hostility Interactions.*..... 191
Figure 38 *Sustainable Financial Performance changes at various EO-Environmental Hostility-Bricolage Capability Interactions.* 202
Figure 39 *Sustainable Financial Performance Changes at Various EO-Environmental Hostility-Bricolage Capability-Organisational identity Interactions.* 214
Figure 40 *Sustainable Financial Performance changes at various EO-Environmental Hostility-Absorptive Capacity Interactions.*..... 226
Figure 41 *Sustainable Financial Performance changes at various EO-Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.* 238

LIST OF ABBREVIATIONS

Abbreviation	Term
ACAP	Absorptive capacity
BC	Bricolage capability
CIDB	Construction industry development board
CT	Contingency theory
ENV	Environment hostility
EO	Entrepreneurial orientation
GDFI	Gross domestic fixed investment
GDP	Gross domestic product
JSE	Johannesburg Stock Exchange
MBV	Market-based view
MR	Multiple regression
OI	Organisational identity
RBT	Resource-based theory
RBV	Resource-based view
ROT	Resource orchestration theory
RV	Relational view
SEM	Structural equation modelling
TMT	Top management teams
TPB	Theory of planned behaviour
UET	The upper echelons theory
VRIN	Valuable, rare, imitable, not easily copied
SMME	Small, micro, and medium enterprises

DEFINITION OF TERMS

Term	Definition
Sustainable Financial Performance	The extent to which a firm can maintain or uphold its financial performance over time.
Entrepreneurial Orientation	Decision-making styles, practices, processes, and behaviours that lead to an entry into new or established markets with new or existing goods and services.
Innovativeness	The tendency to depart from established practices and technologies by embracing and supporting creativity and experimentation, technological leadership, novelty and research and development in new products, services, and processes.
Risk-taking	The commitment of firm resources to uncertain outcomes and activities.
Proactiveness	The continuous search for opportunities to develop and introduce new products in the market.
EO-As-Advantage Perspective	An EO perspective that only positively associates EO and firm performance.
EO-As-Experimentation Perspective	An EO perspective that shows the variance caused by EO, and hence, the negative influence of EO on firm performance over time.
Environmental Hostility	Volatile and complex industry settings, intense competition, harsh, overwhelming business climates, and the relative lack of exploitable opportunities.
Bricolage Capability	Applying a combination of the resources and capabilities at hand to new problems and opportunities.
Absorptive Capacity	The acquisition and processing of reliable and current information from a diverse pool of stakeholders across external boundaries.
Organisational Identity	A set of statements that members of an organization perceive to be central, distinctive, and enduring (CED) to their organisation.

CHAPTER 1: INTRODUCTION

The purpose of this thesis is to investigate the relationship between the internal organisational resources and capabilities of the South African construction and materials sector and its sustainable financial performance during the past decade (2008-2019) period. To this end, the current study leverages the resource-based view (RBV), contingency theory (CT), and the entrepreneurial orientation (EO)-firm performance relationship in the EO-As-Experimentation perspective.

1.1 PRACTICAL CONTEXT OF THE STUDY

The economic growth of a country depends inter alia on a well-developed physical infrastructure (Dithebe, Aigbavboa, Oke, & Muyambu, 2018; Olarewaju & Ibrahim, 2020; Ramachandra, Rotimi, & Rameezdeen, 2013; Sahoo, Dash, & Nataraj, 2010). To this end, its construction and (building) materials sector can be understood as an important contributor. Due to the relatively low barriers to entry, the South African construction and materials sector consists of many construction and building/construction materials firms. These firms range from, inter alia, those that construct, to those who provide electrical and mechanical and plumbing services, to those who manufacture and provide steel, roofing etc. To achieve their objectives, these firms are supported by another layer of firms that provide professional services, such as, inter alia, architects, civil engineers, and project managers. Firms in this sector range from multinationals to small, medium, and micro-enterprises (SMMEs)(CESA, 2022; CIDB, 2016).

The South African construction and materials sector enjoyed a financially lucrative period before the 2008/2009 economic recession. During this period, South Africa's economic growth (GDP) was estimated at +4.56% on average (TradingEconomics, 2020). The construction and building activity index measures current and projected levels of construction or building activity in an economy. Gross domestic fixed investment (GDFI) measures projected expenditure on inter alia physical infrastructure. In both cases, higher values are favourable to economic stimulation. South Africa's construction and building activity averaged at +12.35%, and its GDFI averaged at +10.6% during the period referred to above (Afrisam, 2018). Furthermore, the South African construction and materials sector recorded profit margins of approximately 4-5%; it employed 7-8% of the country's labour force; and accounted for approximately 4-5% of the country's gross domestic product (GDP) (Afrisam, 2018; StatsSA, 2017; TradingEconomics, 2023).

The decade (2008-2019) following the 2008/2009 economic recession was not financially viable for this sector. South Africa's GDP averaged less than 2% (TradingEconomics, 2020), its GDFI had reduced to approximately 2.1% on average, and its construction and building activity had reduced to between 5-6% on average (Afrisam, 2018; TradingEconomics, 2020). As a result, the South African construction and materials sector recorded a persistent, decade long decline in financial performance (PWC, 2016; TradingView, 2020; Venter, 2013), employed 3-4% of the country's labour force, and accounted for approximately 2-3% of the country's GDP, respectively (StatsSA, 2017; TradingEconomics, 2023). In reaction to this financial performance decline, firms in this sector, divested from portions of their businesses, and expanded into foreign markets, while others filed for business rescue, contemplated joint ventures, as well as mergers and acquisitions, respectively (Afrisam, 2018; Global Cement, 2018; PPC, 2018; Research & Markets, 2020).

Firm performance is driven by both the external environment, as well as internal resources and capabilities (Barney, 1991; Farooq, 2020; Higashi, de Queiroz Caleman, de Aguiar, & Manning, 2020; Lawrence & Lorsch, 1967; Lowson, 2003). As such, the relationship between several internal resources and capabilities (factors) and the performance of firms in the South African construction and materials sector prove equally important.

The adoption of different competitive strategies for achieving high quality and timely delivery of construction project deliverables have been negatively correlated to financial performance by Oyewobi, Windapo, and Cattell (2014). The diversification of services and product have also been positively correlated to performance (Oyekunle Oyewobi, Olukemi Windapo, & Cattell Keith, 2013). The adoption of a combination of situation-dependent leadership style practices have been positively correlated with performance (Alade, 2022; Coetzer, Bussin, & Geldenhuys, 2017; Emere, Aigbavboa, & Thwala, 2021; Liphadzi, Aigbavboa, & Thwala, 2015; Mafundu & Mafini, 2019). Poor administrative within firms, lack of skilled professionals, and lack of capacity to deliver on certain projects have also been shown to negatively impact the performance of these firms (Aigbavboa, 2014; Montso, 2022; Omopariola, Windapo, Edwards, & El-Gohary, 2021).

Studies have also shown that intrinsic factors, such as talent management, employee satisfaction, the availability of training programmes, skills development, occupational health and safety of employees, work quality, effective information management, workplace communication, effective resource allocation, channeling internal synergies, and strategic planning, could also positively impact on the performance of this sector (Chinyamurindi, 2017; Emuze, Smallwood, & Han, 2014; Hove & Banjo, 2018; Mafundu & Mafini, 2019;

Oyewobi, Windapo, Rotimi, & Jimoh, 2019; Shikweni, Schurink, & van Wyk, 2019; Windapo, Adediran, Rotimi, & Umeokafor, 2022).

The strategic choice of top management teams (TMTs) is a key driver of sustainable firm performance (Barney, 1991; Hambrick & Mason, 1984). Furthermore, the strategic choices of TMTs contribute more positively to sustainable firm performance where they are complemented by other existing internal resources and capabilities of the firm (Barney & Clark, 2007). In an external environment that is characterised by scarcity of resources, unexploitable opportunities, harsh business conditions, and intense competition, the orchestration or restructuring of existing resources and capabilities could be complementary to the strategic choices or postures of TMTs (Choi, Lee, & Kang, 2020; Lawrence & Lorsch, 1967; Wales, Patel, Parida, & Kreiser, 2013). Furthermore, the acquisition and processing of relevant and current information could also be complementary to TMT strategic choice (Goaill & Al-Hakimi, 2021; Ibarra-Cisneros & Hernandez-Perlines, 2019). The cognitive capabilities of TMTs are a key driver of or contributor to strategic choice (Attah-Boakye, Costanzo, Guney, & Rodgers, 2021; Hambrick & Mason, 1984; Mutinda & Kilika, 2019). Therefore, the extent to which TMTs restructure existing resources and capabilities, as well as acquire and process relevant and current information to complement TMT strategic choice, are also driven by TMT cognitive capabilities (Helfat & Peteraf, 2009; Kor & Mesko, 2013).

While there is evidence of strategic internal resources and capabilities relating to firm performance in the above literature, as demonstrated in Chapter 2, none of these studies have addressed the persistent decline in financial performance of the South African construction sector, because neither do they span the entire 2008-2019 period, nor do they span the national landscape (i.e., they are mostly provincial), let alone the plethora of industries that constitute this sector.

The strategic choices, or postures of TMTs in this sector, and the extent to which they have contributed to this persistent decline in financial performance in the context of the external environment that prevailed during the period in question is not yet known. Furthermore, the extent to which TMTs in this sector recombined or restructured their existing resources and capabilities to complement their strategic choices or postures to counter this persistent decline in financial performance is also not known. Moreover, the extent to which TMTs in this sector acquired and processed reliable and current information to complement their strategic choices or postures is not known. Lastly, the extent to which the capability of TMTs to restructure existing resources and capabilities. as well as their capacity to acquire and

process relevant and current information in the context of the external environmental that prevailed during the period in question, was strengthened or weakened by their cognitive capabilities and the contribution of these interactions to the persistent financial performance decline of this sector is not known.

1.2 THEORETICAL CONTEXT OF THE STUDY

The knowledge gaps demonstrated above hint at several key concepts. The first concept amongst these is firm performance over the period in question; the second is the strategic postures of TMTs; the third is an external environment; the fourth is the recombination of existing resources and capabilities; the fifth is current and relevant knowledge or information, and the last concept is the cognitive capabilities of TMTs. These are defined hereunder.

1.2.1 Sustainable Financial Performance

Firms are generally categorised into non-profit, or profit seeking, respectively. Non-profit firms are established to address certain socio-economic issues. Profit seeking or generating firms are commonly established for financial gain by providing a set of offerings to a given market (Zander, 2007). The achievement of such profits depends on the market response and the internal management of these entities (Dobbs & Koller, 2005; Stanciu, Constandache, & Condrea, 2014). In this respect, it is imperative that firms can gauge their markets, as well as their own internal processes and practices. While there are different and often conflicting definitions of firm performance in the literature (Taouab & Issor, 2019), the gauging of markets and internal firm processes and practices are its most common attributes.

Firm performance is generally divided into non-financial and financial, respectively (Lebans & Euske, 2006). Inter alia, non-financial performance include customer satisfaction, product or service quality, market shares, employee efficiency, and speed to market (Harif, Azhar, Hoe, & Ahmad, 2012; Hunt, 2021). These concepts include the above-mentioned attributes. For example, customer satisfaction, product, or service quality and market share gauge the extent to which customers are content with a firm's offerings, and translate satisfaction into sales growth, while employee efficiency and speed to market gauge internal firm efficiencies.

Literature distinguishes amongst three main groups of financial performance metric groups: (a) profitability performance; (b) growth performance; and (c) market value performance (Capon, Farley, & Hoenig, 1990; Santos & Brito, 2012). Profitability performance refers to the extent to which a firm yields financial gain over time. Growth refers to the extent to which

a firm expands over time. Market value or capitalisation measures the worth of firm's asset on the financial market as observed externally. The authors showed the most common measures of profitability to be, inter alia, net profit margin; return on assets (ROA); return on invested capital (ROIC); or return on capital employed (ROCE). The most common measures of growth are, inter alia, market share growth and net revenue growth, or sales growth, where the most common measures of market value is Tobin's q (Gali, 2018; Gupta & Gupta, 2015). These concepts are defined in detail in Chapter 2.

Sustainable financial performance refers to the extent to which a firm can maintain or uphold its financial performance over time. A firm's ultimate measure of financial performance overtime is its market value or market capitalisation (Dobbs & Koller, 2005; Gali, 2018). Consequently, sustainable financial performance could be defined as the extent to which a firm can maintain its market value overtime. However, a firm's market value overtime stems from its long-term growth and profitability (Dobbs & Koller, 2005). Therefore, sustainable financial performance can also be approximated with a firm's long-term profitability and/or growth which is consistent with extant literature (Engelen, Gupta, Strenger, & Brettel, 2015; Kohtamäki, Heimonen, & Parida, 2019). The concept of sustainable financial performance is relevant to the South African construction and materials sector because it provides for the persistent decline in financial performance of this sector over the 2008-2019 to be approximated. This concept is discussed in detail in Chapter 2.

1.2.2 Entrepreneurial Orientation

Entrepreneurial orientation (EO) is defined as the decision-making styles, practices, processes and behaviours that lead to an entry into new or established markets with new or existing goods and services (Lumpkin & Dess, 1996; Lumpkin & Dess, 2015; Walter, Auer, & Ritter, 2006; Wiklund & Shepherd, 2011). EO was first conceptualised by Mille (1983) and further developed by (Covin & Slevin, 1989a). In this conceptualisation, a firm is considered entrepreneurial if it displays innovativeness, proactiveness, and risk-taking behaviour. Innovativeness refers to the tendency of a firm to divert from established practices, processes through creativity and experimentation, novelty, and research and development in terms of new products, services, and processes. Proactiveness refers to a firm's tendency to anticipate market demands, customer needs, and market changes. Risk-taking refers to a firm's tendency to commit its resources and capabilities to uncertain outcomes.

This three-dimensional conceptualisation was expanded to a five-dimensional one by Lumpkin and Dess (1996), who added competitive aggressiveness and autonomy

subdimensions. Competitive aggressiveness measures the extent to which firms compete in their respective markets. Autonomy is a measure of the freedom of a firm's human capital to engage in entrepreneurial activities for the benefit of that firm. According to this conceptualisation, the EO subdimensions do not need co-vary for a firm to be considered entrepreneurial. Instead, the EO exists either as a set of independent behaviours with a range from low to high across the dimensions, or as a collective profile or composition formed by these dimensions.

The strategic advantages of using both conceptualisations have been demonstrated (Gali, 2018; Putniņš & Sauka, 2020; Seo, 2019; Soares & Perin, 2020). However, EO meta-analyses (Cândido & Santos, 2019; Rauch, Wiklund, Lumpkin, & Frese, 2009) have consistently found that the conceptualisation of Miller, Covin and Slevin are the most used in EO literature. Furthermore, this literature largely excludes the autonomy and competitive aggressiveness dimensions. This is because some researchers have suggested that autonomy may be an antecedent of EO instead of a dimension (Edmond & Wiklund, 2010; Lumpkin, Cogliser, & Schneider, 2009) while others suggest that it may be an individualistic characteristic, which is difficult to conceive at a firm-level (Gali, 2018). Moreover, other researchers suggested that competitive aggressiveness might not be a separate dimension of EO but rather a part of the proactiveness dimension(Hough & Scheepers, 2008; Lumpkin & Dess, 2001).

Nevertheless, opportunities to expand knowledge and understanding on EO abound. For example, the underlying mechanisms from which EO could originate are yet to be understood (Wales, Covin, Schüler, & Baum, 2023). Furthermore, the properties of the EO measurements are highly contextual which points at the need to further investigate and understand how EO is measured and operationalised (Niemand & Eggers, 2023; Yamini & Rönkkö, 2022).

The internal resources and capabilities of the South African construction and sector could be categorised into two main groups: (a) internal resources and capabilities that address strategic renewal or posture; and (b) internal resources and capabilities that address general management activities. The first group consists of resources and capabilities such as strategic planning, effective resource allocation, differentiation competitive strategies, diversification of products and services, as well as situation-based leadership styles. While the second group of resources and capabilities consists of firm administration, talent management, employee satisfaction, the availability of training programmes, skills development, occupational health and safety of employees, work quality effective information management, workplace communication, and channeling internal synergies. The

constructs associated with strategic renewal or posture contained in the first group are concerned with market entry and often involve existing goods or new ones. Therefore, this list of internal resources and capabilities is consistent with the EO concept. For example, strategic planning, diversification, and differentiation are concerned with departing from existing practices, processes, and services.

Given this consistency, the current study proposes to approximate the strategic choice or postures of TMTs in the South African construction and materials sector with the EO construct. However, since there are several conceptualisations of EO, it is important to articulate which of these will be adopted in the current study. In keeping with most previous studies, this study opts to employ EO as a strategic posture composed of innovativeness, proactiveness, and risk-taking subdimensions. Furthermore, this study opts to employ EO both as a unidimensional and as multidimensional construct, with these three subdimensions acting independently. It is important to gain deeper insight into the EO-sustainable financial performance relationship of this sector.

The strategic postures in the first group are consistent with departing from the norm through exploration and experimentation, anticipating market changes, and making decisions without having the assurance of positive returns. As such, based on their definition, innovativeness, proactiveness and risk-taking are found to be as suitable as EO in approximating the strategic postures of TMTs in this sector.

1.2.3 Environmental hostility

The external environment within which firms operate may be benign, dynamic, or hostile (Covin & Slevin, 1989; Rosenbusch, Rauch, & Bausch, 2013). A benign or non-hostile environment promotes business investments and marketing opportunities. A dynamic environment is characterised by continous market demand, customer needs, and competitor changes. It refers to the rate and unpredictability of change in and industry or sector (Eroglu & Hofer, 2014; Ting, Wang, & Wang, 2012). A hostile environments is characterised by intense competition, harsh and overwhelming business climates, scarce resources, and a relative lack of exploitable opportunities (Covin & Slevin, 1989b; Khandwalla, 1976; Rosenbusch, Rauch, & Bausch, 2013).

As demonstrated in section 1.1, the external environment within which firms in the South African construction and materials sector operated during the 2008-2019 period did not promote investments and marketing opportunities. Instead, it was characterised by a

complex industry setting, harsh economic climate, and a dearth of opportunities to exploit, due to a subdued economy. Consequently, compared to the three categories of external environment above, it could be concluded that this sector experienced a hostile environment.

1.2.4 Bricolage Capability

The bricolage capability was originally conceptualised by Levi-Strauss (1962) as the ability to build something from a combination of resources and capabilities at hand. This concept was further developed and introduced into the entrepreneurship literature by Baker and Nelson (2005, p. 333), who similarly define bricolage as “making do by applying combinations of the resources at hand to new problems and opportunities”. More recent definitions refer to bricolage capability as the restructuring of existing resources and capabilities to address new situations or opportunities (Duymedjian & Rüling, 2010) or as an entrepreneur’s capability to defy the limitations-imposed by resource scarcity (De Bernardi & Pedrini, 2020). The basic principles upon which bricolage capability is based emerge from these definitions are: (a) resource scarcity; (b) making do or restructuring; (c) existing resources and capabilities and new situation or opportunities. Therefore, it could be posited that the bricolage capacity seeks to explain the extent to which bricoleurs (entrepreneurs involve in bricolage activities) leverage their existing resources and capability in response to new situations or opportunities that may have emerged from a scarcity of resources. Through the process of restructuring existing resources and capabilities, firms gain new knowledge, making bricolage capability an important tool in strategic entrepreneurship.

An optimal EO-firm performance relationship depends on an optimum mix of contingencies, which inter alia include the business environment and other resources and capabilities (Barney & Clark, 2007; Donaldson, 2001). As demonstrated in section,1.2.2, the South African construction and materials sector possessed other resources and capabilities, which could be regarded as “less strategic”. Not accounting for these other resources and capabilities in this relationship would portray an incomplete picture of the state of firms in the South African construction and materials sector. Therefore, the current study opts to employ the bricolage capability concept to approximate the extent to which firms in the South African construction and materials sector leveraged these resources and capabilities. The reason for this choice over equally suitable choices such as effectuation and improvisation are mentioned in Chapter 2.

1.2.5 Absorptive Capacity

Absorptive capacity (ACAP) was first conceptualised by Cohen and Levinthal (1990) as a firm's ability to acquire, assimilate, and exploit new information to meet its commercial objectives. According to this conceptualisation, a firm's absorptive capacity is dependent on its research and development (R&D) intensity. However, due to existence of other capabilities in a firm, scholars suggested refinements to absorptive capacity (Kim, 1998; Lane & Lubatkin, 1998; Mowery & Oxley, 1995). The most influential refinement was contributed by Zahra and George (2002). The authors posited that a firm's absorptive capacity could be developed from other organisational resources and capabilities. To this end, they expanded the definition of ACAP to refer to a firm's ability to acquire, assimilate, transform, and exploit knowledge through its organisational practices and processes in order to meet its objectives. These dimensions are discussed in detail in Chapter 2.

Relevant and current information are important enablers of effective strategic choice for a firm. For example, Dadkhah, Bayat, Fazli, Tork, and Ebrahimi (2018) demonstrate the importance of environmental scanning as a process of information acquisition and processing, in scenario planning, as a key step in strategy development. Using the lenses of organisational identity (i.e. who are we as a firm? Who are we no longer? and who are we becoming?) with scenario planning, Lang (2019) demonstrates the complementary role that relevant and current information play in effective scenario formulation. The persistence of financial performance decline in the South African construction and materials sector prompts the question of the strategic choices of TMTs in this sector. However, if one of the enablers of effective strategic choice is relevant and current knowledge, then the information acquisition and processing mechanisms of TMTs in this sector ought to be questioned as well. The current study follows the example of Kohtamäki, Heimonen, and Parida (2019), who used the ACAP concept to approximate these mechanisms. In Chapter 2, justification for this choice is provided.

1.2.6 Organisational Identity

Organisational identity (OI) refers to a set of statements that members of an organisation perceive to be central, distinctive, and enduring (CED) to their organisation (Albert & Whetten, 1985; Whetten, 2006). These statements are used to answers the questions: Who am I? As an individual in the organisation, who are we? As a collective, who are we becoming? As a future-focused view of the organisation and who are we no longer? As a reflection of the historical context of the organisation, such questions could be used to facilitate such influence (De Sousa, 2019).

Managerial cognitive capabilities refer to a person's mental faculties, or abilities to perform mental functions (Helfat & Peteraf, 2015). Through its three lenses, the OI construct could be used to approximate the cognitive capabilities of TMTs, because merely responding to the questions that characterise this construct is an inherent cognitive process. Therefore, the relevance of the OI concept in the current study is to approximate the cognitive capabilities of TMTs in the South African construction and materials sector. The importance and relevance of this approximation, particularly in relation to bricolage capability and absorptive capacity, will be demonstrated in section 1.2.8

1.2.7 Entrepreneurial Orientation and Firm Performance

There are two perspectives to EO-firm performance research: EO-As-Advantage, and EO-As-Experimentation (Wiklund & Shepherd, 2011). The former perspective does not consider the variance caused by the explorative EO construct, and therefore advocates for a positive EO-firm performance relationship. However, in the latter, EO could be positively and negatively related to performance (Rauch et al., 2009; Su, Xie, & Wang, 2015). The current study examines the effects of TMT strategic postures on the financial performance of the South African construction and materials sector, over the period in question. Consequently, it takes an EO-As-Experimentation perspective.

Research has shown that the EO-firm performance relationship exhibits curvilinear (nonlinear) behaviour overtime (Gali, 2018; Gupta & Gupta, 2015; Kohtamäki et al., 2019; Tang, Tang, Marino, Zhang, & Li, 2008). Furthermore, some studies have shown that moderating variables such as absorptive capacity, networking capability, information and communication and technology, board monitoring, industry life cycle, intra and extra industry social capital, ambidexterity, working capital efficiency, relatedness, relatedness, method of payment, acquisition premiums, as well as employee psychological safety, could strengthen this curvilinear relationship (Bauweraerts & Colot, 2017; Ferreras-Méndez, Llopis, & Alegre, 2022; Gupta & Gupta, 2015; Hunt, 2021; Kindermann, Schmidt, Pulm, & Strese, 2022; Kohtamäki et al., 2019; Wales, Kraus, Filser, Stöckmann, & Covin, 2021; Wales, Patel, et al., 2013; Yoon & Solomon, 2017). However, as will be demonstrated in Chapter 2, despite the prospect that this literature provides a suitable theoretical lens through which the knowledge gaps identified above could be addressed, this literature presents several challenges.

First, there exists a shortage of conceptual models to explain the contradictory results associated with the EO-firm performance relationship (D'Souza & Fan, 2022; Naskar, 2023; Schröder, Tiberius, Bouncken, & Kraus, 2021a; Surin, Edward, Shaaran, & Ngah, 2023). In fact, no conceptual models in the extant literature capture the reality of firms, because they

either employ managerial variables, or environmental effects, but never both at once. As such, there is no readymade conceptual model in this respect that could enable the investigation of the relationship between the strategic postures and sustainable financial performance in the sector.

Secondly, and more specifically, of the managerial variables that have been employed as moderators in the extant literature, none include the bricolage capability-environmental hostility, absorptive capacity-environmental hostility, bricolage capability-organisational identity and absorptive capacity-organisational identity interactions. Consequently, there is no readily available theoretical lens through which to assess the extent to which these interactions strengthened or weakened the relationship between the strategic postures of TMTs in the South African construction and material sector and their sustainable financial performance.

1.2.8 Resource-Based View and Contingency Theories

The resource-based theory (RBT) or resource-based view (RBV), was developed by Barney (1991). The resource-based view (RBV), posits that firms may achieve sustainable performance if they possess or develop internal strategic resources and capabilities that are valuable (facilitate the exploitation of opportunities); rare (counter threats); imperfectly imitable (not easily copied); and non-substitutable (Barney, 1991). The EO construct is consistent with the RBV, because it promotes the tendency to depart from established practices and the continuous search for new opportunities through exploration and experimentation. Therefore, it could be argued that firms may achieve sustainable performance with EO. However, it was demonstrated in section 1.2.2 that EO constitutes a suitable approximation for the strategic postures (internal resources and capabilities) of TMTs in the South African construction and materials sector, and since the current study aims to investigate the relationship between these strategic postures, and the sustainable financial performance of this sector, *the current study aims to investigate the extent to which the EO and the sustainable financial performance of this sector were related during the 2008-2019 period.*

Contingency theory (CT) was advanced by Lawrence and Lorsch (1967) as a combination of the classical, behavioural, and systems approaches, and applies these principles, depending on the requirements of a given situation in which a firm is affected or involved. According to the CT, the achievement of firm performance depends on an optimal mix between a firm's resources and capabilities, and the external environment within which it operates (Lawrence & Lorsch, 1967). Put differently, this theory suggests that, where firm performance is

concerned, the environmental contexts in which firms operate ought to be considered with the strategic resources and capabilities of a firm. In section 1.2.3, the external environment of the South African construction and materials sector was demonstrated to be aligned with the attributes of environmental hostility.

Since EO is a suitable approximation for the strategic postures of TMTs in this sector, *this study aims to investigate the extent to which the hostile environment of the South African construction and materials sector affected its EO-sustainable financial performance relationship during the 2008-2019 period.*

The RBV posits that complementary resources and capabilities could be employed to maintain the positive effects of a firm's strategic resources and capabilities regarding its performance over time. The current study argues that the general management related internal resources and capabilities in the second group in section 1.2.2, are as important as those in the first group, i.e. strategic postures that were approximated by the EO construct. This is because firms cannot affect strategy without other organisational processes and practices (Lang, 2019; Lew, Meyerowitz, & Svensson, 2019; Ocasio, 1997; Ramírez & Selsky, 2016). In section 1.2.4, these general management related internal resources and capabilities were shown to be best approximated by the bricolage capability construct. Therefore, using the CT and RBV, *the current study aims to investigate the extent to which the bricolage capability of the South African construction and materials sector affected its EO-sustainable financial performance relationship in the context of its hostile environment during the 2008-2019 period.*

In section 1.2.5, the absorptive capacity of a firm was demonstrated to be an important complementary resource and capability to strategic choice. Therefore, using the RBV and CT as in the case of bricolage capability above, *the current study aims to investigate the extent to which the absorptive capacity of the South African construction and materials sector affected its EO- sustainable financial performance relationship in the context of its hostile environment during the 2008-2019 period.*

Mutating external business environments have been shown to unsettle the decision-making processes of TMTs, and as such, it is is impossible to know the right answer under such circumstances (Camillus, 2016; Vecchiato, 2019; Yoon & Solomon, 2017). Bricolage is a managerial capability that involves decision-making that is concerned with the suitability of a given combination of existing resources and capabilities to a given situation. It therefore follows that a mutating business environment makes decision-making in respect of the right combination of resources and capabilities difficult for TMTs. This difficulty stems from the

bounded rationality (i.e. inability to map out all possibilities) of TMTs (Pittenger, Glassman, Mumbower, Merritt, & Bollenback, 2022).

The organisational identity of firms has been shown to shape what is noticed in the external environment of an organisation, as well as how it is interpreted, and what action is to be taken (Gioia & Thomas, 1996; Lin, 2004; Tripsas, 2009). This suggests that, through its lenses, organisational identity can be used to guide TMTs to make focused decisions. For example, through its "what are we no longer" and "who are we becoming" lenses, TMTs could, in a focused matter, define their past and future respectively, which could guide their decision-making in respect of the right combination of existing resources and capabilities. Consequently, it can be inferred that organisational identity has the potential to strengthen the bricolage capability of firms. As such, *the current study aims to investigate the extent to which organisational identity of the South African construction and materials sector, affected its bricolage capability in the context of its hostile environment?*

Absorptive capacity is a managerial capability that involves making decisions in respect of the acquisition, processing, and application of relevant and current information in a firm. Using a similar argument as above, it could be inferred that a mutating business environment also makes decision-making in respect of these aspects difficult. As is notable in the previous example, the lenses of OI could be used to make information current and relevant to a firm. For example, through its "who are we no longer" lens, TMTs could strengthen the absorptive capacity of TMTs by separating outdated and irrelevant information from that which is current and relevant. As such, the *current study aims to investigate the extent to which the organizational identity of the South African construction and materials sector, affected its absorptive capacity in the context of its hostile environment?*

1.3 PROBLEM STATEMENT

The above theoretical context demonstrates that EO-firm performance relationship in the EO-As-Experimentation perspective as well as its contingencies i.e. environmental hostility, bricolage capability, absorptive capacity and organisational identity, are potentially, a suitable body of knowledge through which the situation of the South African construction and materials sector could be understood. However, this perspective lacks readily available and reasonably complex conceptual models that could be used to approximate this situation as realistically as possible. More specifically, the extent to which the EO and sustainable

financial performance of the South African construction and materials sector related during the 2008-2019 period has not yet been investigated in literature. Furthermore, the extent to which the relationship between these two variables was affected by the hostile environment that prevailed during this period is yet to be investigated. Moreover, the extent to which the bricolage capability of this sector affected its EO-sustainable financial performance relationship in the context of such an environment has not yet been investigated. In addition, the extent to which the absorptive capacity of this sector affected its EO-sustainable financial performance relationship in the context of the same environment has also not yet been investigated. Lastly, the extent to which the organisational identity of this sector respectively affected its bricolage capability and absorptive capacity in the context of this environment has also not yet been investigated.

A learning organisation is posited to be one that gains insights from its experiences, through experimentation or exploration, observation, and analysis (Serrat & Serrat, 2017). Argyris and Schön (1978), posits that an organisation learns by: (a) changing an action or strategy that led to a specific outcome; and/or (b) re-evaluating assumptions, objectives, and beliefs that may have led to the action or strategy. The way TMTs perceive the environment within which their firms operate influence strategic choices or postures (Barr, 1998; Garud & Rappa, 1994; Miller & Lin, 2022; Voinea, 2017). This suggests that the way in which TMTs in the South African construction and materials sector interpret the dynamics in their sector could influence their future strategic choices or postures. Therefore, not investigating the above relationships could counter learning from past experiences. This could perpetuate not only the strategic choices or postures that led to the persistent decline in financial performance of this sector but also, the assumptions, beliefs, intentions, and objectives that may have initially prompted such strategic choices or postures. This could, in turn, cause the failure of certain firms in this sector, depending on their size and age, as well as resource and capability abundance (Alexander, Mayr, Mitter, Duller, & Birgit, 2020; Barney, 2001b; Lukason & Hoffman, 2019).

The South African construction and material sector consists of large firms and SMMEs. Like the larger firms, SMMEs are important contributors to the economy. However, this category of firm is particularly crucial to the economic growth and socio-economic imperatives of the country because they catalyse employment generation, income redistribution, reduce poverty and inequality (Berry et al., 2002; Sha, 2006; Thwala, 2014). Despite this, studies have shown that firms in this category experience high failure rates, and that strategic planning was a key tool in mitigating such failure (Gomera, Chinyamurindi, & Mishi, 2018; Rambaruth, Adam, & Krishna, 2021). Therefore, not examining these relationships could

also impede upon the derivation of valuable insights that may assist large firms and particularly SMMEs to navigate harsh business environments in the future which may negatively affect the achievement of economic growth and the redress of socio-economic imbalances in South Africa.

1.4 PURPOSE OF THE STUDY

The current study investigates:

(I) The extent to which the EO and sustainable financial performance of the South African construction and materials sector related during the 2008-2019 period.

(II) The extent to which the EO-sustainable financial performance relationship of this sector was affected by the hostile environment that prevailed during this period.

(III) The extent to which the EO-sustainable financial performance relationship of this sector was affected by its bricolage capability in the context of such an environment.

(IV) The extent to which the EO-sustainable financial performance relationship of this sector was affected by its absorptive capacity in the context of such an environment.

(V) The extent to which the organisational identity of this sector affected its bricolage capability in the context of this environment and the extent to which their interaction affected its EO-sustainable financial performance relationship .

(VI) The extent to which the organisational identity of this sector affected its absorptive capacity in the context of this environment and the extent to which their interaction affected its EO-sustainable financial performance relationship.

1.5 RESEARCH QUESTIONS

Based on the stated purpose, the following research questions (RQs) are posed:

(I) **RQ1:** To what extent were the EO and sustainable financial performance of the South African construction and materials sector related during the 2008-2019 period?

(II) **RQ2:** To what extent was the EO-sustainable financial performance relationship of this sector affected by the hostile environment that prevailed during the 2008-2019 period?

(III) **RQ3:** To what extent was the EO-sustainable financial performance relationship of this sector affected by its bricolage capability in the context of the hostile environment that prevailed during the 2008-2019 period.

(IV) **RQ4:** To what extent was the EO-sustainable financial performance relationship of this sector affected by its absorptive capacity in the context of the hostile environment that prevailed during the 2008-2019 period.

(V) **RQ5(a):** To what extent did the organisational identity of this sector affect its bricolage capability in the context of the hostile environment that prevailed during the 2008-2019 period and to what extent did their interaction affect its EO-sustainable financial performance relationship.

(VI) **RQ5(b):** To what extent did the organizational identity of this sector affect its absorptive capacity in the context of the hostile environment that prevailed during the 2008-2019 period and to what extent did their interaction affect its EO-sustainable financial performance relationship.

1.6 SIGNIFICANCE OF THE STUDY

The current study contributes to two bodies of knowledge: Strategic Entrepreneurship and the South African Construction and Materials literature respectively.

1.6.1 To Strategic Entrepreneurship Literature

A critical analysis of EO-As-Experimentation literature reveals that there exists a shortage of conceptual models to explain the contradictory results associated with the EO-firm performance relationship. Furthermore, this analysis has shown that extant conceptual models largely employ two-way moderating interactions in the EO-firm performance relationship, and thus do not capture the reality of firms, because they either employ managerial variables or environment effects, but never act together as moderators. As such, these models are over-simplified approximations of the reality within which firms operate, and subsequently, they impede upon the acquisition of deeper empirical and theoretical insights in the EO-firm performance relationship (Bauweraerts & Colot, 2017; D'Souza & Fan, 2022; Ferreras-Méndez, Llopis, & Alegre, 2022; Gupta & Gupta, 2015; Hunt, 2021; Kindermann, Schmidt, Pulm, & Strese, 2022; Kohtamäki, Heimonen, & Parida, 2019; Lee & Kreiser, 2018; Schröder, Tiberius, Bouncken, & Kraus, 2021; Wales, Kraus, Filser, Stöckmann, & Covin, 2021; Wales, Patel, Parida, & Kreiser, 2013; Yoon & Solomon, 2017).

This study addresses this shortage by contributing an original conceptual model that could be used to better understand these contradictions. This conceptual model entails a five-way

moderation interaction that combines managerial variables and environmental effects. These managerial variables are: bricolage capability; absorptive capacity; and organisational identity, and have never been used together in EO-As-Experimentation studies. This is of benefit in the following way: first, it closes the gap associated with the separate use of managerial variables and environmental effects, and consequently, creates a platform upon which scholars could build to understand the EO-firm performance relationship better, or more accurately. Secondly, this conceptual model reveals new theoretical linkages between EO, its dimensions and managerial variables, and opens new research avenues for the development of more complex conceptual models on the EO-firm performance relationship.

The RBV: (a) does not suggest how an appropriate complementary organisation could be developed such that competitive advantage is sustained (Connor, 2002); (b) it is not possible to suggest how a single VRIN criterion could yield a permanent, sustainable competitive advantage in an ever-changing business environment (Kraaijenbrink, Spender, & Groen, 2010); and lastly, (c) it is not able to suggest how the impact of this VRIN on firm performance could be empirically measured due to a heterogeneity of resources i.e. it is difficult to compile a heterogeneous construct (Lockett, Thompson, & Morgenstern, 2009). The conceptual model of this study addresses these limitations.

An analysis of the same EO-As-Experimentation literature has shown that there is a shortage of studies in which EO has been employed as a multidimensional construct. In fact, this literature suggests that there are only two such studies and they assess developed economies. This impedes the collection of deeper strategic insights and could hamper effective strategic planning. Furthermore, it raises questions around the external validity of the EO-firm performance relationship in this respect. This study addresses this shortage by adding a developing economy, and an African perspective. This adds to the validation of the EO construct as a universal internal strategic resource and capability, as well as the EO-firm performance relationship as a universal conceptual framework. Furthermore, the same literature suggests that there is shortage of studies from the EO-As-Experimentation perspective that examined the moderating effects of environmental hostility in the EO-firm performance relationship. In fact, an analysis of this literature reveals that there are only two such studies, and they are based on developed economies. Moreover, this analysis reveals that there is only one study that operationalises EO as multidimensional construct in this respect.

The environment within which firms operate cannot be ignored during strategic planning. Therefore, investigating the interaction between explorative strategic postures such as EO

(and its dimensions) and environmental hostility provide much deeper strategic insights to TMTs, and this facilitates more meaningful strategic planning interventions. This study addresses this shortage by adding consideration of a developing economy from an African perspective. This adds to the validation of the environmental hostility construct as a universal moderator in EO-firm performance relationships. In addition, this study addresses the shortage relating to the multidimensional operationalisation of the EO construct in this respect, thereby creating much deeper theoretical and empirical insights that scholars may be able to exploit in future EO-firm performance future research.

An analysis of EO-As-Experimentation literature and other EO studies suggests that the influence of cultural constructs on the EO-firm performance relationship remain understudied (Lee & Kreiser, 2018; Schröder et al., 2021). Furthermore, this analysis suggests that the role of TMT cognitive capabilities/processes in the EO-firm performance relationship is far from being understood. This study contributes a new organisational identity scale and demonstrates how this construct could be used to close these knowledge gaps.

1.6.2 To South African Construction and Materials Sector

The conceptual model of this study closes the knowledge gaps associated with the South African construction and materials literature in the following ways:

(a) through the multidimensional EO construct, it enables the identification of the strategic postures or choices of TMTs during the period in question;

(b) through the interaction between the environmental hostility construct and EO, it illuminates the extent to which these strategic postures or choices affected the sustainable financial performance of the sector in the context of the hostile environment that prevailed during the period in question;

(c) through the interaction of the bricolage capability, EO and environmental hostility constructs, it enables the determination of the extent to which TMTs in this sector leveraged their existing resources and capabilities in the hostile environment that prevailed. This in turn illuminates the extent to which their actions to recombine existing resources and capabilities affected their strategic postures, the way in which this impacted on their sustainable financial performance, and why;

(d) through the interaction of the absorptive capacity, environmental hostility and EO constructs, it enables the determination of the extent to which TMTs in this sector acquired and processed relevant and current information in the hostile environment that prevailed. This in turn illuminates the extent to which their capacity to acquire and process such information affects their strategic postures, how this impacted their sustainable financial performance and why;

(e) through the interaction of the organisational identity construct with the other constructs mentioned above, it facilitates the derivation of insights into the cognitive process of TMTs in this sector, and the extent to which these impacted on their capability to leverage on existing resources, as well as on their capacity to acquire and process reliable information.

The findings of the current study may promote organisational learning and subsequently better strategic planning and execution, not only in firms in the South African construction and materials sector, but potentially in any firm. More generally, the conceptual model of this study could be used as a lens through which any firm can identify their valuable, rare, imitable, and non-substitutable strategic choices or postures, and determine the extent to which their value, rarity, imitability, and non-substitutability can sustain their performance in the context of their external environment. Furthermore, this conceptual model guides any TMT with regards to how leveraging on existing resources and capability and acquiring and processing relevant and current information in the context of such environment, could be used to strengthen the influence of their strategic postures or choices on the performance of their firms. Moreover, this conceptual model guides TMTs on how to review their values, missions, assumptions, beliefs, and strategies by reflecting on their current, past, and future states, and how the outcome of such reflection could direct their leveraging of existing resources and capabilities, as well as their acquisition and processing of relevant information and how these in turn enhance the influence of their strategic postures on their firm performance of their firms.

1.7 DELIMITATIONS OF THE STUDY

This study is limited to the South African context. Therefore, branches of the concerned firms, outside the Republic of South Africa are not considered. This study is limited to all firms in the South African construction and materials sector. Furthermore, it focuses exclusively on firms that were operational between the years 2008 and 2019, or beyond. Moreover, this study is interested in the decade following the 2008 economic downturn. In retrospect, the above period could have been extended to the year 2022, which covers the three years after the Covid-19 pandemic as well. However, the year 2020 would have had to

be excluded because, compared to the 2008-2019 period, and the 2021-2022 period, it was dormant. In addition, the year 2022 would have had to be excluded as well, since that was the year in which data collection was initiated. This would have caused a discontinuity in data of the current study.

This study only involves EO-firm performance literature in the EO-As-Experimentation perspective. Consistent with this literature, this study excluded the competitive aggressiveness and autonomy dimensions of EO. The study was guided by a post positivist philosophy, that is, by a scientific or critical realist ontology, and an objective epistemology. The positivistic philosophy was excluded, because theories and constructs were accepted as approximations, and not absolute determinants of a reality.

1.8 ASSUMPTIONS OF THE STUDY

Consistent with the RBV, this study assumes that firms involved in this study have a satisfactory number of heterogeneous resources and capabilities, and that these are temporarily immobile from one firm to another. The theories and constructs adopted in this study are not determinants of an absolute, static reality about the South African construction and materials sector. Instead, the outcome of using these theories and constructs will be viewed as a mere approximation of this sector's situation. Due to their large contribution to GDP, publicly listed firms of this sector are representative of the market, and therefore inferences about the sector could be derived from them.

1.9 THESIS STRUCTURE

A chronological literature review is presented in Chapter 2. Chapter 3 situates the current study in the positivistic research paradigm or philosophy and justifies a descriptive research design and quantitative methodology. Validity and reliability issues are also addressed extensively in this chapter. Chapter 4 presents the results of the study. Chapter 5 discusses the results that were presented in Chapter 4. Chapter 6 discusses the significance and implications of the results in relation to the research problem, construction, and materials sector, EO-As-Experimentation literature, theory, and practice.

CHAPTER 2: LITERATURE REVIEW

2.1. INTRODUCTION

Chapter 1 demonstrated the relationship between external environmental factors and the persistent decline in the financial performance of the South African construction and materials sector, during the 2008-2019 period. Furthermore, it was posited that the relationship between the internal factors (resources and capabilities) and the same performance has, until this study, not yet been examined. The existence of this knowledge gap is demonstrated in section 2.2. of this chapter. Moreover, in the previous chapter, this knowledge gap was placed in the EO-As-Experimentation literature, where several constructs were used to generate the research questions. These research questions are:

(I) **RQ1:** To what extent were the EO and sustainable financial performance of the South African construction and materials sector related during the 2008-2019 period?

(II) **RQ2:** To what extent was the EO-sustainable financial performance relationship of this sector affected by the hostile environment that prevailed during the 2008-2019 period?

(III) **RQ3:** To what extent was the EO-sustainable financial performance relationship of this sector affected by its bricolage capability in the context of the hostile environment that prevailed during the 2008-2019 period.

(IV) **RQ4:** To what extent was the EO-sustainable financial performance relationship of this sector affected by its absorptive capacity in the context of the hostile environment that prevailed during the 2008-2019 period.

(V) **RQ5(a):** To what extent did the organisational identity of this sector affect its bricolage capability in the context of the hostile environment that prevailed during the 2008-2019 period and to what extent did their interaction affect its EO-sustainable financial performance relationship.

(VI) **RQ5(b):** To what extent did the organisational identity of this sector affect its absorptive capacity in the context of the hostile environment that prevailed during the 2008-2019 period and to what extent did their interaction affect its EO-sustainable financial performance relationship.

These constructs are defined and discussed in detail in section 2.3. In section 2.4, a chronological analysis of empirical research on the EO-firm performance relationship in the EO-As-Experiment perspective, with further research gaps is presented. This is followed by

hypotheses development, and an accompanying conceptual model in section 2.5. Conclusions are drawn in section 2.6.

2.2. INTERNAL RESOURCES AND CAPABILITIES VERSUS FIRM PERFORMANCE IN THE SOUTH AFRICAN CONSTRUCTION AND MATERIAL SECTOR

Internal firm resources refer to assets, capabilities, organisational processes, firm attributes, information, and knowledge that a firm utilises in order to conceive and implement strategies that improve its efficiency and effectiveness (Barney, 2001a).

To demonstrate the existence of the knowledge gap relating to this sector, it is important to ask the following questions:

(a) Are there studies that have attempted to investigate the relationship between the internal resources and capabilities and the persistent decline in financial performance covering the period 2008-2019?
(b) If they exist, are they generalisable to the entire sector, and do they cover the national context?
(c) Have these studies taken the external environment into account?

An analysis of extant literature in respect of this relationship is presented hereunder. The relevant literature is chronologically reviewed henceforth, and each study is analysed based on these questions.

The relationship between product/service and geographical diversification and the performance of construction firms in South Africa was investigated by Oyekunle Oyewobi et al. (2013). The study employed a case study and archival approaches, using semi-structured interviews, to elicit primary qualitative and quantitative data over five years (2006-2013) from 62 large construction companies. Performance was measured by means of Return on Total Asset (ROTA), Return on Capital Employed (ROCE) and Profit Margin (PM). Size, age, technical capability, and capital structure of the construction firms were controlled for. The results of the study showed that large construction companies perform and diversify more in their services/products, and better than do newly upgraded contractors, which was evident in their performance concerning profit margin. The results also indicated that there are no statistically significant differences in the performance of a diversified and undiversified firm.

This study does not directly address the persistent performance decline in financial performance that was experienced during the 2008-2019 period, because it is based on 2006-2013 data. Although it is concerned with large companies in the construction and materials sector, it falls short of accommodating the opinions of firms in lower grades i.e., smaller firms. A certain external business environment prevailed during 2006-2013, the influence of which is not explicit in this study. The diversification of services and product involves relevant information and subsequently knowledge. The study is not explicit regarding how relevant knowledge could have aided the diversification initiatives of the firms concerned, and ultimately, their performance. Furthermore, firms have other internal resources and capabilities that could be enablers of these initiatives; where this study does not detail how the diversification initiatives could have been complemented by such resources and capabilities. The role played by managers in the way in which diversification strategies are carried out is undeniably important. However, this study has not taken these into account, nor has it considered possible counter firm practices and processes that could rationalise potentially irrational management decision-making processes.

Current challenges and problems facing small and medium-size contractors (SME) in Mbombela (Nelspruit) Mpumalanga Province of South Africa were investigated by Aigbavboa (2014). Using a survey, primary data was collected from small and medium contractors within grade 1-4 of the South Africa Construction Industry Development Board (CIDB). The survey results indicated that internal factors, such as poor administrative management, lack of skilled professionals, and lack of capacity to deliver on certain projects, constituted the greatest challenges faced by the construction companies. This study does not directly address the persistent decline in performance experienced by the South African construction and materials sector, because it focused on a single province in South Africa and does not span the 2008-2019 period. Furthermore, the results of this study have low generalisability, due to their focus on only one province, and are worsened by the type and size of the sample used. Similar to the study by Oyekunle Oyewobi et al. (2013), this study is also deficient insofar as accounting for the role that may have been played by the external environment within which the concerned firms may have operated.

The relationship between the financial performance and competitive strategies in thirty (30) large South African civil engineering and general building construction organisations registered in Grades 7 to 9 on the CIDB contractor register was examined by Oyewobi et al. (2014). The study used a survey to collect information about competitive strategies from senior managers. Financial performance was measured using Return on Capital Employed

(ROCE). Using a combination of parametric and non-parametric statistics, the results of the study showed that the differentiation competitive strategies of achieving high quality and time (period within which a construction project is completed), were negatively correlated with financial performance. Although this study used the same category of firms as that of Oyekunle Oyewobi et al. (2013), it focused on a smaller sample size. This has had implications for the generalisability of its findings. Furthermore, insofar as the persistent performance decline of the South African construction and material sector and the role of the external environment are concerned, it is possible to reach similar findings to the those in the study of Oyekunle Oyewobi et al. (2013).

Leadership style practices (transactional, transformational, democratic, autocratic, charismatic and Laissez-faire) were correlated to construction project success by Liphadzi et al. (2015). The data used in this research were derived from both primary and secondary sources. The secondary data were collected via a detailed review of related literature. The primary data were collected through a structured questionnaire aimed at 150 project and construction managers in the South African construction industry. Using correlation analysis, the results of the study showed a positive relationship between transactional, transformational, and democratic leadership and project success. However, the results further revealed that there is no relationship between the remaining leadership styles and construction project success. The study concluded that project success and subsequently company performance depends on leaders that possess diverse leadership styles or approaches. In another study, Coetzer et al. (2017), examined the interrelationship between servant leadership, job demands, job resources, work engagement, and burnout in a South African construction firm. The authors showed that servant leadership could be used as an effective leadership approach to enhance work engagement and decrease burnout in the construction industry. The role of leadership behaviour in the South African construction and materials sector has also recently been respectively studied by Emere et al. (2021) and Alade (2022) . While the above studies emphasise the importance of leadership capabilities on firm success, their scope does not address the persistent performance decline that was experienced by the South African construction and materials sector. Furthermore, these studies fall short of explicitly demonstrating the robustness of these leadership styles in the context of the various external environments that firms might experience.

Measures that could be used to improve the performance of construction projects in Gauteng, South Africa were investigated by Sibiya, Aigbavboa, and Thwala (2015). Data were collected using structured questionnaires on construction professionals, both from the contracting companies, consultant offices, and public owner's sectors. The results of the study showed that the measures to be taken for the improvement of the performance of

construction projects include: proper project planning and scheduling; use of effective project management techniques; clear information and communication channels; adherence to construction drawings and specifications; proper material procurement; adequate planning; effective strategic planning; proper project implementation and management; frequent coordination between the construction team; use of appropriate construction methods; site management and supervision. amongst other aspects.

This study is based in a Gauteng Province context and thereby excludes the remaining eight provinces of South Africa. Consequently, this study has generalisability problems. While the study has identified internal resources and capabilities that might be necessary for the successful execution of construction project, it does not address the persistent decline in performance that was experienced by the South African construction and materials sector. Furthermore, this study suffers from the same deficiencies as those that have been highlighted above.

The views and experiences of entrepreneurs on how: (a) project management success is conceptualised; and (b) the role that information management played within the South African construction industry space were examined by Chinyamurindi (2017). Using a qualitative research approach, which involved semi-structured interviews on a sample of 15 entrepreneurs working within the construction industry, narratives, and themes around these two questions were generated. Based on the analysis of these narratives, project success was conceptualised, mainly along with three themes. Firstly, project success necessitated customer satisfaction. Secondly, project success in the construction industry meant meeting the set targets, especially those of a financial nature. Finally, project success involved channelling internal synergies to realise external gains. Furthermore, the study revealed that information management could be conceptualised as a currency in effective decision-making.

This study focused on 15 entrepreneurs, which are somewhat rare in the construction and materials sector. Therefore, the generalisability of this study's findings is limited. Furthermore, the study does not address the persistent decline in the performance of the sector. Like the previously discussed studies, this study does not account for the role played by the external environment but does identity information and knowledge as key to decision-making. However, how these will ultimately influence performance, in the company of other internal resources and capabilities remains a grey area in this study. Furthermore, the role of management particularly in terms of how the various internal resources and capabilities could be orchestrated for optimum performance, remains unclear.

The factors influencing the performance of the construction industry in the Limpopo Province of South Africa were investigated by Dithebe et al. (2018). The authors used a questionnaire survey on a sample of 35 professionals in the construction industry. Using correlation analysis, the study revealed significant factors affecting the performance of the construction industry to be Instability/escalation of construction material prices, project cost overruns, backlogs of payment to contractors, material and equipment, and inefficient funding of construction projects. The study is based on the context of a single province and therefore has generalisability problems. It does not provide any insight into the persistent decline in performance that has been experienced by the South African construction and materials sector.

The perception of small business executives (SBEs) regarding what they perceived as the determinants of emerging contractors (ECs) performance in the construction industry was examined by Hove and Banjo (2018). Data were obtained from 433 urban-based ECs registered with the Construction Industry Development Board (CIDB) in the construction industry in Gauteng Province. A structured questionnaire and an interview guide were administered as the data collection instruments. Content analysis and multiple linear regression were performed. The analysis of qualitative data revealed that SBEs perceived financial factors, manpower, materials, machinery and equipment, project implementation, quality of work, legal and environmental factors, and strategic planning as valid determinants of EC performance. A subsequent multiple linear regressions analysis on these qualitative outcomes revealed strategic planning, project implementation, and project performance as the most statistically significant factors in predicting the performance of ECs in Gauteng Province. The study focused on emerging contractors, and therefore falls short of accounting for the sector more broadly. Furthermore, the study focused on the context of a single province, which gives rise to generalisability concerns. The study does not tackle the persistent performance decline that was experienced by the sector. It also does not address the role of the external environment and management.

The influence of internal constraints in black-owned SMEs in the South African construction industry on business performance was investigated by Mafundu and Mafini (2019). Data collection was achieved using a qualitative approach involving semi-structured in-depth interviews with a sample of 13 professionals employed by five black-owned SMEs operating in the construction industry in Gauteng Province, South Africa. A content analysis revealed occupational health and safety, human resources, leadership style, workplace communication and resource allocation as constraints to business performance in these firms. This study was conducted in the context of a single province, and thereby raises

issues of generalisability. Furthermore, it does not explicitly provide insight into the persistent decline in the performance of the sector.

The linkage of strategic clusters and performance in South African construction firms has been examined by Oyewobi et al. (2019). Data were collected through a questionnaire survey. It emerged that all the respondents' placed a high premium on employee satisfaction as a measure of achieving success. In a separate but similar study, Shikweni et al. (2019) showed that effective implementation of talent management practices could yield talent sustainability and competitiveness. As for previous studies, the persistent decline in performance experienced by the South African construction and materials sector has not been adequately considered. Like the other studies above, concerns about the role of the external environment, management, knowledge management, as well as other internal resources and capabilities, have also not been explicitly examined.

A positive link between supplier coordination, customer coordination effectiveness and performance in the Gauteng Province construction industry was established by Montso (2022). In similar but separate studies, Windapo et al. (2022) established a positive link between client's knowledge of procurement systems, and construction project performance in South Africa and Omopariola et al. (2021) showed that South African construction companies with a strong structure, multiple areas of specialisation, creative and efficient staff members, and access to funding, have a greater chance of experiencing high financial performance. As for previous studies, these recent studies suffer from the same shortcomings as highlighted above.

The internal resources and capabilities of the South African construction and materials sector that were presented above, could be categorised into two main groups: (a) internal resources and capabilities that address strategic renewal or posture; and (b) internal resources and capabilities that address general management activities. The first group consists of resources and capabilities such as strategic planning, effective resource allocation, differentiation competitive strategies, diversification of products and services, as well as situation-based leadership styles. The second group of resources and capabilities consists of firm administration, talent management, employee satisfaction, the availability of training programmes, skills development, occupational health and safety of employees, work quality effective information management, workplace communication, and channeling internal synergies. Regardless of classification, most of these studies above agree that internal resources and capabilities have some relationship with firm performance. However, none of these studies address the persistent decline in financial performance of the South African construction sector studies, because neither do they span the entire 2008-2019

period, nor do they span the national landscape (i.e., they are mostly provincial). The South construction and materials sector is composed of several industries. To the best of the author's knowledge, a study that spans all the industries in this sector is yet to be published.

.

The strategic choice of TMTs is a key driver of sustainable firm performance (Barney, 1991; Hambrick & Mason, 1984). Furthermore, the strategic choices of TMTs contribute more positively to sustainable firm performance if they are complemented by other existing internal resources and capabilities of the firm (Barney & Clark, 2007). In an external environment that is characterised by scarcity of resources, unexploitable opportunities, harsh business conditions and intense competition, the orchestration or restructuring of existing resources and capabilities could prove complementary to the strategic choices or postures of TMTs (Choi et al., 2020; Lawrence & Lorsch, 1967; Wales, Patel, et al., 2013). Furthermore, the acquisition and processing of relevant and current information could also be complementary to TMT strategic choice (Goaill & Al-Hakimi, 2021; Ibarra-Cisneros & Hernandez-Perlines, 2019). The cognitive capabilities of TMTs are a key driver or contributor to strategic choice (Attah-Boakye et al., 2021; Hambrick & Mason, 1984; Mutinda & Kilika, 2019). Therefore, the extent to which TMTs restructure existing resources and capabilities as well as acquire and process relevant and current information to complement TMT strategic choice is also governed by TMT cognitive capabilities (Helfat & Peteraf, 2009; Kor & Mesko, 2013).

While there is evidence of strategic internal resources and capabilities relating to firm performance in the above literature, the strategic choices, or postures of TMTs in this sector, and the extent to which they contributed towards this persistent decline in financial performance in the context of the external environment that prevailed during the period in question, is not yet known. Furthermore, the extent to which TMTs in this sector recombined or restructured their existing resources and capabilities to complement their strategic choices or postures to counter this persistent financial performance decline, is also not known. Moreover, the extent to which TMTs in this sector acquired and processed reliable and current information to complement their strategic choices or postures is not known. Lastly, the extent to which the capability of TMTs to restructure existing resources and to acquire and process relevant and current information in the context of the external environmental that prevailed during the period in question, was strengthened or weakened by their cognitive capabilities and the contribution of these interactions to the persistent financial performance decline of this sector, is not known.

The knowledge gaps that were demonstrated above hint at several key concepts. The major concept is firm performance over the period in question. The second concept refers to the

strategic postures of TMTs. The third concept refers to an external environment. The fourth concepts refer to the recombination of existing resources and capabilities, the fifth concept refers to current and relevant knowledge or information, and the final concept refers to the cognitive capabilities of TMTs. In the following section, to approximate these concepts, suitable constructs are reviewed and proposed.

2.3. DEFINITION OF KEY CONCEPTS

2.3.1. Sustainable Financial Performance

Firms are generally categorised into non-profit, or profit-seeking entities. Regardless of category, there are various reasons why such firms are established. Non-profit firms could be established to address certain socio-economic issues. Profit-seeking or generating firms are commonly established for financial gain by providing a set of offerings to a market (Zander, 2007). The achievement of such profits depends on the market response, and the internal management of these entities (Dobbs & Koller, 2005; Stanciu et al., 2014). Therefore, in this respect, it is imperative that firms can gauge their markets, as well as their own internal processes and practices. While there are differing and often conflicting definitions of firm performance to be found in the literature (Taouab & Issor, 2019), the gauging of markets and internal firm processes and practices are its most common attributes.

Firm performance is generally divided into non-financial and financial aspects (Lebans & Euske, 2006). Non-financial performance includes inter alia customer satisfaction, product or service quality, market shares, and employee efficiency and speed to market (Harif et al., 2012; Hunt, 2021). These concepts include the above-mentioned attributes. For example, customer satisfaction, product or service quality and market share gauge the extent to which customers are content with a firm's offerings and translate satisfaction into sales growth while employee efficiency and speed to market gauge internal firm efficiencies.

Literature distinguishes amongst three main groups of financial performance metrics: (a) profitability performance; (b) growth performance; and (c) market value performance (Capon et al., 1990; Santos & Brito, 2012). Profitability performance refers to the extent to which a firm yields financial gain. Growth refers to the extent to which a firm expands over a given period. Market value or capitalisation meanwhile measures the worth of firm's asset on the financial market as observed externally. The authors showed the most common measures of

profitability include inter alia net profit margin, return on assets (ROA), return on invested capital (ROIC) or return on capital employed (ROCE). The most common measures of growth are inter alia market share growth and net revenue growth or sales growth and the most common measures of market value is Tobin's q (Gali, 2018; Gupta & Gupta, 2015).

Profit margin measures financial gain after expenditure. ROA measures the percentage profit derived from total assets, while ROCE or ROIC measures the profit percentage derived from investments or capital expenditure. Market share growth measures a change in a firm's market size, and sale growth or net revenue growth measures revenue gain from sale of offerings. Tobin's q measures a firm's market value against its book value. The definitions of the metrics indicate their interdependence and their consistency with the above-mentioned attributes of firm performance.

Financial and non-financial firm performance could be operationalised subjectively or objectively, or both (Cândido & Santos, 2019). Subjective measures are characterised by self-reports from research participants and are directly related to their perceptions and opinions. Objective measures are solely based on quantitative data, and are not affected by personal feelings, interpretation, or bias on the part of the participant (Kotane, 2017). Self-reports largely involve the use of survey questionnaires, while quantitative measures are derived from sources such as stock exchange databases, or similar for listed firms, published financial statements and annual reports. There are three schools of thought around the operationalisation of these measures: (a) sole use of objective measures is more effective; (b) subjective measures are as effective as their objective counterparts (Rauch et al., 2009); and (c) subjective measures are complementary (leading indicators) to objective measures (Hofmann, 2001).

Not all firms are enlisted in the stock exchange or similar platforms, and not all firms publish their financial statements. This makes the availability of quantitative measures difficult to access, hence the few studies using objective measures of performance than their subjective counterparts (Singh, Darwish, & Potočnik, 2016). The lack of inconsistency in terms of the choice of objective performance measures in different studies (Guest, 2011) and the use of different accounting standards (Hult et al., 2008) makes theorising the concept of firm performance even more difficult. Despite these shortfalls, objective measures of performance can reduce the problem of common method bias or variance associated with self-reporting techniques. Common method bias occurs when variables in a study are measured with the same instruments, such as a survey questionnaire, from the same person in the same context.

Despite the risk of common method bias, a key advantage of subjective measures is their capacity to maximise target population reach, especially in the absence of quantitative data. Studies have shown that, although this bias ought to be minimised, subjective measures remain as valid and reliable as their objective counterparts (Naskar, 2023; Rauch et al., 2009; Singh et al., 2016; Tang et al., 2008). However, these studies have also shown that – although not necessarily due to the equal strength of these respective measures – when subjective and objective measures are considered together, they are able to increase the credibility of a study.

Sustainable financial performance refers to the extent to which a firm can maintain or uphold its financial performance over time. A firm's ultimate measure of financial performance overtime is its market value or market capitalisation (Dobbs & Koller, 2005; Gali, 2018). Consequently, sustainable financial performance could be defined as the extent to which a firm can maintain its market value overtime. However, a firm's market value overtime stems from its long-term growth and profitability (Dobbs & Koller, 2005). Therefore, sustainable financial performance can also be approximated with a firm's long-term profitability and/or growth which is consistent with extant literature (Engelen, Gupta, Strenger, & Brettel, 2015; Kohtamäki, Heimonen, & Parida, 2019). The concept of sustainable financial performance is relevant to the South African construction and materials sector because it provides for the persistent decline in financial performance of this sector over the 2008-2019 to be approximated.

2.3.2. Entrepreneurial Orientation

EO is defined as the decision-making styles, practices, processes and behaviours that lead to an entry into new or established markets with new or existing goods and services (Lumpkin & Dess, 1996; Lumpkin & Dess, 2015; Walter et al., 2006; Wiklund & Shepherd, 2011). EO was first conceptualised by Miller (1983) and further developed by Covin and Slevin (1989a). In this conceptualisation, a firm is considered entrepreneurial if it displays innovativeness, proactiveness and risk-taking behaviour. Innovativeness refers to the tendency of a firm to divert from established practices and processes through creativity and experimentation, novelty, and research and development into new products, services, and processes. Proactiveness refers to a firm's tendency to anticipate market demands, customer needs, and market changes. Risk-taking refers to a firm's tendency to commit its resources and capabilities to uncertain outcomes.

The EO concept was operationalised by Covin and Slevin (1989b). The authors theorised that the three dimensions of EO that were proposed by Miller (1983) acted together to comprise a basic, unidimensional strategic orientation, and ought to be aggregated together when researching the field of entrepreneurship. Consequently, these authors developed a nine-item self-response scale for this purpose. This unidimensional, unitary, univocal, composite, monolithic or gestalt conceptualisation of EO, requires that firms ought to have high levels of all three dimensions to be regarded as entrepreneurial or having an EO. A limitation of the gestalt conceptualisation is that it obscures the independent effects of each of the dimensions of EO on firm-level outcomes, which limits strategic renewal efforts (Gali, 2018). Subsequent to the gestalt conceptualisation of Miller/Covin and Slevin (1983), a multi-dimensional conceptualisation was forwarded by Lumpkin and Dess (1996). In this conceptualisation, the authors added competitive aggressiveness and autonomy dimensions to the three dimensions that were proposed earlier by Miller/Covin and Slevin. Competitive aggressiveness is defined as the propensity of a firm to challenge its competitors directly and intensely to achieve entry or improve position. Autonomy is defined as the independence of a firm's employees and/or teams to develop an entrepreneurial idea, and to see it through to completion, unfettered by the shackles of corporate bureaucracy (Lumpkin & Dess, 1996; Rauch et al., 2009).

Lumpkin and Dess (1996) theorised that in this multidimensional perspective, the five dimensions of EO do not need to co-vary for a firm to be considered entrepreneurial. Instead, the EO exists either as a set of independent behavioural scores with a range from low to high across the dimensions, or as a collective profile or composition formed by these dimensions. Covin and Wales (2019) suggest that the two conceptualisations are not mutually exclusive, but that they are simply focused on different phenomena, and thus are both appropriate for study.

A third conceptualisation of EO was proposed by Anderson, Kreiser, Kuratko, Hornsby, and Eshima (2015). According to this conceptualisation, the authors suggested that EO could be viewed as a managerial attitude (risk-taking] and behavioural (pro-activeness and innovativeness) construct, where the former captures managerial dispositions, and the latter entrepreneurial behaviour. This view excludes the competitive aggressiveness and autonomy dimensions. The Anderson et al. (2015), conceptualisation has recently been used by Kreiser, Anderson, Kuratko, and Marino (2019) to examine the relationship between EO and environmental hostility. The authors used content analysis to examine managerial disposition (propensity to risk taking) and financial ratios to measure innovation; and pro-activeness to measure managerial behaviour.

EO meta-analyses have consistently found that the Miller/Covin and Slevin conceptualisation proves itself to be the most used in EO literature (Cândido & Santos, 2019; Rauch et al., 2009) and that of Kreiser et al. (2019) is the least popular. However, to the non-mutual exclusivity conclusion of Covin and Wales (2019), the concurrent use of both the Miller/Covin and Slevin and Lumpskin and Dess conceptualisations have been observed in some studies (Gali, 2018; Morić, 2022). In both instances the autonomy and competitive aggressiveness dimensions have largely been excluded. This is because some researchers have suggested that autonomy may be an antecedent of EO instead of a dimension (Edmond & Wiklund, 2010; Lumpkin et al., 2009) while others suggest that it may be an individualistic characteristic, which is difficult to conceive at a firm-level (Gali, 2018). Moreover, other researchers suggested that competitive aggressiveness might not be a separate dimension of EO but rather a part of the proactiveness dimension(Hough & Scheepers, 2008; Lumpkin & Dess, 2001).

Despite the valuable empirical and theoretical contributions to the EO literature that the above-mentioned conceptualisations have made, opportunities to expand knowledge and understanding on EO abound. For example, the underlying mechanisms from which EO could originate are yet to be understood (Wales, Covin, Schüler, & Baum, 2023). Furthermore, The properties of the EO measurements are highly contextual which points at the need to further investigate and understand how EO is measured and operationalised(Niemand & Eggers, 2023; Yamini & Rönkkö, 2022).

The internal resources and capabilities of the South African construction and sector could be categorised into two main groups: (a) internal resources and capabilities that address strategic renewal or posture; and (b) internal resources and capabilities that address general management activities. The first group consists of resources and capabilities such as strategic planning, effective resource allocation, differentiation competitive strategies, diversification of products and services, and situation-based leadership styles, while the second group of resources and capabilities consists of firm administration, talent management, employee satisfaction, the availability of training programmes, skills development, occupational health and safety of employees, work quality effective information management, workplace communication, and channeling internal synergies. The constructs associated with strategic renewal or posture contained in the first group have to do with market entry, and often involve existing goods, or new ones. For this reason, this list of internal resources and capabilities is consistent with the EO concept. For example, strategic planning, diversification, and differentiation are concerned with departing from existing practices, processes, and services.

Given this consistency, the current study proposes to approximate the strategic choice or postures of the South African construction and materials sector with the EO construct. However, since there are several conceptualisations of EO, it is important to articulate which will be adopted in the current study. Consistent with previous studies and for reasons mentioned above, this study opts to employ EO as a strategic posture composed of innovativeness, proactiveness, and risk-taking subdimensions. Furthermore, this study opts to employ EO both as a unidimensional and as multidimensional construct with these three subdimensions acting independently. This is important to gain finer and deeper insights into the EO-sustainable financial performance relationship of this sector.

The strategic postures in the first group are consistent with departing from the norm through exploration and experimentation, anticipating market changes, and making decisions without having the assurance of positive returns. As such, based on their definition, innovativeness, proactiveness, and risk-taking are as suitable as EO to approximate the strategic postures of TMTs in this sector.

2.3.3. Environmental Hostility

The external environment within which firms operate may be benign, dynamic, or hostile (Covin & Slevin, 1989; Rosenbusch, Rauch, & Bausch, 2013). A benign or non-hostile environment promotes business investments and marketing opportunities. A dynamic environment is characterised by continous market demand, customer needs, and competitor changes. It refers to the rate and unpredictability of change in and industry or sector (Eroglu & Hofer, 2014; Ting et al., 2012). A hostile environments is characterised by intense competition, harsh, overwhelming business climates, scarce resources, and the relative lack of exploitable opportunities (Covin & Slevin, 1989b; Khandwalla, 1976; Rosenbusch et al., 2013). The scarcity of resources and the lack of exploitable opportunities could be attributed to factors such as strict regulatory restrictions, labour or raw materials shortages, and decreasing markets. In a hostile environment, due to intense competition amongst firms, consumers gain in their bargaining power. This leads to a lower demand for the products and services of one firm over those of (Dele-Ijagbulu, Moos, & Eresia-Eke, 2021) another and subsequently to the failure of the less favoured firm.

Environmental hostility has largely been operationalised as a moderator (Martins & Rialp, 2011; Onwe, Ogbo, & Ameh, 2020; Zahra & Garvis, 2000) in the EO-firm performance relationship and to a lesser extent as directly relating to EO(Jogaratnam, 2002; Kreiser et al., 2019) respectively. Understandably, evidence that environmental hostility has been

employed as a mediator in this relationship is almost non-existent. There are two main common justifications for its use as moderator in the above relationship: that the high levels of uncertainty that characterises environmental hostility encourage greater levels of entrepreneurial activity or that this uncertainty negates the impact of such activities and thus result in unfavourable firm performance outcomes. The latter is the most dominant view in literature(Dele-Ijagbulu et al., 2021). Finally, expecting environmental hostility to act as mediator implies that it is a direct result of entrepreneurial activity which is not sensible because EO as an internal organisational strategic posture cannot yield external environmental conditions at least not at a noticeable scale.

Environmental hostility is largely measured subjectively, using survey questionnaires (Covin & Slevin, 1989b); Khandwalla (1976). These scales involve gauging whether participants considered their external environment to be one that promotes survival, investment and competitive advantage, or the extreme opposite. However, the use of objective measures of environmental hostility have also been reported in literature (Kreiser et al., 2019).

As demonstrated in section 1.1, the external environment within which firms in the South African construction and materials sector operated during the 2008-2019 period did not in the main promote investments and marketing opportunities. Instead, the industry setting was complex, under a harsh economic climate, with only a few opportunities to exploit due to a subdued economy. Consequently, compared to the three categories of external environmental factors cited above, it could be concluded that this sector experienced a notably hostile environment.

2.3.4. Bricolage Capability

The bricolage capability was originally conceptualised by Levi-Strauss (1962) as the ability to build something from a combination of resources and capabilities that are to be found at hand. This concept was further developed and introduced into the entrepreneurship literature by Baker and Nelson (2005, p. 333), who defined bricolage as “making do by applying combinations of the resources at hand to new problems and opportunities.” More recent definitions refer to bricolage capability as the restructuring of existing resources and capabilities to address new situations or opportunities (Duymedjian & Rüling, 2010), or as an entrepreneur’s capability to defy the limitations-imposed by resource scarcity (De Bernardi & Pedrini, 2020). The basic principles upon which bricolage capability is based emerge from these definitions: (a) resource scarcity; (b) making do or restructuring; (c) existing resources and capabilities; and (d) new situation or opportunities. Therefore, it could be posited that the

bricolage capability endeavours to explain the extent to which bricoleurs (entrepreneurs involve in bricolage activities) leverage their existing resources and capability in response to new situations or opportunities that may have emerged from a scarcity of resources. Through the process of restructuring existing resources and capabilities, a firm gains new knowledge, and thus makes bricolage capability an important tool for the purposes of strategic entrepreneurship.

Recent systematic reviews (Bhardwaj, Bindra, Singh, & Sahay, 2023; Mateus & Sarkar, 2024) have shown that entrepreneurship literature lacks a unified and holistic conceptual framework that could represent a coherence of diverse bricolage forms and their related capabilities in entrepreneurship. However, these reviews have revealed that bricolage capability has largely been employed as a resource mobilisation strategy to innovate and develop new products and services amidst resource scarce situations and more recently as a direct potential contributor to sustainable firm growth and performance. These approaches have both been realised in EO-firm performance literature. For example, bricolage capability has been employed as a mediator in the EO-firm performance relationship (Hooi, Ahmad, Amran, & Rahman, 2016; Kurnia, Mulyadi, Hendrayati, & Denan, 2023; Kurniawan & Selamat, 2023; Ma & Yang, 2022), as directly related to EO(Mohammadi, 2021; Xiaobao, Rui, Jiewei, & Xiaofan, 2022) and to firm performance (Hashim, Taleb, & Faudzi, 2023; Senyard, Davidsson, & Steffens, 2015). These operationalisations have been a function of purpose or context (Ben-Asher, 2022; Martínez, Rojas, Ruiz, Chipana, & Fernandez, 2023). Regardless of context, bricolage capability is largely measured subjectively with the widely used five-point eight-item scale of Senyard, Baker, Steffens, and Davidsson (2014) in entrepreneurship research (Chinyoka, 2017; Liu, Kwong, Kim, & Liu, 2021; Martínez et al., 2023; Mitka, 2017; Nomatovu, 2018; Tsilika, Kakouris, Apostolopoulos, & Dermatis, 2020; Yan, Hu, Liu, Ru, & Wu, 2020).

In entrepreneurship, bricolage capability is regarded an entrepreneurial decision-making posture, and so are effectuation, and improvisation (Long, Xiang, & Wei, 2023). Originally conceptualised by Sarasvathy (2001), effectuation measures the decision-making processes of entrepreneurs in uncertain business environments. This process involves optimally and iteratively using a set of given means to develop new resources and capabilities by leveraging strategic relationships and other contingencies, such new markets (Sarasvathy & Dew, 2005). Improvisation measures the extent to which entrepreneurs spontaneously and iteratively restructure their existing resources and capabilities to create a competitive edge (Cunha, 2007; Gojny-Zbierowska & Zbierowski, 2021; Hmieleski & Corbett, 2006) under constrained business conditions. All three concepts are concerned with creating a

competitive edge from a base of existing resources and capabilities. Furthermore, all three are characterised by constrained environmental conditions, persistence, spontaneity, and leveraging on other contingencies, such as markets. In this respect, effectuation and improvision are considered equally important, and are suitable to explain the extent to which firms leverage their existing resources and capabilities in a resource-scarce environment.

An optimal EO-firm performance relationship depends on an optimum mix of contingencies, which, inter alia, include the business environment, as well as other resources and capabilities (Barney & Clark, 2007; Donaldson, 2001). As was demonstrated in previous section, the South African construction and materials sector possessed other resources and capabilities, which could be regarded as “less strategic”. Not accounting for these other resources and capabilities in this relationship would portray an incomplete picture about the state of firms in the South African construction and materials sector. Therefore, the current study opts to employ the bricolage capability concept to approximate the extent to which firms in the South African construction and materials sector leveraged these resources and capabilities. The reason for this choice over effectuation and improvisation is its ease of operationalisation in entrepreneurship research.

2.3.5. Absorptive Capacity

Absorptive capacity (ACAP) was first conceptualised by Cohen and Levinthal (1990) as a firm’s ability to acquire, assimilate and exploit new information to meet its commercial objectives. According to this conceptualisation, a firm’s absorptive capacity is dependent on its research and development (R&D) intensity. However, due to existence of other capabilities in a firm, scholars suggest refinements to absorptive capacity (Kim, 1998; Lane & Lubatkin, 1998; Mowery & Oxley, 1995). The most influential refinement was contributed by Zahra and George (2002). The authors posit in this regard that a firm’s absorptive capacity could be developed from other organisational resources and capabilities. To this end, they expanded the definition of ACAP to refer to a firm’s ability to acquire, assimilate, transform, and exploit knowledge through its organisational practices and processes to meet its objectives.

The four dimensions of ACAP are defined as follows: (i) acquisition as a firm’s capacity to acquire or gain new information; (ii) assimilation as a firm’s capacity to relate this new information to extant knowledge and how this existing information could be modified to better understand a firm’s environment; (iii) transformation as a firm’s capacity to use new knowledge while re-evaluating and modernising existing knowledge and finally; (iv)

exploitation as a firm's capacity use or implement new external knowledge towards the achievement of its objectives. Zahra and George (2002) grouped acquisition and assimilation into potential absorptive capacity (PACAP), and transformation and exploitation into realised absorptive capacity (RACAP), respectively. PACAP enables a firm to measure its potential to detect and interpret external environmental stimuli. RACAP enables a firm to measure its capacity to refine existing knowledge with new knowledge derived from such stimuli, as well as measure its capacity to apply the resulting knowledge.

ACAP has largely been operationalized as a mediator (Aljanabi, 2018; Ato Sarsah, Tian, Dogbe, Bamfo, & Pomegbe, 2020; Lau & Lo, 2015; Raisal, Tarofder, & Ilmudeen, 2021; Sun, Hou, Liang, & Bi, 2023; Wiklund & Shepherd, 2003) or moderator (Engelen, Kube, Schmidt, & Flatten, 2014; Goaill & Al-Hakimi, 2021; Sbissa, Zonatto, Rossetto, & Zonatto, 2020)in the EO-firm performance relationship literature. The common justification for the use of ACAP as a mediator amongst these scholars, is that entrepreneurial oriented activities (innovativeness, proactiveness and risk-taking) put firms in a higher position to develop ACAP which in turn yields positive firm performance outcomes. The common justification for the use of ACAP as a moderator in extant literature is that entrepreneurial activities involve trial and error i.e. high variance which could produce varying firm performance outcomes. In this respect, this literature suggests that ACAP ensures that entrepreneurial firms understand and interpret such variance correctly and act upon it in time.

ACAP is measured both objectively and subjectively (Ayala & González-Campo, 2015; Kohtamäki et al., 2019). The former limits the measurement of this construct to the conceptualisation of Cohen and Levinthal (1990), because it is largely based on a firm's R&D (Ayala & González-Campo, 2015). Although the authors demonstrated the existence of a plethora of subjective measures of this construct, the 22 item, seven-point Likert scale of Zahra and George (2002) that was further developed Jansen, Van Den Bosch, and Volberda (2005) is the regarded as the most well-established in the literature (Kohtamäki et al., 2019). This scale measures each of the dimensions of ACAP, and thereby the PACAP and RACAP respectively.

The current conceptualisation of the ACAP assumes that PACAP always precedes RACAP, and thereby implies that information processing is a linear process. However, this is a limitation because information processing is often in fact a nonlinear process, especially in turbulent business environments (Camillus, 2016; Mufudza, 2018; Pu & Liu, 2023). This limitation calls for a more dynamic conceptualisation of ACAP. Furthermore, this conceptualisation is based on organisational capabilities, but does not account for the role

played by stakeholders that are internal to the firm, such as individuals and teams. Therefore, such a dynamic conceptualisation ought to account for individual and team cognitive capabilities, and how these shape the PACAP and RACAP of their firms. Moreover, such a dynamic conceptualisation would need to consider factors that shape these cognitive capabilities.

ACAP is concerned with learning, and therefore a potential alternative theory that could be used in understanding a firm's information and knowledge processing mechanisms is the organisational learning (OL) theory of Argyris and Schön (1978). This theory consists of two conceptual frameworks of learning, viz.: (a) single loop learning; and (b) double loop learning. Single loop learning occurs when a firm detects, interprets, and responds to external environmental stimuli until a desired results is achieved. This type of learning assumes that a firm's current objectives, values, and strategies are sound, and not questionable, and focuses on the effectiveness of firm's techniques. Double-loop learning occurs when a firm detects, interprets, and adapts to both external and internal environmental stimuli, until a desired result is achieved. In addition to assessing the effectiveness of a firm's techniques, the scope of this type of learning also includes interrogating the fundamental assumptions, values, and norms of a firm.

The ACAP is consistent with single loop learning, because it focuses on a firm's potential to acquire and assimilate, as well as its capability to transform and apply knowledge effectively. In this respect, OL theory is equally important in understanding the information and knowledge mechanisms of a firm. However, the mechanism involved in the double loop learning conceptual framework suggest that it has the potential to provide deeper insights into the learning mechanisms of a firm than the single loop learning conceptual framework and ACAP, because: (a) its dynamism has the potential to resolve the linearity limitation that is highlighted above; and (b) its broad scope and dynamism have the potential to interactively and iteratively account for all sources of information and knowledge in a firm, and thus facilitate active and more effective strategic renewal. Despite these prospects, the scope of this study does not extend to determining the dynamic capabilities of firms, but rather seeks to approximate their knowledge acquisition and processing mechanisms during the period in question. Therefore, this study follows the example of Kohtamäki et al. (2019), who used the conceptualisation of Zahra and George (2002) to this end.

2.3.6. Organisational Identity Construct

Organisational identity (OI) is an organisational management concept that was proposed by Albert and Whetten (1985), and thereafter extended by Whetten (2006). These authors define an organisational identity as a set of statements that members of an organisation perceive to be central, distinctive, and enduring (CED) to their organisation. These statements emanate from the following questions: Who am I? As an individual in the organisation, who are we? As a collective, who are we becoming? As a future-focused view of the organisation and who are we no longer? As a reflection of the historical context of the organisation (De Sousa, 2019). Central attributes are those that have impacted the history of a firm, where their absence would have yielded a different history (Whetten, 2006). The author posits that enduring attributes are those that are embedded in the history of a firm. Furthermore, distinct attributes are those used by a firm to separate itself from other similar firms. (Whetten, 2006) asserts that an attribute of a firm must satisfy the CED criteria to be considered an organisational identity.

OI could be used as an action guideline to lead the actions and decision making processes of managers (Lin, 2004). Furthermore, the author suggests that organisational identity could also be used as an interpretive lens through which internal firm events could be interpreted by members. Lastly, the author suggests that organisational identity could be used as a comparison reference. These could all be realised through the “who are we “, “who are we no longer” and the “who are we becoming” lenses.

Gioia and Thomas (1996) argue that under conditions of change, top management team members’ perceptions of organisational identity play a critical role in their sense-making process and interpretation of problems. Through examining the intuitive logics process of scenario planning, Lang (2019) demonstrated how the inclusion of organisational identity lenses at the beginning of the process and the end of the process could realign managerial perceptions and representations, calm the disruptions of business environmental turbulence, provide a platform for the articulation of vision, as well as a roadmap towards the realisation of such a vision. Similarly, De Sousa (2019) demonstrated how the business environmental turbulence-induced disruptions could be organised through the process of organisational design with organisational identity as the driver of the process through its “who are becoming” lens.

The positive impact of this concept depends on the alignment between managers on the interpretation of their organisational identity; the failure of which could hamper the impact of OI and subsequently firm performance (Voss, Cable, & Voss, 2006). Organisational identity has also been criticised as a potential hurdle that could impede organisational

learning(Gustafson & Reger, 1995). This stems from the temptation to remain firm on the "who are we?", without using the "who are we no longer?" and the "who are becoming?" lenses.

OI differs from organisational culture and organisational image. Janićijević (2013, p. 36), define organisational culture as "a system of assumptions, values, norms, and attitudes, manifested through symbols which the members of an organization [sic] have developed and adopted through mutual experience, and which help them determine the meaning of the world around them and the way they behave in it". Schein (2004), suggests that the significance of organisational culture emerges from the imposing a set of assumptions and values, it creates a frame of reference for the perceptions, interpretations, and actions of the organisation's members, and that in this way, it influences all the processes that take place in an organisation. Lin (2004), defines organisational image as the perception of outside stakeholders about a firm. The difference between these three constructs is best explained using the model of Hatch and Schultz (2002). According to the model, organisational identity facilitates the expression of organisational culture i.e., norms, values, and attitudes. This could be achieved through the "who are we?" as an organisational lens of organisational identity. The answer to this question is enacted by firms, which is subsequently interpreted by outsiders, and subsequently leads to their perception (organisational image) of the nature of a given organisation. This image informs organisational identity, and ultimately, organisational culture. It could therefore be inferred that organisational identity makes the invisible organisation visible to external stakeholders and facilitates its interpretation by firms. Furthermore, it could be concluded that organisational identity facilitates the absorption of the external environment necessary to reshape and redefine a firm's culture.

Camillus (2016) posits that, in mutating environments (characterised by frequent changes and a high degree of unpredictability), knowing the 'right answer' is impossible, and as result managers tend to lose their strategic bearings i.e., long-held strategic vantage points and strategic foundations. Navis and Glynn (2011) showed that external environment business turbulence unsettles the taken-for-granted assumptions managers and leaders have about the identity of their firms. Whetton (2006) posits that in turbulent business environments, the need to resolve a real or potential identity crisis dominates the attention of decision-makers. Organisational practices and processes have been shown to be important to direct managerial decisions (De Sousa, 2019; Lang, 2019; Lin, 2004; Meissner & Wulf, 2013; Ocasio, 1997). Tripsas (2009) posits that organisational identity shapes what is noticed in the organisation's environment, how it is interpreted, and what action is taken. Studies have

shown how an OI could be used to direct managerial decisions in turbulent business environments (De Sousa, 2019; Lang, 2019; Voss et al., 2006).

Managerial cognitive capabilities refer to a person's mental faculties or abilities to perform mental functions (Helfat & Peteraf, 2015). Through its three lenses, the OI construct could be used to approximate the cognitive capabilities of TMTs, where responding to the questions that characterise this construct, is an inherently cognitive process. The relevance of the OI concept in the current study is to approximate the cognitive capabilities of TMTs in the South African construction and materials sector.

2.4. REVIEW OF EO-FIRM PERFORMANCE RELATIONSHIP

2.4.1. The EO-As-Advantage and EO-As-Experimentation Perspectives

The relationship between EO and firm performance has been widely studied (Rauch et al., 2009; Wiklund & Shepherd, 2011). There is general consensus that studies pertaining to this relationship could be categorised into two main perspectives: EO-As-Advantage and EO-As-Experimentation respectively(Wiklund & Shepherd, 2011). Research in the former perspective suggests that entrepreneurial orientation can yield a competitive advantage, because it enables firms to identify and exploit market opportunities more effectively. Using the dimensions of EO, this perspective posits that firms with a strong entrepreneurial orientation are more likely to engage in innovative activities, respond proactively to market changes, and take calculated risks, all of which can contribute to sustained competitive advantage and consequently firm performance. However, this perspective assumes that for as long as EO remains unique i.e. valuable, rare, imitable and non-substitutable to a firm, it will yield positive firm outcomes(Wiklund & Shepherd, 2003; Wiklund & Shepherd, 2011). This perspective has two main shortfalls: Firstly, it assumes that the cognitive capabilities of organisational decision-makers in respect of always making a success out of EO regardless of context always prevail which assumes that human beings are infallible and secondly, it does not account for firm failure due to EO (Wiklund & Shepherd, 2011).

The EO-As-Experimentation perspective takes into account the risk bearing effects of EO(Gali, 2018). In this perspective, EO is explorative i.e. it involves experimenting with new alternatives, trial and error, variance-seeking, as well as learning by doing with returns that can either be negative and/or positive to the firm (Digan, 2019; March, 1991). This perspective is consistent with the operations of nature because it recognises that decision-

makers are fallible and that their decisions could be beneficial or detrimental to a firm. Furthermore, it provides a lens through which loss and/or gain of competitive advantage and by implication firm performance could be modelled and investigated more realistically.

The above discussion reveals that the EO-As-Advantage perspective is not an ideal body of knowledge into which the problem of the South African construction and materials sector could be placed. Instead, the problem best resonates with the EO-As-Experimentation perspective because it allows for both the epochs where this sector may have benefited and not benefitted from adopting an entrepreneurial strategic posture. The current study therefore is placed into this perspective.

The following section reviews and synthesises relevant EO-firm performance empirical literature in the EO-As-Experimentation perspective. These studies are chronologically reviewed. Each study is critiqued based on methodology and/or conceptual model. A comprehensive synthesis of this literature is provided in section 2.4.3.

2.4.2. EO- Firm Performance in the EO-As-Experimentation Perspective

The long-term (three-year) effects of EO (measured using a five-point Likert scale) on firm performance (measured subjectively using the scale provided by McDougall, Covin, Robinson Jr, and Herron (1994), and later, objectively, using self-reported sales growth) were examined by Tang et al. (2008). Using survey data collected from 1 100 randomly selected Chinese firms and hierarchical regression analysis, the results of the study revealed a curvilinear (inversed u-shaped) relationship between EO and firm performance in both the subjective and objective approaches.

The strength of this study is in the convergence of findings in both approaches albeit with the subjective displaying a higher EO maximum when compared to its objective counterpart. This study falls short of providing possible explanations for the curvilinear behaviour observed in both approaches.

The long-term effects (2004 -2008) of EO dimensions (measured using shareholder letters from corporate reports and historiometry) on firm value (using Tobin's q derived from the Standard & Poor's COMPUSTAT database) in 25 USA based retail firms, were examined by Gupta, Chen, and Gupta (2016). Using regression analysis, the study showed that the EO dimensions do not generate uniform and consistent gains in shareholder value creation.

The study uses a relatively small sample size of 25 retails firms based in the USA. Given the size of the USA and the undoubtedly many retail firms based there, it is possible that this sample is not representative. Consequently, the validity of this study is questionable.

Furthermore, the study used an shareholder letter to derive the EO construct, which could have introduced inaccuracies as to what constitutes this construct, due to the possibility of information misrepresentation associated with letters.

The use of historiometric analysis is relatively new in EO research (Gupta & Gupta, 2015). A search spanning 40 years (1980 to 2022) of entrepreneurial orientation" and "historiometrics" reveals less than 10 studies. Therefore, the authors have created a platform for new ways to measure EO compared to the traditional Miller/Covin and Slevin scales and their variations.

The multidimensional conceptualisation of EO was particularly important in this study, as it uncovered the impact of each of the dimensions, rather than eliding these into a single construct, with the associated potential to lose value information (Gupta et al., 2016). The conceptualisation of EO as a multidimensional construct by Lumpkin and Dess (1996) included autonomy and competitive aggressiveness. This study elected to examine innovativeness, pro-activeness, and risk-taking. The authors concluded that innovativeness may be the most important dimension of EO, followed by pro-activeness, insofar as value creation is concerned. The authors associated the decrease in the effectiveness of pro-activeness and innovation with an increase in competition. However, the study neglected to examine the competitive aggressiveness dimension of these firms to ascertain the extent to which it could have perpetuated or worsened the derivation of value from EO on the part of firms. The potential validity problem highlighted above casts doubt on these findings.

The effects of EO (as both a gestalt and multidimensional construct) on long-term performance (using ROA and Tobin's q) were examined by Gali (2018). The author used a quantitative methodology by objectively measuring EO at the firm level and examining its long-term effects over a period from 2000 to 2014. The study used secondary financial and market information of 742 large firms in the USA in the high-technology industry. Using fixed effect panel regression to examine the effect of EO and its dimensions on short-term and long-term measures of firm performance over the above-cited period, and the Cox proportional Hazard regression to examine the effect of EO and each of its dimensions on the risk of firm failure, the study revealed that EO had an inverse U-shaped effect on performance, with innovativeness contributing positively to this performance over time; whereas pro-activeness and risk-taking had a significant negative effect on performance over time. It was also shown that EO, as well as its dimensions, increased the risk of failure over time.

Methodologically, this study has many strengths: (a) it avoids recall and common bias by using secondary data; (b) it operationalised firm performance as a multidimensional

construct measuring the short-medium term (ROA) and long-term (Tobin's q), and so as a result, it provides important insights into the evolution of a firm's financial performance.

The simultaneous use of both the multidimensional and unitary conceptualisations of the EO in this study is commendable because this approach enables the derivation of deeper insights into the EO-firm performance relationship. However, this study neglected to use moderators to establish the extent to which they could have impacted the EO versus performance relationship and firm failure. Specifically, it neglected to account for the external environment and managerial or human agency effects, amongst others. Although it adopted a multidimensional approach to the EO construct, it elected to ignore the competitiveness and autonomy dimensions of EO, and it did not consider any antecedents that could have triggered EO (Gali, 2018).

The adoption of any strategic postures stems from certain intensions and beliefs (Ajzen, 2011). Consequently, if EO is an example of a strategic posture, then it is important to understand its antecedents. This study neglected to account for such.

In an attempt to lend insight to the relationship between behavioural orientation signal intensity and crowdfunding performance, Calic and Shevchenko (2020) produced a data set of 48,628 crowdfunding projects from a relevant database. The authors operationalised behavioural orientation signal intensity as the dimensions of the EO construct i.e., innovativeness, proactiveness, risk-taking, competitive aggressiveness, and autonomy. Furthermore, the authors operationalised crowdfunding performance by the amount of money raised, whether the project reached its funding goal, and the number of backers supporting it. Data for the dimensions of EO was collected using thematic content analysis conducted by means of the CATA software programme. Data was analysed using regression analysis. The results suggest that signals of autonomy, innovativeness, competitive aggressiveness, and risk-taking have an inverted-U-shaped relationship with crowdfunding performance. Signals of proactiveness have a positive non-monotonic relationship with crowdfunding performance.

The large sample size of this study is particularly commendable, since it increases the validity of its results. Furthermore, this study is the most demonstrative of how the firm performance construct could be operationalised in various ways, because it departs from the common firm performance measures that have been largely used by most preceding studies.

In terms of the operationalisation of EO using content analysis, this study complements the very few (Gupta et al., 2016; Gupta & Gupta, 2015) that exist in the EO-As-Experimentation perspective. However, this study neglects contingency factors that might have played an important role in relationship under investigation. Notably, it neglects to consider the external environmental or even other internal resources and capabilities that might have driven the crowdfunding performance of the various projects, let alone complemented (whether as moderators, mediators, or antecedents) the EO signals that resulted in the crowdfunding performance results that were obtained.

The nonlinear or curvilinearity of the EO-firm performance relationship has, to date, largely been conducted in developed economies, where the exploration of this relationship in developing economies remains neglected. As such, Šlogar, Morić Milovanović, and Hrvatin (2023) recently endeavoured to contribute a developing economy perspective. The authors collected data from decisionmakers of 963 SMEs operating in several south-eastern European countries. Data was analysed using hierarchical linear regression analysis. Research results confirmed the existence of a positive direct relationship between EO and financial performance. However, the results did not confirm the existence of nonlinearity effects in the EO-financial performance relationship in this context. This study fell short of providing plausible explanation for its results. Although this study operationalised financial performance using profit growth and sale growth respectively, it did not operationalise EO as a multidimensional construct, which could have provided finer grain details into this relationship. Furthermore, the study did not consider the effects of the environment within which the SMEs operated. This could also have provided deeper insight into the results that were obtained.

Meta-analyses suggest that introducing a moderator into the bivariate relationship between EO and firm performance helps to reduce the potential for misleading inferences and permits a more precise and specific understanding of the EO–firm performance relationship (Rauch et al., 2009; Rosenbusch et al., 2013; Schröder et al., 2021a). Consequently, it can be inferred that the above studies demonstrate a shortcoming in this regard. However, there do exist studies that have examined this relationship in the context of third variables.

The long-term (1999-2008) relationship between EO (measured using historiometry) and firm performance (measured return on invested capital (ROIC derived from financial statements) of 42 publicly traded German firms listed in the Forbes 2010 ranking was examined by Gupta and Gupta (2015). Competitive intensity (which refers to rivalry and measured using Herfindahl indices) and demand volatility (which refer to frequent and

unpredictable demand of goods or products by customers and measured as industry overall sales volatility) were used as moderating variables. Firm size (measured as the log transformation of the number of employees at year-end due to high skewness and kurtosis); acquisitive growth and CEO change were used as control variables. Using regression analysis, the study indicated that EO had a strong initial effect on firm performance, and that this effect gradually declined with time.

Competitive intensity and demand volatility influenced the effect of EO on performance in both the short and long term. This study does not provide an in-depth analysis into the reasons behind the EO versus performance relationship observed (applicable in both the short and long term), nor does it provide such reasons for the effects of competitive intensity and demand volatility.

Although this study neglected to analyse the impact of internal firm resources and capabilities, it demonstrated the negative impact of the external environment on the EO versus firm relationship. Similar to previous studies, the use of EO as a univocal construct, does not facilitate an in-depth analysis into the reasons behind the observed relationship between EO and performance (Gupta et al., 2016). This potential impediment has not been noted in this study. The authors highlighted the limitations associated with the use of return on invested capital (ROIC) as an indication of long-term firm performance, since it indicates nothing about a firm's growth trajectory.

The effects of a lack of this ambidexterity in EO studies were also highlighted in a study by Revilla, Pérez-Luño, and Nieto (2016), who examined the moderating effect of EO (measured with a seven-point Likert scale of Covin and Slevin (1989) between firm failure and family member involvement in management. Survey data collected from 369 manufacturing firms in Spain from 2007 to 2013 analysed with the Cox proportional hazards model, revealed that EO increases the risk of firm failure, because it hinders consensus reaching and commitment to family-centred goals, which are focused on long-term survival.

The authors do not explicitly provide reasons for this negative EO impact. However, they align their findings to previous research that have highlighted the ambivalent effects of EO on firms (McKelvie, McKenny, Lumpkin, & Short, 2014; Wiklund & Shepherd, 2011). The position of Wiklund and Shepherd (2011) was discussed above, noting that EO necessarily involves exploration. McKelvie et al. (2014) raises that entrepreneurship has distinct consequences for family businesses, and as a result, it may be difficult to build collective commitment around entrepreneurial strategies, as they often differ from the established normative family identity of the firm. Consequently, it could be concluded, based on these two studies, and Revilla et al. (2016) suggest, that EO involves exploration, and that this

tendency challenges the more exploitation-inclined tendency of firms. Therefore, Revilla et al. (2016) highlight the existence of a gap between exploitation and exploration in these firms, but do not propose how this gap might be bridged. Furthermore, Revilla et al. (2016) highlights that the use of a multidimensional conceptualisation of EO could have provided a finer-grained vision of the consequences of EO for the relationship between family involvement and business failure. Gupta et al. (2016) meanwhile write that the use of EO as a univocal construct result in knowledge voids. Consequently, it could be deduced that the use of EO as a univocal construct in this study has hindered the in-depth comprehension of the negative effects of EO on these firms.

A more elaborate study compared to that of Revilla et al. (2016), was conducted by Bauweraerts and Colot (2017). Building on stewardship theory, agency theory, and the RBV, the authors used a sample of 208 Belgian private family firms, to demonstrate an inverted U-shaped relationship between family-member involvement in boards (FIB) and EO, with EO declining beyond moderate levels of FIB. Furthermore, the study showed that, when board monitoring (BM) was used as a moderator, this limited the negative effects of high FIB on EO. This study hints at how the lack of ambidexterity in the study of Revilla et al. (2016), could have been addressed. Furthermore, it is especially commendable due to its unique use of agency and stewardship with the widely used RBV. This integration of theories paves the way for more novel EO-firm performance conceptual models.

Drawing on the resource orchestration theory (ROT), Wales, Patel, et al. (2013) examined the long-term relationship (2007 to 2009) between EO (using Covin and Slevin, 1989) and small firm performance (measured objectively using sales growth data). This study used information and communication technology (ICT) and network capability (NC) as moderators. Using regression analysis, the results from a sample of 258 Swedish small firms indicate an inverted U-shaped relationship between EO and small firm performance. The study showed that, in the absence of the above moderating variables, returns to firm performance from increasing EO were observed to reach harmful levels. Consequently, the authors concluded that EO should not be used by firms when they experience critical firm-level resource orchestration capabilities and note that EO should be increased with firm size.

The findings of Wales, Patel, et al. (2013) suggest that the exploration that is inherent in EO ought to be minimised by the exploitation (the orchestration of various firm resources) of internal firm resources, and this could minimise the negative effects of EO on firm performance. However, these should be validated through the combination of an expanded pool of resources and capabilities (Lee & Kreiser, 2018). As for the case of Revilla et al. (2016), the study of Wales et al. (2013) fell short of examining the extent to which each of

the EO dimensions could have contributed to this inverse U-shaped EO versus performance relationship.

The relationship between EO (measured using a modified Covin and Slevin scale) and sales growth (measured objectively as the average change in turnover over the 2009-2013 period) was examined by Kohtamäki et al. (2019). Absorptive capacity (influenced by slack resources) was used as a moderator. Data were collected from 86 Finnish food manufacturing companies. Results from regression analysis (ordinary least squares OLS) revealed that EO has a non-linear relationship with sales growth. Moreover, the results suggest a non-linear effect of EO on sales growth, and particularly from moderate to high levels of EO, the positive moderating effects of absorptive capacity and slack resources. As in previous studies, there is a lack of detail insofar as the EO dimensions are concerned, since EO was used as a unidimensional construct. Sales growth is not the only measure of long-term firm performance, since it ignores other measures, such as market share and/or value. The study ignored the external environment of firms, which was shown to play an important role in the EO versus performance relationship (Gupta and Gupta (2015). However, the study adds to previous studies on how the inherent variance of EO could be minimised with organisational resources and is particularly empirically and theoretically impactful in that it is the first to introduce more complex moderation interaction to the EO-firm relationship.

The variance caused by the exploratory nature of EO has been found to unsettle employment security, managerial knowledge and expertise by Yoon and Solomon (2017). The authors examined the long-term (3-year period) relationship between EO (measured as a univocal construct using a 5-point Covin and Slevin Likert scale) and firm performance (derived from financial statements and measured as sales growth) using employees' psychological safety (measured using the Edmondson's scale) as a moderator. The study was conducted on 157 enterprises comprising 1,633 employees and 157 managers in South Korea. Partial least squares (PLS) were used for validity and reliability, while Structural Equation Modelling (SEM) was used to analyse the EO versus firm performance relationship, as well as to assess the moderating role of employees' psychological safety. The results showed an inverted U-shaped relationship between EO, and firm performance, noting that employees' psychological safety positively moderated this relationship.

While the study found that higher EO was detrimental to firm performance over time, the extent to which each of its dimensions i.e., risk-taking, innovation, and pro-activeness have contributed to this U-shape behaviour remains obscured. However, the results of the study demonstrate how the variance created by EO could unsettle employees in a firm in terms of

their job security, which could impact their motivation to perform. Furthermore, the study has shown that an understanding of these insecurities by managers could lessen this variability. However, this study has also shown that higher levels of EO (higher levels of uncertainty) unsettles managerial knowledge and expertise, which in turn affects the extent to which they can reassure insecure employees. This finding is supported by other studies that have also shown that managerial knowledge and expertise could be challenged in turbulent (volatile, uncertain, complex and ambiguous) business environments (De Sousa, 2019; Lang, 2019; Lew et al., 2019). There is no suggestion from Yoon and Solomon (2017) as to how this managerial problem could be solved. Winslow and Solomon (1993), posit that higher EO could be perceived as positive by stakeholders and be rewarded in cultures that value competitiveness, but may be viewed negatively and may be punished in cultures that value harmony and peaceful coordination. The gap between exploitation and exploration that was highlighted when the study of Revilla et al. (2016) was reviewed presents an example of such.

In an attempt to suggest an accompanying explanatory framework for the contradictory results relating to the EO-firm performance relationship, D'Souza and Fan (2022) proposed a capability-anchored articulation of this relationship, using a moderated-mediation interaction. The authors characterised EO as a dynamic managerial capability, and demonstrated that absorptive capacity (ACAP), a dynamic organisational capability, mediates the EO versus organisational performance relationship. Furthermore, the authors suggested that the ACAP efficiency factor moderates this relationship. Using relevant literature, the authors suggested that their model indicates a negative and curvilinear relationship between EO and organisational performance for emergent organisations and a positive and curvilinear relationship for post-emergent organisations. Furthermore, the authors suggest that their development indicates an inverted U-shaped relationship for a mixed sample of emergent and post-emergent organisations. Although the model postulated by D'Souza and Fan (2022) has not been empirically tested, it contributes to future research in that it stimulates the exploration of theoretical extensions of the EO-firm performance relationship, and creates an opportunity for the reconceptualisation of the EO construct, based on the capability-based view of the firm.

Contrary to previously discussed EO-As-Experimentation studies, this study is unique where it provides granular and holistic insights into the EO versus firm performance relationship by (a) distinguishing between emergent and post-emergent firms, and (b) by examining the behaviour of the emergent and post emergent mix. The categorisation by firm type versus

the collective proves important because it enables a better understanding of how the respective firm types contributed to the overall EO versus performance relationship, and vice versa. However, the model proposed by D'Souza and Fan (2022) is yet to be tested empirically. The proposed model does not provide for the antecedents of EO as a dynamic managerial capability. Furthermore, this study operationalises EO as a univocal construct, which limits granular insight that could be derived from the multidimensional operationalisation. Moreover, the study does not consider the external environment within which firms operate. This is important because the external environment determines the way in which absorptive capacity itself – postulated as a dynamic organisational capability – is effectively utilised (Felin & Powell, 2016; Tzokas, Kim, Akbar, & Al-Dajani, 2015). Moreover, the study does not explain how the bounded rationality of managers would be overcome or at least minimised amidst the plethora of options that would arise from the interaction of EO (as an exploratory managerial capability) and ACAP (as a dynamic organisation capability). The study falls short in assuming that ACAP and its variations, are adequate organisational resources and capabilities to explain the EO versus firm organisational relationship. This is contrary to the RBV, which postulates that firm internal resources and capabilities ought to be deployed in a complementary manner to sustain firm performance.

The EO versus firm performance relationship has also been studied by Ferreras-Méndez et al. (2022). The aim of their study was to determine the extent to which the entrepreneurial orientation (EO) of small and medium-sized enterprises' (SMEs) influence their capacity to quickly introduce new products to the market (here referred to speed to market). The authors collected data using survey questionnaire from 384 SMEs belonging to four sectors in Spain: biotechnology, ceramic tiles, toys, and footwear. The data was analysed using linear regression. Their results suggest that firms will exhibit greater speed-to-market when displaying either low or high levels of EO. Furthermore, the authors suggest that the EO versus speed-to-market relationship will be contingent on firms' ambidexterity, or its capacity to simultaneously embrace exploratory and exploitative strategies. Moreover, the authors confirm the existence of a U-shaped relationship between EO and speed to market and show that this curvilinear relationship is accentuated when ambidexterity increases in SMEs.

Although this study examines the moderating effects on EO versus firm performance (measured as speed-to-market), it does not explicitly measure the effects of the external environment. This proves to be a lost opportunity, because, according to contingency theory, the way ambidexterity is executed depends on the severity of the external environment. This study operationalised EO as a univocal construct, thereby limiting a fine-grained

understanding into the extent to which EO influences speed-to-market. The authors highlight that market knowledge, noting that sourcing could be used in future research to provide more insights into the relation tested in this study. The absorptive capacity or networking capability constructs could be used to in this regard to achieve this objective.

The relationship between entrepreneurial orientation (EO) and firm failure was investigated by Kindermann et al. (2022). The study included determining the extent to which working capital efficiency directly moderate this relationship, and the extent to which working capital efficiency is itself moderated by technological turbulence. In general, data was collected from a sample of 2578 firms that went public between 1997 and 2018. EO data was collected from annual reports of published firms using content analysis using the CATA software programme. Firm failure was measured by determining whether a firm qualifies to be listed on the stock exchange, or whether it has been liquidated. The data was analysed using regression analysis. The study found that, for the context of newly public firms, after their initial public offering, EO reduces firm failure, particularly in specific configurations of EO, working capital efficiency, and technological turbulence. As for prior studies, this study reaffirms that the relationship between EO and firm failure needs to be understood in the context of organisational and environmental factors. As such, the authors suggest that future research ought to include investigating how EO interacts with the capabilities of the top management team, other firm resources, and distinct environmental characteristics, and how these combinations influence firm failure. The study does not operationalise EO as a multidimensional construct, thereby falling short of providing granular insight into the EO versus firm failure relationship (Revilla et al., 2016).

The relationship between EO and acquisition performance or acquirers returns was investigated by Hunt (2021), tthrough an analysis of 500 randomly selected deals consummated by US firms between 2001 and 2012. The findings suggest that EO's impact on acquisition-related outcomes is ultimately a matter of degree, with curvilinear effects driven by interactions between EO and three key contingencies, viz.: relatedness, method of payment, and acquisition premiums. For each of these moderators, high and low levels of EO are associated with value destruction, while moderate levels, on average, generate positive returns for acquiring firms. However, the relationship is not symmetrical. Firms exhibiting high levels of EO, and experience significantly worse acquisition-related returns than firms with low EO. The study falls short of providing a comprehensive conceptual framework through which the moderating variables used could be examined in the context of environmental factors. Furthermore, the study could have used a multidimensional

operationalised EO construct, which would have created a platform for the derivation of finer insight into its various interactions.

Using the univocal and multidimensional conceptualisation of EO, Morić (2022), examined the relationship between EO (measured using the Covin and Slevin (1989), 9-item, seven-point Likert scale) and business performance (measured using the Gupta and Govindarajan (1984) 6-item, seven-point Likert scale for assessing importance and satisfaction with the following performance criteria: sales growth rate, market share, operating profit, profit/sales ratio, market development, and new product development, within a small, open, and transitional economy. The authors also examined the moderation effects of environmental turbulence, defined as environmental dynamism and environmental hostility, respectively (measured using Miller and Friesen's (1982) eight-item, seven-point Likert scale of environmental dynamism environmental hostility. Data was collected from 109 private consulting firms using an emailed questionnaire. Using hierarchical regression analysis, the study showed that out of all five EO dimensions, environmental turbulence positively moderated a direct relationship with small firm performance, where EO has an inverted U-shaped non-linear relationship with small firm performance; that out of all five EO dimensions, only risk-taking and autonomy have an inverted U-shaped non-linear relationship with small firm performance; and that environmental turbulence does not moderate the non-linear relationship between EO and small firm performance, nor between any of EO dimensions and small firm performance.

The study by Morić (2022) complements that of Gali (2018) where it provides a multidimensional view of EO, and thereby a richer analysis in terms of the relationship between EO and firm performance in the context of environmental turbulence. Moreover, this study extends that of Gali (2018) by further examining the effects of autonomy and competitive aggressiveness. Gupta and Gupta (2015) come the closest to examining the moderation effects of the external environment on the EO versus firm performance relationship, where, in the place of environmental turbulence, demand volatility and competitive intensity were used. Contrary to the latter and other EO-As-Experimentation studies above, the authors contribute direct empirical evidence on the moderating role played by environmental factors in the EO versus firm performance relationship. This moderation role remains largely unexplored (Morić, 2022; Wales, 2016).

2.4.3. Synthesis of EO-As-Experimentation Empirical Research and Literature Gap Establishment

This section provides a synthesis of extant literature, using five sub-headings to highlight general agreements and disagreements amongst scholars on the topic, to identify the key theoretical underpinnings in this literature, and to highlight both the context types of methodologies that have and have not been engaged by this literature.

2.4.3.1. Agreements

The EO-As-Experimentation literature generally agrees on the strategic advantages that firms could derive from EO. In fact, they appear to agree that EO is a valuable, rare, imitable, and non-substitutable resource that could yield sustainable firm performance, noting its adoption by many of these studies as an independent variable. However, this literature also appears to agree that, regardless of context, the EO-firm performance relationship is unstable, if not complemented by other organisational resources and capabilities, and hence, the plethora of other internal resources and capabilities as moderating variables to this relationship. Most of the literature appears to accept that the three dimensions of EO: innovativeness, proactiveness and risk-taking, triangulated into a gestalt construct, are sufficient descriptions of a firm's entrepreneurial orientation.

2.4.3.2. Disagreements

The question regarding an optimum organisation between EO-firm performance and other complementary resources and capabilities is not yet settled in EO-firm performance research. This is because only a few moderators (ICT, NC, employee psychological safety, ACAP, relatedness, method of payment, acquisition premiums, working capital efficiency, ambidexterity, slack market orientation, etc.) have proven to enhance the effects of EO on firm performance. How will these enhance EO if used together, since they are all relevant to a firm? Which other variables and contexts should be considered? Literature suggests that variables such as adaptive capability, bricolage capability, social capital, human capital, slack resources, industry type, other forms of innovation, individual absorptive capacity, absorptive capacity efficiency factor, environmental factors, and cultural dimensions are yet to be understood in the context of the EO-firm performance relationship (Covin & Wales, 2019; D'Souza & Fan, 2022; Lee & Kreiser, 2018; Prexl & Gonera, 2021; Schröder et al., 2021a; Wales et al., 2021). Furthermore, where EO has been used as a multidimensional

construct, the varying results from one study to another suggests that further research in this regard is required.

2.4.3.3. Key Theories and Models

Most studies employed the resource-based view (RBV) to the EO-firm performance relationship and its contingency factors. In the only two studies (Gupta & Gupta, 2015; Morić, 2022) that considered the contingency effects of the external environmental, the RBV was used along with contingency theory (CT). This integration is the most common in EO studies. However, certain theories, such as stewardship and agency theories (Bauweraerts & Colot, 2017), organizational learning theory (Gali, 2018) and resource orchestration theory (ROT)(Wales, Gupta, & Mousa, 2013) were also demonstrated in the literature, and show some promise.

In general, all these theories cover the same ground, because they all focus on the internal resources and capabilities of a firm, with the CT adding environmental factors to these. Furthermore, all these theories attempt to link such internal resources and capabilities to the performance of firms. All these theories feed into one another. For example, Bauweraerts and Colot (2017) used steward and agency theories with the RBV to account for the extent to which agency and stewardship factors impact the effectiveness of entrepreneurial activities family firms. The well proven integration between the RBV and CT could be taken advantage of by introducing CT into the RBV-Stewardship-Agency mix. The use of (OL) theory by Gali (2018) was not only used to link EO to firm performance, but through its looping mechanisms, added dynamism to this relationship, thereby remaining faithful to the dynamism within which firms operate. This could add the elements of organisational learning to the above theory mix and thereby pave the way for more complex and dynamic EO-firm performance conceptual models, which remain scarce.

This literature review demonstrates that extant conceptual models largely employ two-way moderating interactions in the EO-firm performance relationship, and thus do not capture the reality of firms, because they either employ managerial variables or environment effects, but never do this together as moderators. As such, these models are over-simplified approximations of the reality within which firms operate, and subsequently, they impede upon the acquisition of deeper empirical and theoretical insights in the EO-firm performance relationship.

This literature reveals that there is a shortage of studies that examine the moderating effects of environmental hostility in the EO-firm performance relationship. In fact, an analysis of this literature reveals that there are only two such studies (Gupta & Gupta, 2015; Morić, 2022) and they are based on developed and developing economies in the Northern Hemisphere. Moreover, this analysis reveals that, of the two studies, only that of Morić (2022) operationalised EO as multidimensional construct in this respect. Furthermore, the role or influence of cultural constructs such as organisational culture, image, and identity on the EO-firm performance relationship remains largely unexamined (Lee & Kreiser, 2018; Schröder et al., 2021).

2.4.3.4. Context

The EO-firm performance relationship that defines the EO-As-Experiment perspective is investigated mainly in the developed world. The literature discussed above reveals that that this relationship was for the most part investigated in developed economies, with the vast majority of studies stemming from North America and Western Europe. There are few studies from the developing world, and none from the Southern Hemisphere. This literature reveals that there are only two studies from developing economies, based in Asia and Eastern Europe, respectively. There is no evidence of such studies in the African context, let alone in South Africa, which therefore presents an opportunity to increase the external validity of this relationship in the above-mentioned perspective. However, regardless of type of economy, the ecological validity of EO-firm relationship studies in respect of firm variety is high, because the general trend in extant literature is that many scholars avoid single industry settings by opting to investigate a wide range of firms stemming from different industries in a single study. While this is beneficial for the purposes of ecological validity, it presents a research gap insofar as studies set in single industry settings are concerned.

2.4.3.5. Methodological Approaches

I. Study Time Horizon and Research Designs

There are very few cross-sectional studies included here because the majority were retrospective in nature, having been concerned with investigating the EO-firm performance relationship of respective firms from a prior period, rather than the actual year of study. Furthermore, most of these studies used confirmatory-descriptive-correlations research

designs. In this respect, the variables, especially the independent variables, were not varied, but rather, observed. This suggests that cause and effect was not a priority.

II. Sampling Techniques

In general, there is a deficiency of probabilistic sampling in the extant literature, because most studies used a non-probabilistic purposive sampling technique. Despite its convenience, purposive sampling, and non-probabilistic sampling in general pose sample representativity, and consequently, result in external validity issues.

III. Data Collection

Independent Variables

There is a dearth of studies that use alternative data collection techniques for the independent variable i.e., EO and its subdimensions, due to the dominance of the Miller/Covin and Slevin (1989) scale in most studies. In fact, very few studies collected EO data using objective measures, such as historiometry or quantitative data. Therefore, it could be concluded that many studies in the extant literature used this scale to retrospectively collect data about the independent variable i.e., EO. While this poses a threat insofar as recall bias is concerned, as it will be demonstrated hereafter, most studies counter this by using objective measures of the dependent variable.

There is a deficiency of multidimensional use of EO in many studies. An analysis of the same EO-As-Experimentation literature has shown that there are only two such studies, and that these are based on developed economies. This impedes the collection of deeper strategic insights and could hamper effective strategic planning. Furthermore, it raises questions around the external validity of the EO-firm performance relationship in this respect.

Dependent Variables

The general trend in the studies is to measure the dependent variable i.e., firm performance, objectively. Most studies have used data from financial statements and databases respectively with sales growth and Tobin's q used the most. However, Tang et al. (2008) have shown that it is possible to measure this variable using subjective means as well. In fact, they proved that subjective measures were as impactful and relevant as objective measures, by using both in one study. This is consistent with the meta-analytical findings of Rauch et al. (2009), and constitutes the only study of its kind. Another unique study is that

of Moric (2022), who used subjective measures for both the independent and dependent variable. Although, the author produced a valid study by eliminating the possibility of common method bias prior to analysing the data, their study differed in the sense that it was not retrospective as were the others, and thus, did not suffer from prospects of recall bias.

Lumpkin and Dess (1996) suggest that the multidimensional nature of the performance construct ought to have been employed with EO, because entrepreneurial activity or processes may at times lead to favourable outcomes for one performance dimension, and unfavourable outcomes for another. Generally, this avenue has not yet been explored in the extant literature.

Contingency Factors

There are no mediation or moderator-mediation interactions in extant literature because all studies focused on moderation effects. Furthermore, most studies were focused on a single moderating variable, and thus only used simple two-way interactions. This suggests that there is room for more complex interactions that may contribute to extant literature. In fact, there is only one study (Kohtamäki et al., 2019) that has used a three-way interaction thus far. Moreover, all studies measured moderating variables subjectively using survey questionnaires, suggesting a gap in this respect.

Control Variables

All studies in the literature used control variables. The most common control variables that were controlled for are firm size, and firm age. Although not as prominent in this literature as these two, some studies have used CEO age, CEO tenure, industry effects, and TMT size.

Validity and Reliability

Due to the use of existing survey questionnaires, the trend in extant literature is to test construct (convergent and divergent) using confirmatory and exploratory factor analysis and internal consistency using Cronbach's alpha. In fact, none of the studies in this perspective have tested for other forms of validity (face and content) and reliability (inter-rater and test-retest). All studies account for internal validity by considering control variables.

Data Analysis

Although all studies used parametric statistics, it is not clear how normality – a key prerequisite of such analyses – was confirmed. Regardless of conceptual model complexity, most studies analysed data using ordinary least squares (OLS) hierarchical regression and

analysis of variance (ANOVA), with only one using panel fixed regression. Due to the complexity of models in extant literature, there is no evidence of structural equation modelling (SEM) techniques. Due to the use of OLS, hypotheses were tested as per the procedures of these techniques with complex moderation variables graphically visualised.

2.4.4. Implications on Research Questions

In respect of **RQ1**, the above synthesis suggests that there is an opportunity to add to the body of knowledge not only another developing country's perspective, but an African and South African one. In addition, the setting of the current study in the South African construction and materials sector deviates from the usual retail, technology, hospitality etc. industries and therefore adds to the ecological validity of the EO-firm performance relationship.

In respect of **RQ2,** the shortage of studies that examine the EO-firm performance relationship in the context of environmental factors suggests an opportunity to provide a second developing country's perspective in this regard, and thus adds to the ecological validity of this relationship.

In respect of **RQ3,** there is no precedent pointing to the simultaneous effects of the external environment and bricolage capability on the EO-firm performance relationship in extant literature. Moreover, the bricolage capability concept has until now not been introduced to this body of knowledge. Therefore, in this respect this research question is worth investigating.

Regarding **RQ4**, although the absorptive capacity construct has been used in extant literature as a moderating variable, albeit not with environmental factors (Kohtamäki et al., 2019)**,** there is no precedent pointing to the simultaneous effects of the external environment and absorptive capacity in this literature. Therefore, in this respect, this research question is worth investigating.

In respect of **RQ5(a),** there is no precedent pointing to the simultaneous effects of the external environment, bricolage capability, and organisational identity on the EO-firm performance relationship in extant literature. Moreover, the organisational identity concept has, until now, not been introduced to this body of knowledge. Therefore, in this respect, this research question is worth investigating.

In respect of **RQ5(b),** there is no precedent pointing to the simultaneous effects of the external environment, absorptive capacity, and organisational identity on the EO-firm performance relationship in extant literature. Moreover, the organisational identity concept

has, until now, not been introduced to this body of knowledge, providing some rationale for the current study.

In summary, the above knowledge gaps suggest that the EO-firm performance relationship is far from well understood. More specifically, these gaps suggest that the search for conceptual models that could explain this relationship proves to be far from over. This is consistent with recent literature (D'Souza & Fan, 2022; Lee & Kreiser, 2018; Naskar, 2023; Schröder, Tiberius, Bouncken, & Kraus, 2021b). In the next section, a suitable conceptual model is proposed for the problem that the current study seeks to solve.

2.5. DEVELOPMENT OF HYPOTHESES

In the previous section, the integration of the RBV and CT was shown to be the most used in EO-firm performance studies, while other theories were shown to be equally advantageous to a study, the current study limits its scope to this widely used integration due to its convenience and ease in linking internal organisational resources and capabilities, firm performance, and the external environment. As such, hypotheses associated to the research questions of this study are constructed using this integration and relevant empirical research.

2.5.1. Contingency Theory

Contingency theory was advanced by Lawrence and Lorsch (1967). It is a combination of the classical, behavioural and systems approach and applies its principles depending on the requirements of a situation in which a firm is affected or involved. The CT was postulated in response to the challenges identified with both the Human Relations and Organisational humanist approaches, such as Weber's bureaucracy and Taylor's scientific management which had overlooked that management style and organisational structure were influenced by various aspects of the environment. There are three contingency theory perspectives, namely: leadership, decision-making, and structural. Contingency theory holds that there is no best way to organise a corporation, to lead a company, or to make decisions. Instead, the optimal course of action is dependent upon the internal and external environment within which a firm operates (Carpenter & Golden, 1997). Consequently, the theory suggests that a firm’s performance is determined by the best fit between its resources and capabilities, structure, and strategies, as well as the external environment within which the firm operates.

The CT has been criticised for not providing a platform for a definite solution to problems because it suggests that managers ought to consider all other alternative solutions and make the best fitting decisions according to the environment or situation that prevails. The

problem with this is the bounded rationality of managers, time, and monetary constraints. Managers can neither collect complete information about the environment, nor analyse it completely. Empirical testing of precepts is not concrete from a contingency perspective, due to multifarious situational factors that ought to be taken into account (Jayasmita, n.d). Furthermore, the author suggests that contingency theory is more reactive than proactive in coping with environmental complexity.

The CT is comparable to situational theory, systems theory, and organisational learning theory. Similar to contingency theory, situational theory also posits that there is no single "best" style of leadership (Hersey & Blanchard, 1977). The main difference is that situational theory focuses more on the behaviours that leaders ought to use, whereas the contingency theory takes a broader view, which includes contingent factors about leader capability, but also includes other variables within the situation.

The systems theory takes a general view of organisational variables, i.e., technical, social, personal, structural, and external variables, whereas contingency theory seeks to achieve 'fit' between a firm's resources and capabilities, and its environment (Jayasmita, n.d).

Organisational learning (OL) theory scans the environment, interprets information gathered from this environment, and charts a plan of action, the impact of which can be iteratively evaluated (March, 1991). The OL is comparable to the CT in terms of considering environmental factors. Both theories advocate for the interpretation of situations, appropriate actions, and evaluation of the impact of these actions. However, the CT relates organisational resources and capabilities within the context of the environment directly to firm performance which the systems theory, situational theory, and OL theory do not explicitly do.

This theory is used in the current study to link organisational resources and capabilities to external environmental factors and firm performance. In other words, it facilitates that the independent variable (EO) and complementary resources and capabilities (bricolage capability, absorptive capacity and organisational identity) to be linked to sustainable financial performance, while considering environmental factors (environmental hostility).

2.5.2. The Resource-Based Theory

The resource-based theory (RBT) or resource-based view (RBV), was developed by Barney (1991). The RBV postulates that firms can achieve sustainable competitive advantage and subsequently sustainable performance if they possess or develop internal strategic firm resources and capabilities that are valuable, rare, imperfectly imitable, and non-substitutable

(VRIN) (J. Barney, 1991). Barney (2001a) defines firm resources as assets, capabilities, organisational processes, firm attributes, information and knowledge that a firm controls in order conceive of and implement strategies that improve its efficiency and effectiveness. Makadok (2001) defines capabilities as those resources whose purpose it is to improve the productivity of the other resources possessed by a firm. Barney (2001a), defines competitive advantage as a firm's ability to implement a value-creating strategy that is not being simultaneously implemented by current or potential rivals. Firm resources and capabilities may be tangible and/or intangible. Tangible resources include physical assets, such as financial resources and human resources including real estate, raw materials machinery, plant, inventory, brands, patents and trademarks, and cash (Andriessen, 2004). Intangible resources may be embedded in organisational routines or practices such as an organisation's reputation, culture, identity, knowledge or know-how, accumulated experience, relationships with customers, suppliers, or other key stakeholders (Lev, 2000). Barney and Clark (2007), adds that the full exploitation of these resources requires firms to be organised, which they denote with the vowel "O". The authors argue that the use of complementary resources and capabilities could enable such an organisation and subsequently the full exploitation of strategic firm resources. Complementary resources and capabilities do not provide much value in isolation, but can result in sustained competitive advantage, and subsequently, sustainable performance, when paired with other resources (Barney & Clark, 2007). Like all other internal firm resources and capabilities, complementary resources and capabilities may either be tangible or intangible (Lev, 2000).

The RBV is based on two assumptions: resource heterogeneity, and resource immobility. In the case of the former, the RBV assumes that firms possess a diverse pool (of varying value) of resources and capabilities, and that these differ between firms such that these firms can implement varying competitive strategies. In the case of the latter, the RBV assumes that resources are immobile, and thus, unable to move freely from organisation to organisation (e.g., employee movement), at least over the short term. Due to this, organisations are unable to quickly replicate the resources of rival organisations, and therefore, to implement the same strategies.

The most comprehensive examination of RBV critique was published by Kraaijenbrink, Spender, and Groen (2010). These authors summarised the following limitations: the RBV does not guide how managers ought to go about developing and obtaining strategic resources that are VRIN, and how an appropriate organisation can be developed (Connor, 2002). No single VRIN/O criteria yielded a permanent, sustainable competitive advantage in an ever-changing business environment. i.e., a capability that provides one firm's a competitive advantage in the short-term can be reproduced and improved by other

firms(Collins et al., 2010). It is difficult to empirically measure the impact of this VRIN on firm performance due to the heterogeneity of resources i.e., it is difficult to compile a heterogeneous construct (Lockett et al., 2009) and the RBV does not apply to small firms because such firms do not have an abundance of resources on which to draw

The persistent decline in the performance of the South African construction and materials sector could also be examined through the market-based view (MBV) and the relation view of strategy (RV) (Wang, 2014). An MBV proposes that industry factors and external market orientation are the primary determinants of firm performance(Bain, 1968; Caves, 1980). The RV proposes that inter-firm linkage may be a source of relational rents and competitive advantage(Dyer & Singh, 1998). A relational rent is defined as “a supernormal profit jointly generated in an exchange relationship that cannot be generated by either firm in isolation and can only be created through the joint idiosyncratic contributions of the specific alliance partners” (Dyer & Singh, 1998, p. 662). Porter’s five force model is the most representative of the MBV (Wang, 2014). These forces are: barriers to entry, the threat of substitutes, bargaining power of suppliers, bargaining power of buyers and rivalry among competitors (Dälken, 2014). While the MBV and RV may provide insight into possible causes of performance decline in the sector in question, compared to the RBV, these theories do not provide a platform for the selection of internal resources to understand this situation, which is the object of this study.

The RBV facilitates the link between a VRIN strategic resource and capability and sustainable firm performance. Furthermore, it facilitates the inclusion of other complementary resources and capabilities into the relationship between such a strategic resource and capability and firm performance. In the context of the current study, the independent variable (EO) is linked to the dependent variable (sustainable financial performance), while complementary resources and capabilities such as bricolage capability, absorptive capacity, and organisational identity are considered as well.

2.5.3. Hypotheses

This section is dedicated to the development of research hypothesis for the current study. Research questions are used as the forerunners of these hypotheses.

2.5.3.1. Entrepreneurial Orientation and Sustainable Financial Performance

RQ1: To what extent were the EO and Sustainable Financial Performance of the South African construction and materials sector related during the 2008-2019 period?

In section 1.2.8 the RBV was used with justification, to link the EO of the South African construction and materials sector to its sustainable financial performance. However, as indicated in section 2.4, the assumption upon which this linkage is based is consistent with EO-firm performance studies in the EO-As-Advantage perspective. This is not aligned with the situation of the current study in respect of its persistent decline in financial performance. The EO-As-Experimentation perspective is more aligned with this situation. Furthermore, it is consistent with relevant empirical research which has shown that the EO-firm performance relationship exhibits a non-linear (curvilinear) behaviour (Calic & Shevchenko, 2020; Kohtamäki et al., 2019; Morić, 2022; Tang et al., 2008). Therefore, using extant literature and the context of this sector, in response to **RQ1** it is hypothesized that:

H1: *The EO-Sustainable Financial Performance of the South African construction and materials sector exhibited non-linear behaviour during the 2008-2019 period*.

2.5.3.2. Entrepreneurial Orientation, Environmental Hostility and Sustainable Financial Performance

RQ2: To what extent was the EO-Sustainable financial performance relationship of this sector affected by the hostile environment that prevailed during the 2008-2019 period?

In hypothesis H1, the EO of the South African construction and materials sector was linked to its sustainable financial performance and it was posited that the strength of this relationship depended on whether the value, rarity, imitability and non-substitutability (VRIN) of EO are persistently achieved. However, CT posits that the strength of the same relationship depends on the persistent achievement of an optimum mix or best fit between EO and the hostile environment within which firms in this sector operated. Consequently, it could be posited that the hostile environment of the sector ought to promote the persistent achievement of the VRIN condition of EO and thereby strengthen its EO-sustainable financial performance relationship.

The strategic choices of firms are driven by their top management teams(Hambrick & Mason, 1984). Studies have shown that these tend to lose their strategic bearings or long-

held strategic vantage points in mutating environments (Camillus, 2016; Vecchiato, 2019; Yoon & Solomon, 2017). This implies that the extent to which the hostile environment of the sector promotes the persistent achievement of a VRIN condition for EO or strengthens its EO-sustainable financial performance relationship depends on the extent to which top management teams in firms effectively interpret such environment which could go either way. Therefore, the hostile environment of this sector could have weakened or strengthened its EO-sustainable financial performance relationship. This is consistent with extant literature (Gupta et al., 2016; Lindelöf & Löfsten, 2006; Morić, 2022; Onwe et al., 2020; Tajeddini & Mueller, 2018). The underlying mechanism that is responsible for this inconsistency relates to the extent to which the dimensions of entrepreneurial orientation are influenced by environmental conditions(Bengesi & Le Roux, 2014). For example, studies have shown that risk-taking, innovativeness and competitive aggressiveness become more critical in highly hostile environments, while proactiveness may be more beneficial in relatively stable markets(Bengesi & Le Roux, 2014; Gupta & Gupta, 2015; Rauch et al., 2009). However, taking the specific context of this study into account, it could be posited that this environmental hostility weakened the EO-sustainable financial performance of this sector. Therefore in response to **RQ2** it is hypothesized that:

H2: *The EO-sustainable financial performance relationship of the South African construction and materials sector was negatively moderated by its hostile environment during the 2008-2019 period.*

2.5.3.3. Entrepreneurial Orientation, Environmental Hostility, Bricolage Capability and Sustainable Financial Performance

RQ3: To what extent was the EO-sustainable financial performance relationship of this sector affected by its bricolage capability in the context of the hostile environment that prevailed during the 2008-2019 period?

The RBV posits that a strategic resource such as EO, ought to be complemented by other resources and capabilities to maintain its VRIN and consequently the strength of the EO-sustainable financial performance relationship. The bricolage capability was defined as an organisational resource and capability that involves the restructuring of existing resources and capabilities to address new situations or opportunities particularly in resource-constrained environments. Therefore, for this second condition of the RBV to hold, bricolage

capability ought to perpetuate the VRIN conditions for EO and consequently strengthen the EO-sustainable financial performance relationship through the production of new resources and capabilities from existing ones. However, CT posits that the strength of the same relationship depends on the persistent achievement of an optimum mix or best fit between EO, bricolage capability and the hostile environment within which firms in this sector operated. This suggests both the bricolage capability and the hostile environment, ought to strengthen the VRIN of EO and consequently the EO-sustainable financial performance relationship. Stated differently, in a hostile environment, the bricolage capability ought to strengthen the VRIN of EO and consequently the EO-sustainable financial performance relationship.

This is consistent with extant literature. For example, Senyard et al. (2014) has shown that entrepreneurial bricolage can be a driver of entrepreneurial orientation in that firms that engage in entrepreneurial bricolage may be better able to identify and exploit new opportunities, even in resource-constrained environments. Baker and Nelson (2005) posit that by recombining available resources in novel ways, entrepreneurial firms can develop innovative products and services that challenge institutional norms and push the boundaries of their markets. Xiaobao et al. (2022) found that resource bricolage positively influences EO in start-ups. Wu, Luo, Zhang, and Cheng (2024), established that bricolage positively influences business innovation, a key component of EO in newly established enterprises in China. Mudalige (2023), showed that bricolage positively influences EO in family firms in Sri Lanka. Lin, Weiss, and Murad (2023) found that bricolage positively influences EO in startups. Overall, the existing evidence suggests that entrepreneurial bricolage is more likely to positively influence or strengthen EO than to constrain it. Entrepreneurial firms that can effectively leverage limited resources through bricolage may be better positioned to foster the risk-taking, innovativeness, and proactiveness that characterize a strong entrepreneurial orientation.

Applying the same argument as in hypothesis H2, the extent to which the hostile environment is interpreted by organisations could cause the application of bricolage capability to either weaken or strengthen the VRIN of EO and consequently the EO-sustainable financial relationship. Furthermore, taking the context of the South African construction and materials sector into consideration and assuming that in the hostile environment that this sector experienced, bricolage capability was employed, it could be posited that bricolage capability did not strengthen its EO-sustainable financial performance relationship. Therefore, it is against this backdrop that, in response to **RQ3** it is hypothesized that:

H3: *The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its bricolage capability in the hostile environment that prevailed during the 2008-2019 period.*

2.5.3.4. Entrepreneurial Orientation, Environmental Hostility, Absorptive Capacity and Sustainable Financial Performance

RQ4: To what extent was the EO-sustainable financial performance relationship of this sector affected by its absorptive capacity in the context of the hostile environment that prevailed during the 2008-2019 period?

The RBV posits that a strategic resource such as EO, ought to be complemented by other resources and capabilities to maintain its VRIN and consequently the strength of the EO-sustainable financial performance relationship. Absorptive capacity was defined as an organisational resource and capability that involves the acquisition and processing of current and relevant information to meet organisation objectives. Therefore, as in the previous hypothesis, for this second condition of the RBV to hold, absorptive capacity ought to perpetuate the VRIN conditions for EO and consequently strengthen the EO-sustainable financial performance relationship. Similarly, CT posits that the strength of the same relationship depends on the persistent achievement of an optimum mix or best fit between EO, absorptive capacity and the hostile environment within which firms in this sector operated. This suggests both the absorptive capacity and the hostile environment, ought to strengthen the EO-sustainable financial performance relationship. Stated differently, in a hostile environment, the absorptive capacity ought to strengthen the EO-sustainable financial performance relationship.

This is consistent with extant literature. For example, Ibarra-Cisneros and Hernandez-Perlines (2019) found that absorptive capacity strengthens the EO-business performance relationship in SMEs of the manufacturing sector in Mexico. Goaill and Al-Hakimi (2021), found that absorptive capacity positively moderated the EO-firm performance measured as supply chain resilience in Yemeni manufacturing SMEs. Seo, Edler, and Massini (2022) showed that the relationship between EO and technological competitiveness of R&D alliance firms is moderated by their absorptive capacity. In addition, a growing body of empirical research that has examined the interplay between entrepreneurial orientation, absorptive

capacity, and external environmental factors suggest that absorptive capacity can amplify the positive impact of entrepreneurial orientation on firm performance, especially in dynamic and turbulent environments. For example, in a study of 324 small and medium-sized enterprises in China, researchers found that the relationship between EO and innovation performance was significantly positive, and that this relationship was further strengthened by absorptive capacity (Zhai et al., 2018). Moreover, the moderating effect of absorptive capacity was more pronounced when the external environment was highly dynamic, underscoring the important interplay between a firm's internal capabilities and the characteristics of its external context. Similarly, a study of 219 German SMEs revealed that absorptive capacity strengthened the EO-firm performance relationship, particularly in turbulent environments (Engélen et al., 2014). The authors argue that absorptive capacity enables firms to more effectively process and apply the knowledge generated through their entrepreneurial activities, leading to superior performance outcomes. Taken together, this extant literature suggests that EO, absorptive capacity, and external environment are intricately linked in positively shaping firm performance. Firms seeking to capitalize on their EO must cultivate robust absorptive capacities to capitalize on changing market conditions and emerging opportunities

Applying the same argument as in hypothesis H2, the extent to which the hostile environment is interpreted by organisations could cause the application of absorptive capacity to either weaken or strengthen the VRIN of EO and consequently the EO-sustainable financial relationship. Furthermore, taking the context of the South African construction and materials sector into consideration and assuming that in the hostile environment that this sector experienced, an absorptive capacity was employed, it could be posited that absorptive capacity did not strengthen its EO-sustainable financial performance relationship. Therefore, it is against this backdrop that, in response to **RQ4** it is hypothesized that:

H4: *The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its absorptive capacity in the hostile environment that prevailed during the 2008-2019 period.*

2.5.3.5. Entrepreneurial Orientation, Environmental Hostility, Bricolage Capability, Organizational Identity and Sustainable Financial Performance

RQ5(a): To what extent did the organisational identity of this sector affect its bricolage capability in the context of the hostile environment that prevailed during the 2008-2019 period and to what extent did their interaction affect its EO-sustainable financial performance relationship?

As in previous hypotheses, the RBV and CT, posit that the achievement of sustained firm performance depends on an optimal mix or best fit between a firm's resources and capabilities, and their external environment. Furthermore, in the formulation of hypothesis H3, it was suggested that based on these theories, in a hostile environment, the bricolage capability ought to strengthen the VRIN of EO and consequently the EO-sustainable financial performance relationship. Therefore, in the context of this research question this implies that the achievement of sustainable financial performance depends on an optimal mix or best fit between EO, environmental hostility, bricolage capability, and organisational identity. Stated differently, in a hostile environment, the bricolage capability and organisational identity interaction ought to strengthen the VRIN of EO and consequently the EO-sustainable financial performance relationship.

Organizational identity was previously posited to refer to the central, distinctive, and enduring characteristics that define an organization and distinguish it from others. Furthermore, it was shown that it could be conceptualised using the three lenses: "who are we", "who are we no longer" and "who are we becoming". Entrepreneurial bricolage, on the other hand, was defined as "making do" by applying a combination of existing resources and capabilities at hand to new situations or opportunities that may have been brought about by resource-constrained environments. Studies have shown that in mutating business environments, knowing the 'right answer' is impossible, and as result managers tend to lose their strategic bearings i.e., long-held strategic vantage points and strategic foundations (Camillus, 2016; Navis & Glynn, 2011). Consequently, the outcome of this "making do" process could vary in such environments. Organisational identity has been posited to shape what is noticed in an organisation's environment, how it is interpreted, and what managerial decision or action is taken(Lang, 2019; Tripsas, 2009; Voss et al., 2006). Consequently, organisational identity has the potential to influence the nature and extent of its entrepreneurial bricolage activities. For example, a strong and well-defined organizational identity can provide a sense of purpose and direction for entrepreneurial activities. It can

guide entrepreneurs in selecting resources to use for bricolage and help them maintain coherence and consistency in their decision-making process. However, despite these positives that could be derived from organisational identity, scholars have shown that such benefits could compromised if top management teams lack alignment in respect of what should comprise their organisational identity (Gustafson & Reger, 1995; Voss et al., 2006). Consequently, organisational identity could weaken or strengthen entrepreneurial bricolage and hence their interaction could weaken or strengthen EO-sustainable financial performance relationship.

Considering the context of the South African construction and materials sector and assuming that in the hostile environment that this sector experienced, a certain level of bricolage capability and organisational identity were employed respectively, it could be posited that the organisational identity of this sector did not strengthen its bricolage capability which in turn, weakened its EO-sustainable financial performance relationship. Therefore, it is against this backdrop that, in response to **RQ5(a)** it is hypothesized that:

H5(a): *In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its bricolage capability. Additionally, their interaction had a negative impact on its EO-sustainable financial performance relationship.*

2.5.3.6. Entrepreneurial Orientation, Environmental Hostility, Absorptive Capacity, Organizational Identity and Sustainable Financial Performance

RQ5(b): To what extent did the organisational identity of this sector affect its absorptive capacity in the context of the hostile environment that prevailed during the 2008-2019 period and to what extent did their interaction affect its EO-sustainable financial performance relationship?

As in previous hypotheses, the RBV and CT, posit that the achievement of sustained firm performance depends on an optimal mix or best fit between a firm's resources and capabilities, and their external environment. Furthermore, in the formulation of hypothesis H4, it was suggested that based on these theories, in a hostile environment, the absorptive capacity ought to strengthen the VRIN of EO and consequently the EO-sustainable financial performance relationship. Therefore, in the context of this research question this implies that the achievement of sustainable financial performance depends on an optimal mix or best fit between EO, environmental hostility, absorptive capacity and organisational identity. Stated

differently, in a hostile environment, the absorptive capacity and organisational identity interaction ought to strengthen the VRIN of EO and consequently the EO-sustainable financial performance relationship.

Organizational identity was previously posited to refer to the central, distinctive, and enduring characteristics that define an organization and distinguish it from others. Furthermore, it was shown that it could be conceptualised using the three lenses: “who are we”, “who are we no longer” and “who are we becoming”. Absorptive capacity was defined as the acquisition and processing of current and relevant information to meet organisational objectives. The relationship between organizational identity and absorptive capacity lies in the way in which organizational identity influences the organization's approach to acquiring and utilizing external knowledge.

Studies have shown that in mutating business environments, knowing the ‘right answer’ is impossible, and as result managers tend to lose their strategic bearings i.e., long-held strategic vantage points and strategic foundations (Camillus, 2016; Navis & Glynn, 2011). Consequently, the outcome of this acquisition and processing could vary in such environments. Organisational identity has been posited to shape what is noticed in an organisation’s environment, how it is interpreted, and what managerial decision or action is taken(Lang, 2019; Tripsas, 2009; Voss et al., 2006). Consequently, organisational identity has the potential to influence the nature and extent of its absorptive capacity. For example, a clear and strong organizational identity can provide a guiding framework for decision-making related to knowledge acquisition and integration. It can shape how the organization assesses the relevance of external information, aligns it with its existing values and goals, and incorporates it into its practices. However, despite these positives that could be derived from organisational identity, scholars have shown that such benefits could compromised if top management teams lack alignment in respect of what should comprise their organisational identity (Gustafson & Reger, 1995; Voss et al., 2006). Consequently, organisational identity could weaken or strengthen entrepreneurial absorptive capacity and hence their interaction could weaken or strengthen EO-sustainable financial performance relationship.

Considering the context of the South African construction and materials sector and assuming that in the hostile environment that this sector experienced, a certain level of absorptive capacity and organisational identity were employed respectively, it could be posited that the organisational identity of this sector did not strengthen its absorptive capacity which in turn, weakened its EO-sustainable financial performance relationship. Therefore, it is against this backdrop that, in response to **RQ5(b)** it is hypothesized that:

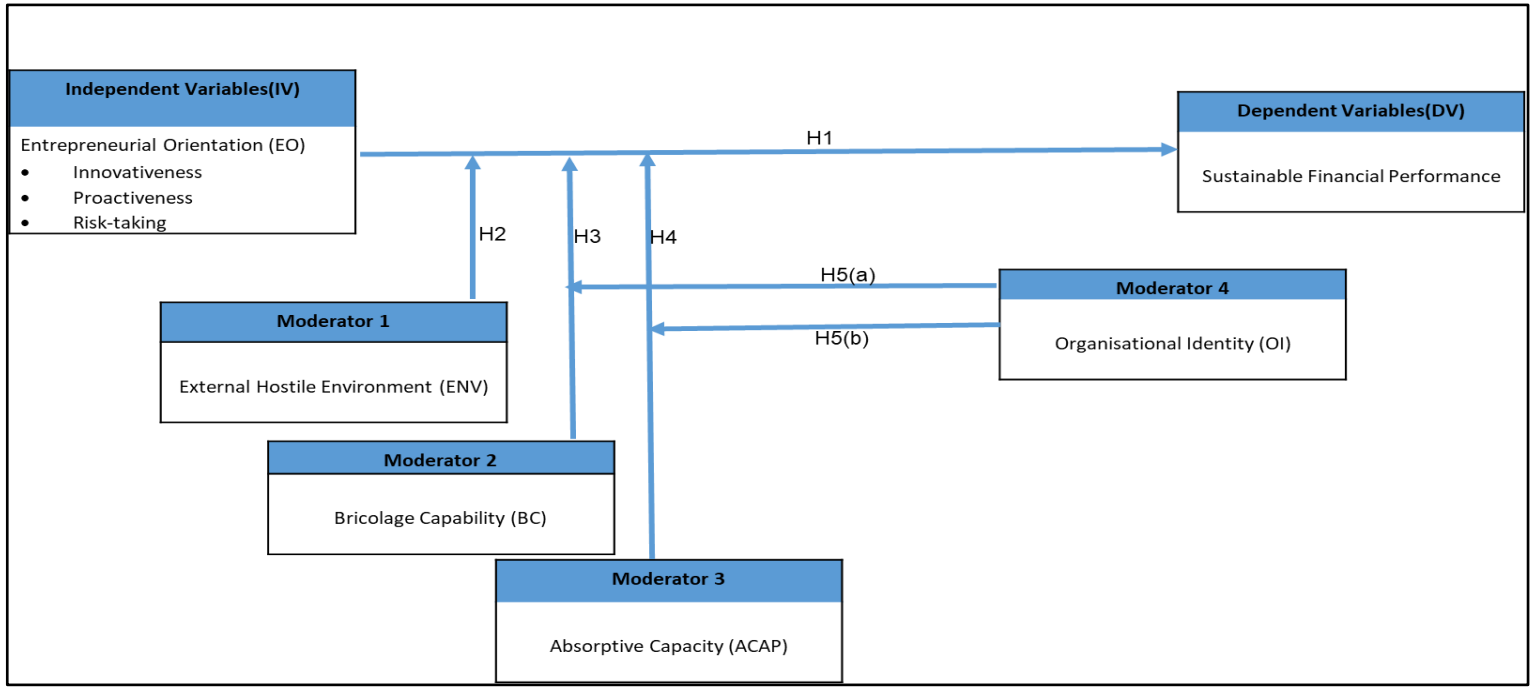
H5(b): *In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its absorptive capacity. Additionally, their interaction had a negative impact its EO-sustainable financial performance relationship.*

The above hypotheses are shown in a conceptual model in the next page.

2.6. RESEARCH CONCEPTUAL MODEL

Figure 1, captures the hypotheses that were formulated in section 2.5.

Figure 1: *The conceptual model of the study.*



The model identifies the independent, dependent, and moderating variables, respectively. EO (as a multidimensional construct) is shown as an independent variable (IV), that could yield the dependent variable (DV) i.e., sustainable financial performance. The moderation effect of environmental hostility on the EO-sustainable financial performance is shown by H2. The moderating effects of the bricolage capability on the EO-sustainable financial performance are shown in H3. Similarly, the moderation of the absorptive capacity on the EO-sustainable financial performance relationship is shown in H4. The respective moderating effects of the organisational identity on bricolage capability and of organisational identity on absorptive capacity are shown in H5(a) and H5(b), respectively. It should be noted that except for H1, all hypotheses take the effects of environmental hostility into account.

2.7. CONCLUSION

This literature review has demonstrated the dearth of studies that investigate the relationship between the internal resources and capabilities and firm performance during the 2008-2019 period, in the South African construction and materials sector.

This review has also shown that EO-firm performance conceptual models are far from being understood due to the numerous managerial variables that exist but not tested (either as a combination or alone) in literature.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. INTRODUCTION

The current study sought to test the following hypotheses:

- **H1:** The EO-Sustainable Financial Performance of the South African construction and materials sector exhibited non-linear behaviour during the 2008-2019 period.
- **H2:** The EO-sustainable financial performance relationship of the South African construction and materials sector was negatively moderated by its hostile environment during the 2008-2019 period.
- **H3:** The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its bricolage capability in the hostile environment that prevailed during the 2008-2019 period.
- **H4:** The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its absorptive capacity in the hostile environment that prevailed during the 2008-2019 period.
- **H5(a):** In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its bricolage capability. Additionally, their interaction had a negative impact on its EO-sustainable financial performance relationship.
- **H5(b):** In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its absorptive capacity. Additionally, their interaction had a negative impact its EO-sustainable financial performance relationship.

The purpose of this chapter is to discuss the ontological and epistemological underpinnings of this study as well as its research design and methodology. This chapter is divided into the following main sections: research philosophy, research methodology and design, data collection, data analysis, and ethical considerations and conclusions.

3.2. RESEARCH PHILOSOPHY

Any research is conducted based on a set of numerous assumptions and beliefs (Burrell & Morgan, 2017; Saunders, Lewis, & Thornhill, 2007, 2009b). Such a set is referred to as a research philosophy or paradigm (Dudovskiy, 2016; Kuhn, 2012; Saunders et al., 2007, 2009b). Research philosophy is characterised by two main assumptions, namely: ontological and epistemological assumptions (Dudovskiy, 2016; Killam, 2013; Saunders et al., 2007).

Ontology seeks to answer the questions as to “what exists?”, “what is true?” and the “how can we categorise existing things?” (Killam, 2013). There are two main perspectives of ontology, namely realism and relativism (Killam, 2013; Saunders et al., 2009b). Realism posits that there exists an objective truth or reality, that is separate from human behaviour (context-free), and that it cannot be changed once discovered. Relativism posits that there are multiple subjective truths or realities, that are a function of experiences and social interactions and that such truths/realities could co-exist, even though they could be conflicting (Guba & Lincoln, 1994; Killam, 2013). Along the realism and relativism continuum, there exists another ontological perspective, namely that of critical or scientific realism. Critical realism posits that there is no absolute truth or reality, but rather approximations thereof, due to the inherent limited nature of human intellectual mechanisms and the fundamentally intractable nature of the phenomenon. Furthermore, critical realism posits that reality is shaped by socially constructed phenomena and by phenomena that are independent of human influence or behaviour (Guba & Lincoln, 1994).

Killam (2013), suggest that epistemology seeks to answers the questions as to “how is knowledge acquired?” and “how do we know what we know?” In general, the acquisition of knowledge could be achieved either objectively or subjectively (Gali, 2018; Killam, 2013; Saunders et al., 2009b). In an objective epistemology, a researcher assumes that reality or truth exists independent of the human (researcher) behaviour as it is waiting to be discovered. Subjective epistemology differs significantly from the objectivist perspective in the sense that, it opposes the notion that there is a reality that is awaiting discovery. Instead, this epistemology posits that reality or truth is a function of contexts i.e., it evolves with context and that human behaviour is not independent of this reality.

In Chapter 1, it was objectively demonstrated that that the South African construction and materials sector experienced a persistent decline in sustainable financial performance during the 2008-2019 period and that this decline correlates with the hostile macroeconomic conditions that prevailed during this period. However, the current study sought to determine the extent to which this decline was related to this sector’s internal resources and capabilities. Due to the numerous internal resources and capabilities that exist in a firm, the EO, bricolage capability, absorptive capacity and organisational identity were used to approximate these resources and capabilities. Furthermore, these concepts were deductively linked together using the RBV and CT. However, due to the limited cognitive capabilities of organisational decision-makers, neither are these concepts exhaustive of the internal resources and capabilities that exist in a firm nor are the linkages between them absolutes determinants of this sector’s sustainable financial performance. This resonates

with critical realism ontological world view. Moreover, despite the limited cognitive capabilities of the organisational decision-makers, knowledge about the situation of the sector can still be obtained from them (Hambrick & Mason, 1984) or from other secondary sources albeit only as an approximation of its reality or truth without the interference of the researcher. This is aligned with an objective epistemology. Taken together, a critical realistic ontology and an objective epistemology define a post positivistic research philosophy(Tanlaka, Ewashen, & King-Shier, 2019).

3.3. RESEARCH DESIGN AND METHODOLOGY

This section presents the research design, methodology and the time dimension of the current study.

3.3.1. Research Design

Research designs are either exploratory or confirmatory in nature(Gali, 2018). Exploratory research involves the exploration of research questions and does not intend to offer final and conclusive solutions to these questions. Exploratory research is conducted to study a problem that has not yet been clearly defined (Dudovskiy, 2016). In exploratory research, the direction of the research could change due to the revelation of new data and new insights(Saunders, Lewis, & Thornhill, 2009a).

Confirmatory or conclusive research involves the testing of hypotheses and relationships concerning some topic of interest, ending with the researcher's inductive inferences(Dudovskiy, 2016). Confirmatory designs are either descriptive or experimental (causal or explanatory) (Fluid Surveys, 2014; Gali, 2018; Muijs, 2004). Descriptive research designs describe what relationships between variables look like, but do not explain why such relationship exist. However, all that being the case, knowing the nature of relationship opens avenues for inquiry into why such relationships might exist (Punch, 2013).

Causal or experimental research designs are the most tightly controlled types of research design. They explain why relationship between variables exist and allows for the production of confirmatory conclusive results (Dudovskiy, 2016). However, due its requirement of controlling all variables tightly, this research design is preferred within limits.

The purpose of the current study was to investigate the extent to which the EO and sustainable financial performance of the South African construction and materials sector

related during the 2008-2019 period. Furthermore, it was to also investigate the extent to which several variable interactions moderated this relationship. Like extant literature, the current study sought to solve a clearly defined problem which automatically excluded the prospects for an exploratory research design. Consequently, the current study adopted a confirmatory research design. However, like extant literature, a descriptive research design was opted for over an experimental research design due to the stringent requirement to control all variables tightly. The former resonated with the current study as it provided for answering the research questions and opened avenues for plausible reasons for the types of relationships that emerged between constructs.

3.3.2. Research Methodology

While epistemology is concerned with the philosophical aspects of what constitutes acceptable, valid, and legitimate knowledge, methodology is more specific and practice-based (Killam, 2013). Methodology does not attempt to answer what the procedures and techniques of data collection and analysis to acquire knowledge ought to be, but rather it aims to answer the 'how to acquire knowledge? question (Gali, 2018). In general, methodologies are either quantitative or qualitative. The choice of methodology is driven by the researcher's epistemological and ontological positions (Killam, 2013; Saunders et al., 2015). Post-positivism, advocates for methodological pluralism in the sense that the choice of methodology, methods and techniques, are selected based on the research question being addressed (Panhwar, Ansari, & Shah, 2017). Consequently, both qualitative and quantitative methods are considered valid.

As demonstrated in Chapter 2, EO-As-Experimentation studies have all been investigated quantitatively. Therefore, based on the epistemological and ontological underpinnings of the current study, as well as consistent with prior studies, a quantitative methodology was adopted.

3.3.3. Time Horizon

The time horizon of a study is the time it takes to investigate a phenomenon. In general, research could be cross-sectional or longitudinal. Cross-sectional research involves the investigation of phenomenon at one moment in time with all variables remaining the same throughout the study. Longitudinal research involves the repeated observation of phenomena over a defined period. As it was demonstrated in Chapter 2 that most EO-As-Experimentation studies employed retrospective cross-sectional approaches to collect data about independent and moderating variables, and to control for common method and recall

bias they employed a longitudinal or time series approach for the dependent variable, i.e. firm performance.

The interest of the study was to retrospectively investigate the EO-sustainable financial performance of the South African construction and material sector and its moderating effects over the 2008-2019 period. Consistent with literature, and for reasons that will be clarified in subsequent sections, this study also adopted a mix of retrospective cross-sectional and time series approaches.

3.4. DATA COLLECTION

This section discusses the sampling strategies, research instruments and the data collection approach.

3.4.1. Sampling strategies

3.4.1.1. Primary Study

Polit, Beck, and Hungler (1997), define a population as an aggregate or totality of all the objects, subjects or members that conform to a set of specifications. A sample is the group of subjects who take part in the investigation and possess the same attributes as the population.

The South African construction and materials sector is composed of a diverse pool of firms. These firms are involved in construction work, building materials manufacturing and supply and professional services. In the current study, the target population consisted of all such firms in the sector. However, due to the large number of firms that comprise this sector, it was impossible to account for every one of them. Consequently, this study assumed that all these firms could provide strategic level insights into the situation of the sector. This meant that any firm had an equal opportunity to be included in the sample, This assumption is consistent with the simple random sampling technique (Dudovskiy, 2016). According to this technique, the sample size could have been determined, either through the Cochran or Yamane formulae (Guwahat, 2013). While Yamane's formula is more simplified to calculate sample sizes (Israel, 1992), it does not take into consideration the degree of sample variability or heterogeneity. This study acknowledged the diversity of the respective firms. Consequently, the Cochran formula shown in , was used to determine the sample size for this study.

$$no = \frac{Z^2 P(1-P)}{e^2} \qquad \textit{Eq. 1}$$

Where *no* is the sample size for an infinite population, *Z* is the abscissa of the normal curve that cuts off an area α (level of significance) at the tails (1 – α equals the desired confidence level), *e* is the desired level of precision or sample error, and *P* is the degree of population attribute variability. This study assumed that the sector being studied is composed of a diverse pool of participants, and therefore used the maximum degree of variability (*P*=0.5). It should be noted that mathematically, any value lesser or greater than the maximum degree of variability will yield a smaller sample size than that which could be obtained at this value. Furthermore, this study used the widely adopted level of confidence of 95% i.e., Z =1.96. Finally, using the sample sizes of previous EO versus long-term performance studies as well as the above *Z* and *P* assumptions above, Eq. 1 yielded an average level of precision of 9 percent. Consequently, Eq. 1, yielded a sample size of 120 firms for this study. To increase the probability of a higher response rate, which is a remedy for higher validity (Hasson, Keeney, & McKenna, 2000) this figure was doubled. The 240 random firms were extracted using the RAND function in Microsoft Excel.

Mintzberg (1979, p. 24) define a TMT as: “a group of top executives at the apex of an organization who effect strategic decision making and have overall responsibility over a firm or organization” [all sic]. TMTs influence strategic choice and firm performance (Grühn, Strese, Flatten, Jaeger, & Brettel, 2017; Hambrick & Mason, 1984; Mundi & Kaur, 2019; Richard, Wu, & Chadwick, 2009; Zhang, Bhabra, Chou, & Tan, 2019). Entrepreneurial orientation, bricolage capability, absorptive capacity and organisational identity are strategic orientations or postures. Therefore, using the knowledge that TMTs drive strategic choice and that the use of participants who have knowledge and an interest in the topic may help to increase research validity (Goodman, 1987), where this research saw it as plausible to engage with TMTs in respect of these orientations versus their sustainable financial performance over the past decade. Consequently, each of the 240 firms were represented by members of their TMTs. The details are discussions in subsequent sections.

The drawback of a simple random sampling technique is that it creates chances for firms whose financial data is not readily available to be selected in a sample as well. This decreases the chances for a study that completely employs secondary data and explains why the EO-firm performance relationship was largely investigated using purposively selected samples in literature. However, extant literature in Chapter 2 and particularly meta-analytical studies (Rauch, Wiklund, Lumpkin, & Frese, 2009; Soares & Perin, 2020) in

entrepreneurship have demonstrated how subjective and objective measures are complementary. For example, in their pioneering study, of Tang et al. (2008), demonstrated how subjective measured EO and long-term financial performance, could be used to investigate the EO-long-term financial performance relationship of firms. Furthermore, the authors demonstrated how such a study could be validated against common method bias and recall bias by obtaining the same results from subjectively measured EO and objectively measured long-term financial performance in a secondary study.

Cognisant of the above mentioned drawbacks, the current study followed the example of Tang et al. (2008) and also conducted a secondary study to validate the primary study. The sampling strategy for this secondary study is explained hereunder to support.

3.4.1.2. Secondary Study

The South African construction and materials sector consisted for 20 publicly listed firms during the 2008-2019 period (JSE, 2021). The average contribution to the country's GDP by this sector was approximately R140 billion (TradingEconomics, 2023). The average revenue generated by these firms during this period was approximately R118 billion(JSE, 2021; PWC, 2016). The GDP by income approach involves determining GDP from income. Therefore, applying the GDP this approach to these firms, suggests that they contributed approximately above 80% of the sector's contribution to GDP. Consequently, it could be inferred that the sustainable financial performance of this sector was largely driven by these firms. Based on this, these firms were purposively chosen for the secondary study. Like the primary study, each of the 20 firms were represented members of their TMTs. The details are discussed in subsequent sections.

3.4.2. Research Instruments

As per the hypotheses, EO (and its dimensions) constitute the independent variables, sustainable financial performance as the dependent variable, environmental hostility, bricolage capability, absorptive capacity, and organisational identity are moderators. The next sections present the instruments that were chosen to measure these variables and why. However, to lay a theoretical foundation for this presentation, a comparative discussion on formative and reflective research instruments is first provided. All research instruments are attached in Appendix A.

3.4.2.1. Formative and Reflective Instruments

A research construct is an abstract variable used to represent a phenomenon or concept in research. A construct is characterised by its measurement items. A research measurement

model relates a construct to its measurement items. Measurement models are either formative or reflective in nature (Bollen & Lennox, 1991). The difference between the two is the direction of the relationship between construct and their measurement items (Diamantopoulos, Riefler, & Roth, 2008). In a reflective model, a construct causes a change in its measurement items. Conversely, In a formative model, the measurement items of a construct cause a change in the construct (Coltman, Devinney, Midgley, & Venaik, 2008). The authors posit that in a reflective model, a construct is reflected in its respective measurement items, and therefore these items are interchangeable, and the meaning of the construct can remain unchanged with the deletion of any measurement item. This is the reason why measurement items ought to have a positive internal consistency. However, in a formative model, the opposite applies for all the above-mentioned characteristics.

3.4.2.2. Primary Study

For reasons mentioned above, this study followed the example of Tang et al. (2008). In respect of the primary study, it measured all variables using survey questionnaires. These are presented and justified hereunder.

Sustainable Financial Performance

Tang et al. (2008) used the matured five-point, four item, reflective Likert scale (Cronbach α =0.89) of McDougall, Covin, Robinson Jr, and Herron (1994) to approximate long-term financial performance using sales growth rate, market share, profit growth before tax, and overall performance as measurement items. Similarly, due to the random sampling strategy that was employed in the current study and related drawbacks, purely measuring sustainable financial performance with secondary data was not an option as it was going to compromise sample size. It should be noted that even if purposive sampling was used, the sample size issue would persist for the same reasons. Consequently, the current study employed the same instrument as that of Tang et al. (2008) the rationale for which is expanded upon hereunder.

Sustainable financial performance was previously defined as a measure of the extent to which a firm can maintain or uphold its financial performance over time. Furthermore, although it was shown that a firm's ultimate measure of financial performance over time is its market value, it was also shown that it could be approximated using its long-term sales or revenue growth and/or profitability growth, which are already measurement items in the McDougall et al. (1994) scale that was used by Tang et al (2008) and hence its relevance to the current study. However, this scale included two more items market share growth and

overall performance. Market share growth measures a change in a firm's size relative to its market size. While market share growth and sales growth are related, they are not the same. For example, a firm can experience sales growth without gaining market share if the overall market is also growing. Similarly, it can gain market share without experiencing sales growth if the overall market is shrinking. Furthermore, profit growth may not necessarily translate to sales growth or market share growth, as profits can be maintained or increased through cost-cutting or efficiency gains. Consequently, this discussion suggests that firms can gain a more comprehensive understanding of their sustainable financial performance by examining these items relative to each other as well as by examining their overall contribution as was done by Tang et al (2008).

The validity and reliability considerations of this scale are discussed in a separate section.

Entrepreneurial Orientation

In Chapter 2, it was demonstrated that most extant literature used the matured, reflective seven-point, nine item Likert scale of Cronbach's α =0.81 devised by Miller, Covin and Slevin (1989). Furthermore, it was demonstrated that there were a few studies that operationalised this construct using secondary data. Due to the constraints around obtaining secondary data mentioned above, this study opted to remain consistent with the large body of knowledge and measured EO using this scale as well. However, in the literature review, it was shown that there was a shortage of multidimensional EO studies in general, and particularly using this scale. Therefore, to contribute to EO-As-Experimentation literature methodologically and empirically in this respect, this study also operationalised EO as a multidimensional construct using the same scale.

The validity and reliability considerations of this scale are discussed in a separate section.

Environmental Hostility

The literature review revealed that environmental hostility has not been measured in EO-As-Experimentation studies, although other environmental factors were measured by Moric (2022) and Gupta and Gupta (2015), respectively. However, in other EO studies (Isip, Baconguis, Depositario, Quimbo, & Paunlagui, 2022; Jogaratnam, 2002), the most widely used instrument to measure this construct is the matured, reflective, seven-point, three-item Likert scale (Cronbach α =0.73) of (Khandwalla, 1976). Consistent with extant literature and to contribute to extant EO-as-experimentation literature methodologically and empirically in this respect, the current study also elected to use the above scale.

The validity and reliability considerations of this scale are discussed in a separate section.

Bricolage Capability

In Chapter 2, it was demonstrated that EO-As-Experimentation studies had not yet investigated this construct. However, in the same chapter it was revealed that bricolage capability was largely operationalised using the matured, reflective, five-point eight item scale (Cronbach's α =0.80) of Senyard et al. (2014) used in other EO studies. Therefore, to contribute to the EO-As-Experimentation literature, the current study opted to remain consistent with other EO studies and selected to use the same instrument methodologically and empirically.

The validity and reliability considerations of this scale are discussed in a separate section.

Absorptive Capacity

In Chapter 2 it was demonstrated that amidst the plethora of measures for this construct, the matured, reflective, 22-item, seven-point Likert scale (Cronbach's α =0.89) of Zahra and George (2002) that was further developed Jansen et al. (2005) is the regarded as the most well established in the literature (Kohtamäki et al., 2019). In the same chapter, it was demonstrated that the latter study was the only one in the EO-As-Experimentation perspective that has employed this construct. Therefore, consistent with extant literature and to contribute to this perspective methodologically and empirically, the current study adopted this research instrument to measure the absorptive capacity construct.

The validity and reliability considerations of this scale are discussed in a separate section.

Organisational Identity

Due to the absence of generally accepted definition of OI and the use of parochial research designs, researchers have operationalised OI to fit their ontological and epistemological suppositions about the nature of organisations and organising (Agyabeng-Mensah, Tang, Afum, Baah, & Dacosta, 2021; Foreman & Whetten, 2016; Whetten, Foreman, & Dyer, 2014). In this study, the aim was to examine the extent to which the OI construct moderated managerial decisions i.e., bricolage capability and absorptive capacity, in the context of a hostile external environment. However, for reasons mentioned above, no existing OI scale served this purpose. Consequently, a new scale was developed for this study. Scale development can be either deductive or inductive (Tay & Jebb, 2017). In the former, theory

and existing formed conceptualisation of a construct are used to generate scale items. In the latter, items evolve through thematic content analysis. Generally, it has been shown that OI could be conceptualised using the three lenses: “who are we”, “who are we no longer” and “who are we becoming” (De Sousa, 2019; Lang, 2019). Studies have shown how an OI could be used to direct managerial decisions in the turbulent business environment (De Sousa, 2019; Lang, 2019; Tripsas, 2009; Voss et al., 2006; Whetten, 2006).

As hypothesised in the previous chapters, this study investigated the extent to which the relationship between entrepreneurial orientation and sustainable financial performance, in the context of a hostile external environment, could be moderated by bricolage capability and absorptive capacity, respectively. Moreover, this study investigated how strategic managerial decisions such as bricolage capability and absorptive capacity could be positively moderated by organisational identity in the context of the same hostile environment. Therefore, adopting the logic of Lang (2019), who used the lenses of OI as antecedents of strategic decision-making, six (6) scale items were deductively generated, as shown in the scale in Appendix A. These were designed around the moderating role of OI on bricolage capability (three items) and then repeated for absorptive capacity (three items).

The validity and reliability considerations of this scale are discussed in a separate section.

Control Variables

Internal validity refers to the extent of a relationship between two variables that cannot be explained by a third variable. Such a third variable is referred to as a confounding variable. In Chapter 2, it was found that most EO-As-Experimentation studies controlled for firm age and firm size, respectively. Furthermore, it was shown that a few firms controlled inter alia CEO tenure, CEO age, and CEO qualifications. The current study was concerned with a vast range of firm types ranging from SMME to large corporates. Therefore, their resources and capabilities were assumed not to have been the same. In this respect, the achievement of sustainable financial performance by one firm over another may have differed, because bigger firms may have leveraged their resources and capabilities with ease, as compared to those that were less resourced. Furthermore, firms that had existed for a longer time may have had more resources and capabilities than those that were younger, which may have led to varying outcomes. Therefore, following extant literature, this study opted to control for firm age and size, respectively. Although considered to a lesser extent by extant literature, this study also opted to include TMT tenure (years), TMT wok experience(years), TMT experience in the sector (years) and TMT qualifications. These were considered important traits, as they may have varied from one firm to another and may have varyingly influenced

strategic choice (e.g. EO) and firm performance, respectively (Hambrick & Mason, 1984). Controlling for these was an attempt to “level” the play field of the study and to leverage on the scientific practice that the more confounding variables are controlled for the better the internal validity.

Extant literature applies two methods to collect control variables: subjectively, using survey questionnaires or objectively using secondary data. Consistent with the logic that was followed to justify the use of survey questionnaires in the above discussions, the current study elected to use the former method. The survey questionnaire was created using the work of Goll, Brown Johnson, and Rasheed (2008) , and Ma and Yang (2022) as a guide.

3.4.2.3. Secondary Study

In Chapter 2, it was demonstrated that most EO-firm performance studies used subjectively measured EO and moderating variables with objectively measured firm performance. As mentioned above, the same approach was used by Tang et al. (2008) in their secondary study. Consequently, in respect of the current secondary study and for the same reasons as the authors, the same approach was followed in that the sustainable financial performance for the purposively selected sample, was objectively measured using market value. EO, environmental hostility, bricolage capability, organisational identity and absorptive capacity were subjectively measured as in the primary study.

3.4.3. Data Collection Approach

All research instruments i.e. survey questionnaires, were digitised using the Google Forms platform. To prevent missing data and incomplete survey issues, the Google form was programmed such that participants could not move to the next survey without completing the preceding one. This time delay was a way to also compel participants to pay attention to a single survey at a time.

The data collection process was preceded by a university approved letter to all members of TMTs in the sampled firms. Their contact details were gathered from LinkedIn, company websites, professional industry databases and through personal contacts. The letter requested the consent of participants to take part in the survey, and explained what the research was about, with special attention given to the 2008-2019 period. After obtaining consent, a Google Forms generated hyperlink was sent to them. The hyperlink was largely sent to participants via email, with few opting to receive it via WhatsApp Messenger for convenience.

Research data was collected over period of six months (January 2022 to June 2022). On an ad-hoc basis, the researcher followed up with participants to remind them to complete the survey. The above was applied for both primary and secondary studies respectively. However, for the secondary study, objective market value data was retrieved from TradingView (2020).

3.5.

3.5. DATA ANALYSIS

Data analysis consisted of three parts: data analytical tools, data preparation, and hypothesis testing. These are discussed hereunder.

3.5.1. Data Analysis Tools

The current study used the IBM Statistics for the Social Science (SPSS) statistics software package and the AMOS SPSS software packages recommended by the University. As such, the functionalities available in these software packages were relied upon.

3.5.2. Data Preparation

Due to the programming techniques that were applied to the digitised research instrument, there we no missing data or incomplete questionnaire issues. Responses from participants from the same firm were averaged accordingly. As in extant literature, the current study used composite constructs for all variables. These were constructed using Composite constructs were created using the weighted average technique (Ayala & González-Campo, 2015). This involved multiplying the standardised confirmatory factor analysis (CFA) loadings of the various scale items (see section 3.6 for actual CFA results) with a participant's rating and subsequently averaging the resulting measurement items of each construct using the same technique.

3.5.3. Hypothesis Testing

3.5.3.1. Data Normality

As with previous EO-As-Experimentation studies, the current study used parametric statistics to perform multiple hierarchical regression analysis. A key pre-requisite for hypothesis testing, under parametric statistics, is data normality i.e., data is expected to follow a Gaussian or normal distribution. Although there is no golden standard technique for determining data normality (Kim, 2013), graphical and/or numerical techniques could serve

the purpose (Kim, 2013; Tsagris & Pandis, 2021). Graphical techniques also known as the eyeball test, involve examining whether research data follows a Gaussian distribution. The quantile-quantile (Q-Q) plot, a straight line drawn through research data is often used for this purpose. If the data follows the straight line as closely as possible then the data is concluded to be normal. The most widely used numerical normality tests are the Shapiro-Wilk and Kolmogorov-Smirnov tests respectively(Kim, 2013; Tsagris & Pandis, 2021). Kim (2013) showed that the numerical (Shapiro-Wilk and Kolmogorov-Smirnov) and graphical normality tests for the same data could yield incompatible results and that the sample size contributes to this incompatibility.

Tsagris and Pandis (2021) recommend that more informative results could be obtained from graphical normality test techniques as compared to their numerical alternatives. To provide a solution to this dichotomy, Kim (2013) shows how a skewness and kurtosis of a distribution could be used as a sufficient measure of normality. Skewness is a measure of the asymmetry, and kurtosis is a measure of 'peakedness' of a distribution. The author showed that these techniques were more reliable, because they were independent of sample size. Normality testing using skewness and kurtosis is determined by calculating a z-score. The z-score is obtained by dividing the skew values or excess kurtosis by their respective standard errors (Kim, 2013). If the z-cores are between -1.96 and 1.96, data is concluded to be normal. Based on this discussion, this study opted to use skewness and kurtosis as a necessary and sufficient measure of data normality. However, to complement these measures, the respective Q-Q plots were also used to visually confirm the normality of data inspection for normality.

The EO, innovativeness, risk-taking, sustainable financial performance, organisational identity and proactiveness constructs were not normalised, since they conformed to the normality conditions articulated above. However, the bricolage capability and environmental hostility constructs were normalised using the Box-Cox transformation (Osborne, 2010) at optimum lambda values of 1,90 and 1,61, respectively. The latter could not transform the ACAP construct. Consequently, the Johnson transformation (Weisberg, 2001) was used for this purpose. The normality test results are shown below.

Table 1: *Normality Test of Survey Constructs Using Z-Scores*

Construct	Skewness	Skewness Standard Error	Skewness z-score	Kurtosis	Kurtosis Standard Error	Kurtosis z-score
Sustainable Financial Performance	0,08	0,22	0,36	-0,74	0,43	-1,74
Innovativeness	-0,21	0,22	-1,00	0,28	0,43	0,66
Proactiveness	-0,41	0,22	-1,90	0,04	0,43	0,10
Risk-taking	-0,24	0,22	-1,11	0,03	0,43	0,06
Entrepreneurial Orientation	-0,09	0,22	-0,41	-0,19	0,43	-0,45
Environmental Hostility	0,08	0,22	0,37	-0,47	0,43	-1,10
Bricolage Capability	-0,16	0,22	-0,75	-0,22	0,43	-0,52
Absorptive Capacity	-0,04	0,22	-0,17	-0,13	0,43	-0,31
Organisational Identity	-0,24	0,22	-1,13	0,11	0,43	0,26

Z-scores and the Q-Q plots in Appendix B confirmed normality, which paved the way for inferential statistics.

3.5.3.2. Inferential Statistics

In Chapter 2, it was demonstrated that most EO-As-Experimentation studies employed ordinary least squares (OLS) to investigate hypotheses, with two to three studies using SEM and Cox proportional hazards model. respectively. However, SEM is most appropriate when a study deals with multiple latent constructs, and where the multiplicative components of such constructs in not complex (Cortina, Markell-Goldstein, Green, & Chang, 2020; Nusair & Hua, 2010). The current study employed composite constructs throughout and involved the step-by-step examination of complex multiplicative moderation interactions. Consequently, and consistent with prior research, the hierarchical multiple regression analysis technique in SPSS was employed for inferential statistics.

The complex multiplicative moderation interactions referred to above could turn out to be meaningless i.e., their product could be zero, they could turn out to be large and thus distort the examination of moderating effects, and lastly, they could create multi-collinearity between higher predictors. As such, it was necessary to mitigate these threats before hierarchical regression analysis. This involved mean centring the variables (Kohtamäki et al., 2019; Li, 2018). In addition, multicollinearity diagnostics on the independent variables, as well as on each regression model were performed. The thresholds VIF <10 and tolerance >0.2 were used to exclude multicollinearity (Arya & Lin, 2007; Kohtamäki et al., 2019).

Hierarchical regression analysis involves entering predictors as blocks in SPSS, starting with the most basic to the most complex interaction (Wuensch, 2015). The convention in SPSS is that each block represents a model and each model an effect or a hypothesis. The current

study distinguished between five effects: control variables, direct or main effects, nonlinear effects (hypothesis H1), moderating effects (hypotheses H2, H3, H4, H5(a) and H5(b) respectively), and indirect effects. The latter refer to the extent to which the sustainable financial performance was statistically significantly predicted by the interaction between EO and other independent variables without the context of environmental hostility. This was necessary to rule out extraneous effects. The other effects were explained in Chapter 2.

As is to be found in the extant literature, hypothesis testing involved two steps: (a) checking overall statistical significance of a model; and (b) checking the statistical significance of an effect or interaction that was under investigation. The former was achieved using the *F*-statistic and *p*-value of a model and were derived from the IBM SPSS analysis of variance (ANOVA) output. A model was statistically significant if its associated *p*-value was less than or equal to 0,05 (95% confidence level). In the latter, an effect or interaction that was under investigation was statistically significant if its associated *p*-value was less than or equal to 0,05. Consistent with extant literature (Bauweraerts & Colot, 2017; Kohtamäki et al., 2019; Naskar, 2023; Siegel, 2016; Yamada & Eshima, 2009), regression inferences were derived from standardised coefficients.

The *p*-value only provides information about the statistical significance of an interaction i.e., they inform a researcher as to whether an effect exists or not, but do not provide any information about their practical significance or non-significance i.e., they do not reveal the size of the effect (Sullivan & Feinn, 2012; Yigit & Mendes, 2018). This is problematic, because real life situations are compared inter alia in terms of magnitude and intensity, and therefore sole reliance on *p*-values alone could lead to incorrect inferences about a practical situation. As such, post-hoc analysis tests were used in the current study to: (a) effect size determination; (b) Tukey honest significance difference (HSD) test; and (b) graphical slope analysis.

The effect sizes were derived from ANOVA results (Lakens, 2013; Yigit & Mendes, 2018). Although they could be measured using the omega-squared (ω^2) or eta-squared (η^2) measures, Yigit and Mendes (2018) have shown that omega-squared is a lesser biased alternative to eta-squared where population variance is concerned. In the current study, effect sizes were determined using the omega-squared measure as shown in Eq.2.

$$\omega^2 = \frac{df_{regression}\ x\ (MS_{regresion-}MS_{residual})}{SS_{total} + MS_{residual}} \qquad \textit{Eq. 2}$$

Where $df_{regression}$ is the degree of freedom from the regression component of a model, $MS_{regression}$ is the mean of squares of regression, $MS_{residual}$ is the mean of squares of the residual component of a model and SS_{total} is the total sum of squares of a model. Omega-squared was interpreted as follows: 0,01 represents a small effect, 0,06 represents a medium effect and 0,14 represents a large effect (Kotrlik, Williams, & Jabor, 2011)

The Tukey HSD test was also performed, using the results from ANOVA and interpreted as articulated in literature (Abdi & Williams, 2010; Taatila & Down, 2012). To maintain the focus and clarity of the current study and following Tang et al. (2008), whom the current has used as a reference and justification for a two-study approach, this post hoc analysis was only applied to the primary study and not the secondary study.

Graphical slope analysis involved standardised regression coefficients to plot the EO-sustainable financial performance relationship represented by each of the same models for which effect sizes were determined i.e., main effects and moderating effects, together also referred to as total effects. In this instance, two extremes for EO and two for the interaction under investigation were examined and appropriate inferences were derived accordingly. The graphical slope analysis approach is consistent with the recommendations of Aiken, West, and Reno (1991) even for non-significant interactions.

3.6. VALIDITY AND RELIABILITY

This section discusses the validity and reliability aspects of the current study.

3.6.1. Validity

Validity determines whether the research truly measures that which it was intended to measure (Joppe, 2000). In general, validity is classified into three main categories, namely: internal validity, external validity, and construct validity (Taherdoost, 2016a). These are discussed in turn hereunder.

3.6.1.1. Internal Validity

Internal validity refers to the extent to which the researcher can be confident that a cause-and-effect relationship established in a study cannot be explained by other factors. This involves controlling for confounding variables in a regression model. A confounding variable

is one that can affect both the dependent and independent variables in a cause-effect relationship. As with extant literature, the current study accounted for confounding variables. These were presented and argue for in section 3.4.2.2.

3.6.1.2. External Validity

External validity refers to the generalisability of research results. It can be categorised into population and ecological validity, respectively. Population validity examines whether research findings could be generalised from a sample to the larger population from which it was derived. Ecological validity examines whether research findings could be generalised to other entities, situations, and periods. In general, external validity could be optimised if a study is conducted in a natural setting, if a sample is representative of the population from which it was derived and when prospective participants experience the events of the study as being real, which could be achieved by telling them a “cover story”(Glen Stephanie, 2015). Furthermore, Hasson et al. (2000) argue for a good sample accompanied by an acceptable response rate and a rigorous analysis of input information. Moreover, Goodman (1987) observes that the use of participants who have knowledge and an interest in the topic may help to increase research validity.

The current study accounted for these factors in several ways. First, the study employed probabilistic statistics to determine the minimum representative sample size from an infinite population. This ensured that the South African construction and materials sector could be represented by any firm that met the criteria. Second, the study went beyond the minimum representative sample by doubling the sample size to ensure a good response rate. Third, this study collected information from TMTs whose knowledge about strategic choice i.e. the interest of this study, has previously been demonstrated to be important. Lastly, this study used ‘cover stories’ both in correspondences to participants as well as in the questionnaires themselves to ensure that participants experienced its events as being real.

3.6.1.3. Construct Validity

Construct validity is further divided into content validity, face validity, convergent validity, and discriminant validity. Face validity subjectively measures the readability, consistency, style of formatting and language clarity of a questionnaire. Content validity measures the extent that measurement instrument items are relevant and representative of the target construct.

Convergent validity determines the extent to which the measures of different construct converge or correlate with one another. Discriminant or divergent validity measures the extent that measures of different constructs diverge or minimally correlate with one another.

In general, after scale items are identified, the scale development process involves: face validity content validity, exploratory factor analysis (EFA) to determine constructs, confirmatory factor analysis (CFA) to confirm the structure, internal consistency ,and construct validity (convergent and discriminant) (Hinkin, 1995; Tay & Jebb, 2017). However, Hinkin (1995) suggest that there is no generally accepted quantitative measure of face and content validity, and therefore, that a researcher should exercise judgement in validating a measure. To this end, this study followed the example of the extant literature that was reviewed in Chapter 2 by administering the survey questionnaires directly to participants. For the OI survey questionnaire, this study simply operationalised the lenses of OI that were established by De Sousa (2019) as it would any theory or concept, arguing that the true measure of validity would be in construct validity and reliability. However, consistent with the same extant literature referred to above, the current study employed EFA and CFA on all the scales to determine and confirm structure respectively.

3.6.1.4. Measuring Construct Validity

Research instrument validation involved the determination of the factorial structure of constructs, their validity (both convergent and divergent or discrimination) and their reliability (internal consistency, composite and inter-rater). Factorial structure determination was achieved through exploratory factor analysis (EFA). Sample and correlation structure adequacy are pre-requisites for EFA. SPSS uses the Kaiser-Meyer-Olkin (KMO) and Bartlet's test of sphericity to determine the required adequacy. Adequacy is satisfied if KMO is equal or greater than 0.60 and if Bartlett's test of sphericity is significant ($p < 0.05$)(Reddy & Kulshrestha, 2019). To extract components or factors, the principal component analysis (PCA), principal axis factor analysis (PAFA), or the maximum likelihood techniques could have been used. However, this study elected to use the most suitable PCA, based on the Kaiser's criterion of eigenvalues greater than one and orthogonal rotation (Varimax) techniques. Coefficients below absolute value of 0.4 were suppressed. The number of extracted components with their corresponding items were derived from the rotation component matrix seen in the SPSS output (Costello & Osborne, 2005; Mabel & Olayemi, 2020).

The resulting components were confirmed using confirmatory factor analysis (CFA) using the AMOS SPSS software package. The following CFA model fit indices were used to determine model viability: Chi-squared (χ^2), Chi-squared/degrees of freedom (CMIN/df), root mean square error of approximation (RMSEA), incremental fit index (IFI), Tucker-Lewis Index (TLI), comparative fit index (CFI) and the standardise root mean square residual (SRMS) (Hu & Bentler, 1999; Sun, 2005; Tucker & Lewis, 1973).

Convergent validity was measured using the average variance extracted (AVE) from standardised regression weights of a confirmatory factor analysis (CFA) model. Conditions for convergent validity are satisfied if AVE is greater than or equal to 0.50 (Alarcón, Sánchez, & De Olavide, 2015). Conditions of divergent validity are satisfied if the square root of AVE is greater than or equal to correlation estimates between CFA components or if the average share variance (ASV) between components is less than AVE (Alarcón et al., 2015).

The validity results for all research instruments are provided in section 3.6.4.

3.6.2. Reliability

Reliability is defined as the extent to which results are consistent (repeatable and reproducible) (Hasson et al., 2000; Heale & Twycross, 2015; Joppe, 2000; Taherdoost, 2016b). There are three types of reliability and they are inter-rater reliability, test-retest reliability, and internal consistency reliability (Taherdoost, 2016a). Inter-rater reliability measures the extent to which two or more survey participants agree on a measure. An inter-rater value of 0.7 or higher is indicative of such an agreement (Graham, Milanowski, & Miller, 2012). Test-retest reliability involves using the same instrument on the same sample more than once. A value of 0.7 or higher affirms the reliability of an instrument (Paiva et al., 2014). Internal consistency measures the extent to which measurement items of a construct correlate with one another and is particularly useful in reflective models when composite constructs are intended in a study.

Internal consistency is largely measured using Cronbach's alpha, where a value of 0.7 or higher is indicative of high internal consistency amongst measurement items (Grande, Madsen, & Borch, 2011; Madsen, 2007). Another common measure of internal consistency is composite reliability (CR). Similar to Cronbach's alpha, a value of 0.7 or greater is indicative of higher composite reliability (Alarcón et al., 2015). These are usually used in a complementary manner in research.

As demonstrated in Chapter 2, it is not common practice in extant literature to account for the inter-rater and test-retest reliability. Instead, most literature accounted for internal consistency, Therefore, consistent with extant literature, the current study accounted for this via Cronbach's alpha and composite reliability. In addition, contrary to common practice and due to its importance in guarding against observer bias, the current study opted to account for inter-rater reliability as well. However, consistent with practice, due to the maturity of the scales used and due to research time constraints, test-retest reliability was not accounted for in the current study.

3.6.2.1. Measuring Reliability

Internal consistency and inter-rater reliability were measured using the analytical techniques provided in SPSS (MacLennan, 1993) and composite reliability was measured using the output of CFA models mentioned previously.

The reliability results for all research instruments are provided in section 3.6.4.

3.6.3. Research Bias Considerations

3.6.3.1. Common Method Variance or Bias

As the name suggests, common method bias (CMB) or variance occurs when both the dependent and independent variables are measured using the same method or technique particularly survey questionnaires (Kock, Berbekova, & Assaf, 2021). The authors suggest that, if not controlled, CMB could inflate or deflate the relationship between the independent and dependent variables and any subsequent statistical inferences. Scholars suggests that measuring the independent and dependent variables with data from different sources (MacKenzie & Podsakoff, 2012), giving clear instructions; ensuring anonymity of responses, avoiding complex and ambiguous items; and keeping surveys concise (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and collecting self-reported data from the same source, but at different points in time (MacKenzie & Podsakoff, 2012) could alleviate CMB. The most common technique used to measure CMB amongst surveys is Harman's single factor test through EFA or CFA (Morić, 2022). An indication of CMB amongst research instruments is when all primary study variables result in one factor accounting for more than 50% of the variance (Korsgaard & Roberson, 1995; Morić, 2022).

The current study largely employed survey questionnaires which a trigger for common bias. However, they were designed with the above-mentioned considerations i.e. anonymity,

clarity of instruction, concise questions as well as the use of a secondary study that ensured that the dependent variable was also measured using secondary data.

The CMB results are provided in section 3.6.4.

3.6.3.2. Recall Bias

Recall bias occurs when research participants cannot clearly remember the details of a past event. This type of bias could be a threat to a retrospective study that solely relies on self-reported data. However, scholars suggest several ways to reduce the effects of recall bias: (a) a well-developed survey questionnaire with clear and precise questions to reduce variation in comprehension(Bhandari & Wagner, 2006; Roberts, Bergstralh, Schmidt, & Jacobsen, 1996); and/or (b) stimulating "forward recall" or "flashbulb memories" (Day & Ross, 2014; Khare & Vedel, 2019). The latter has been supported by recent studies such as those by Ribeiro, Marques, Roberto, and Raposo (2023) and Cordonnier and Luminet (2021), who showed that event memories or memories traces about an original past events were a causal stimulant of flashbulb memories. Lastly, as seen in Chapter 2, most EO-As-Experimentation studies attempted to minimise recall bias by complementing survey questionnaires with secondary data, especially for firm performance.

The current study largely employed survey questionnaires which is a trigger for recall bias. However, in addition to the approach of Tang et al. (2008) who had clearly developed and precise questions, the current study leveraged flashbulb memory empirical evidence by adding 'cover stories' to stimulate their forward recall or flashbulb memories, a technique that was also shown to be important for the increase of external validity of a study. In addition, the current study, followed extant literature referred to above by complementing the subjectively measured sustainable financial performance with secondary data in a complementary secondary study.

In the next section, validity and reliability results are presented.

3.6.4. Research Instrument Reliability and Validity Results

Using survey data, the structure of each construct was verified using EFA and thereafter was confirmed using CFA. However, prior to these tests, the surveys were investigated for common method bias.

3.6.4.1. Common Method Bias Test

The measurement items of all constructs were loaded onto SPSS and Harman's single factor test was performed and indicated that 30.57% of the variance was accounted for by one factor suggesting the absence of CMB. This result affirmed that the mitigating actions against CMB that were recommended by scholars, and considered in the current research were indeed effective.

In the absence of common method bias, the reliability and validity of the respective instruments were discussed.

3.6.4.2. Sustainable Financial Performance

The structure of the construct was determined using EFA and confirmed with CFA from which convergent or divergent validity and reliability were also determined.

Exploratory Factor Analysis

The EFA results are shown in Table 2.

Table 2:*Component Matrix for Sustainable Financial Performance*

Scale Item	Component	Cumulative Contribution to Total Variance
	Sustainable Financial Performance	
Sust_Perf4	.925	
Sust_Perf1	.914	78.5%
Sust_Perf3	.872	
Sust_Perf2	.831	

Note: Sust_Perf1 to Sust_Perf4 represent the scale items of the original sustainable performance scale.

The Kaiser-Meyer-Olkin measure of sampling adequacy was .80, which is above the commonly recommended value of .60, and the Bartlett's test of sphericity was significant at p-value < 0.001. Using both the scree plot and eigenvalues > 1 to determine the underlying components the analysis showed that sustainable financial performance as a one component construct explaining a cumulative contribution to total variance in the data of 78,5% with no rotation. Following the confirmation of the structure, the CFA model shown in with the accompanying model fit indices in Table 3 were determined.

Confirmatory Factor Analysis

Figure 2:*CFA structure for Sustainable Financial Performance*

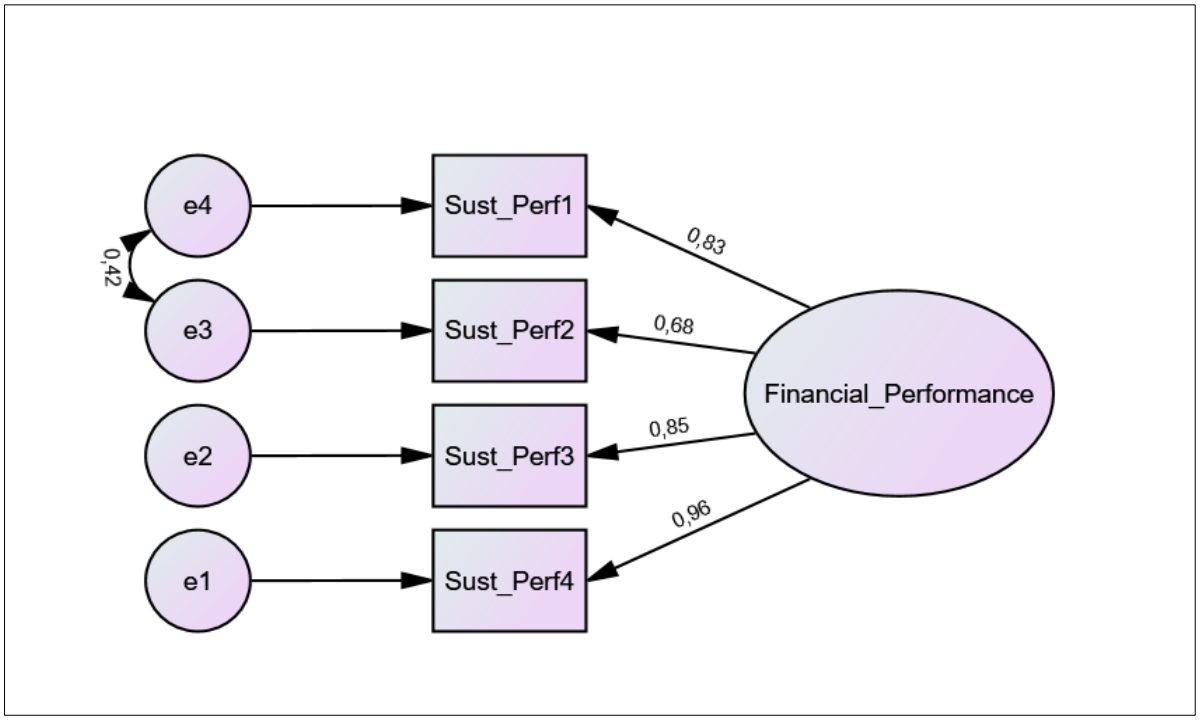


Table 3: *Model Fit Indices for Sustainable Financial Performance*

Model index	Description	Acceptable fit value	Actual fit value
	Chi-squared	As insignificant as possible	0,067
χ^2/df	Degrees of freedom	<=3	0,067
RMSEA	Root mean square error of approximation	<=0,08	0,000
IFI	Incremental fit index	>=0,9	1,003
TLI	Tucker-Lewis index	>=0,9	1,016
CFI	Comparative fit index	>=0,9	1,000
SRMS	Standard root mean square residual	<=0,10	0,0022

Table 3, indicated a good model fit χ^2 = 0,067 χ^2 /df =0,067, RMSEA =0,000, IFI =1,003, TLI=1,016, CFI =1,000 and SRMS =0,0022.

Table 4 below shows the construct validity and reliability indicators derived from the standardised regression weights and correlations of the CFA model.

Table 4:*Construct Reliability and Validity for Sustainable Financial Performance*

Scale Item	Standardised Regression Weight	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach Alpha	Inter-rater
Sust_Perf4	0,96				
Sust_Perf1	0,85				
Sust_Perf3	0,68				
Sust_Perf2	0,83				
Average		**0.690**	**0.90**	**0.904**	**0.903**

The AVE, CR, Cronbach's alpha and inter-rater reliability were acceptable, because they were higher than their respective thresholds and thus confirming. These high values of AVE and CR confirm the existence of convergent validity. Furthermore, in relation to this research instrument, they confirm high agreement amongst participants (interrater reliability= 0,903). Moreover, the high composite reliability and high internal consistency suggest that all items are reflective of sustainable financial performance.

3.6.4.3. Entrepreneurial Orientation

The structure of the construct was determined using EFA and confirmed with CFA from which convergent or divergent validity and reliability were also determined.

Exploratory Factor Analysis

Table 5:*Rotated Component Matrix for Entrepreneurial Orientation*

Scale Item	Component			Cumulative Contribution to Total Variance
	Risk-Taking	Innovativeness	Proactiveness	
RISK1	.846			
RISK2	.838			
RISK3	.720			43.93%
INNOV2		.823		
INNOV3		.697		
INNOV1		.649		50.09%
PROACT1			.798	
PROACT2			.788	
PROACT3			.671	70.57%

Note: RISK, INNOV and PROACT represent the scale items of the original entrepreneurial orientation scale.

The Kaiser-Meyer-Olkin measure of sampling adequacy was .772, which is above the commonly recommended value of .60, and the Bartlett's test of sphericity was significant at p-value < 0.001. Using both the scree plot and eigenvalues > 1 to determine the underlying components, the analysis yielded three (3) components, explaining a cumulative contribution to total variance in the data of 70,57% after rotation. Following the confirmation of the structure, the CFA model shown in Figure 3 with the accompanying model fit indices in Table 6 were determined.

Confirmatory Factor Analysis

Figure 3:*CFA structure for Entrepreneurial Orientation*

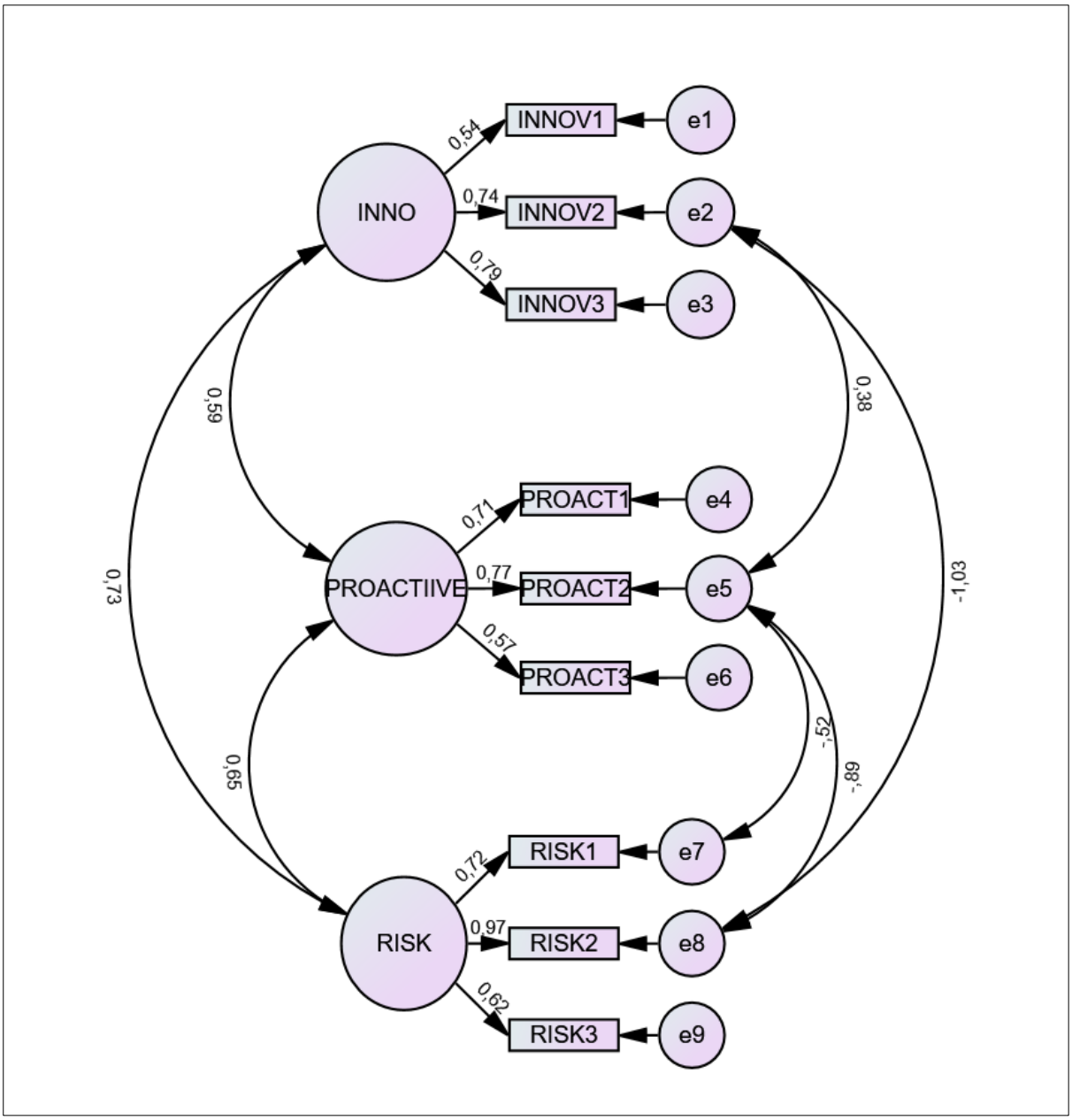


Table 6: *Model Fit Indices for Entrepreneurial Orientation*

Model index	Description	Acceptable fit value	Actual fit value
	Chi-squared	As insignificant as possible	
χ^2/df	Degrees of freedom	<=3	1,113
RMSEA	Root mean square error of approximation	<=0.08	0,030
IFI	Incremental fit index	>=0.9	0,995
TLI	Tucker-Lewis index	>=0.9	0,991
CFI	Comparative fit index	>=0.9	0,995
SRMS	Standard root mean square residual	<=0.10	0,0493

The CFA results shown in Table 6, indicated a good model fit χ^2/df =1.113, RMSEA =0,030, IFI =0,995 , TLI =0,991 , CFI =0,995 and SRMS =0,0493.

Table 7 below shows the construct validity and reliability indicators derived from the standardised regression weights and correlations of the scale items shown in Figure 3.

Table 7:*Construct Reliability and Validity for Entrepreneurial Orientation*

Scale Item	Standardised Regression Weight	Component	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach Alpha	Inter-rater
RISK1	0,72					
RISK2	0,97	Risk-Taking	0,6	0,82	0,82	0,82
RISK3	0,62					
INNOV2	0,79					
INNOV3	0,79	Innovativeness	0,5	0,83	0,72	0,71
INNOV1	0,54					
PROACT1	0,71					
PROACT2	0,77	Proactiveness	0,5	0,83	0,71	0,71
PROACT3	0,57					
Average			0.59	0.83	0.75	0.75

The high inter-rater reliability suggests agreement amongst raters in respect of the dimensions of EO. The high AVE suggests convergent validity in respect of these dimensions. The high internal consistency and CR suggests that the measurement items of each of these dimensions were reflective of them.

The average AVE of the three dimensions is 0,59, the average CR is 0.83, average Cronbach's alpha is 0,75 and average Inter-rater reliability is 0,75 respectively. These suggest the presence of convergent validity, that participants agree that these three dimensions are reflective of EO, and that the respective dimensions are reflective of EO. The square root of the average AVE is 0,77. In Figure 3, the correlation between risk-taking and

innovativeness is 0,73, between innovativeness and proactiveness is 0,59, and between risk-taking and proactiveness is 0,65. These are less than the average AVE suggesting a lack of divergent validity and confirming convergent validity.

3.6.4.4. Environmental Hostility

The structure of the construct was determined using EFA and confirmed with CFA, from which convergent or divergent validity and reliability were also determined.

Exploratory Factor Analysis

The EFA results are shown in Table 8

Table 8*: Component Matrix for Environmental*

Scale Item	Component	Cumulative Contribution to Total Variance
	Environmental Hostility	
HOST_ENV2	.855	100%
HOST_ENV3	.854	
HOST_ENV1	.709	

Note: HOST_ENV1 to HOST_ENV3 represents the three scale items of the original environmental hostility scale.

The Kaiser-Meyer-Olkin measure of sampling adequacy was .641, which is marginally above the commonly recommended value of .60m and the Bartlett's test of sphericity was significant at p-value < 0.001. Using both the scree plot and eigenvalues > 1 to determine the underlying components the analysis showed that environmental hostility as a one component construct explaining a cumulative contribution to total variance in the data of 100% with no rotation.

Following the confirmation of the structure, the CFA model shown in Figure 4 with the accompanying model fit indices in Table 9 were determined.

Confirmatory Factor Analysis

Figure 4: *CFA factor structure for Environmental Hostility*

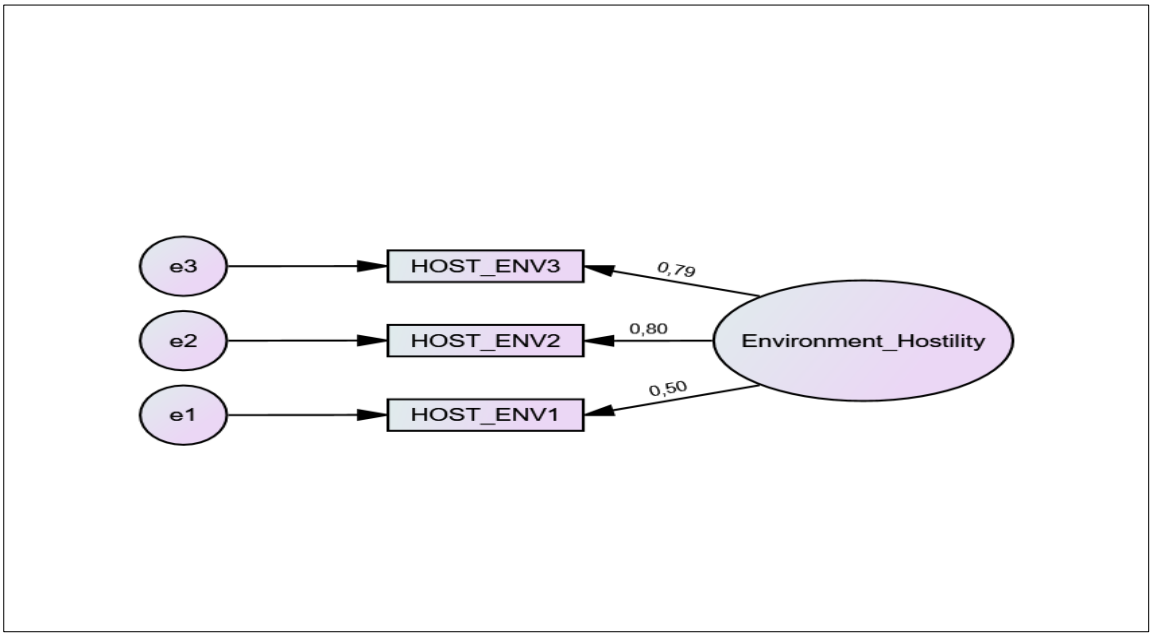


Table 9: *Model Fit Indices for Environmental Hostility*

Model index	Description	Acceptable fit value	Actual fit value
	Chi-squared	As insignificant as possible	0.000
χ^2/df	Degrees of freedom	<=3	-
RMSEA	Root mean square error of approximation	<=0.08	0.048
IFI	Incremental fit index	>=0.9	1.000
TLI	Tucker-Lewis index	>=0.9	-
CFI	Comparative fit index	>=0.9	1.000
SRMS	Standard root mean square residual	<=0.10	.0000

The CFA results shown in *Table 9*, indicated a good model fit χ^2 =0,000, df =0,000 , RMSEA =0,048 , IFI =1,000, CFA =1,000 and SRMS =0,0000.

Table 10 below shows the construct validity and reliability indicators derived from the standardised regression weights and correlations of the scale items shown in Figure 4.

Table 10:*Construct Reliability and Validity for Environmental Hostility*

Scale Item	Standardised Regression Weight	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach Alpha	Inter-rater
HOST_ENV1	0,503				
HOST_ENV2	0,799				
HOST_ENV3	0,791				
		0.51	**0.747**	**0.728**	**0.72**

The AVE, CR, Cronbach's alpha and inter-rater reliability were acceptable because they were higher than their respective threshold. These high values of AVE and CR confirm the existence of convergent validity. Furthermore, in relation to this research instrument, they confirm high agreement amongst participants (interrater reliability= 0,722). Moreover, the high composite reliability and high internal consistency suggest that all items are reflective of environmental hostility.

3.6.4.5. Bricolage Capability

The structure of the construct was determined using EFA and confirmed with CFA, from which convergent or divergent validity and reliability were also determined.

Exploratory Factor Analysis

The EFA results are shown in Table 11

Table 11: Component Matrix for Bricolage Capability

Scale Item	Component	Cumulative Contribution to Total Variance
	Bricolage Capacity	
BC3	.846	
BC5	.823	
BC6	.784	
BC7	.781	
BC2	.772	60.54%
BC1	.717	
BC4	.715	

Note: BC1 to BC7 represent the scale items of the original bricolage capability scale.

The Kaiser-Meyer-Olkin measure of sampling adequacy was .865, which is above the commonly recommended value of .60, and the Bartlett's test of sphericity was significant at p-value < 0.001. Using both the scree plot and eigenvalues > 1 to determine the underlying components the analysis showed that bricolage capability as a one component construct explaining a cumulative contribution to total variance in the data of 60,54%, with no rotation.

Following the confirmation of the structure, Figure 5 shows the CFA model with the accompanying model fit indices determined in Table 12.

Confirmatory Factor Analysis

Figure 5:*CFA structure for Bricolage Capability*

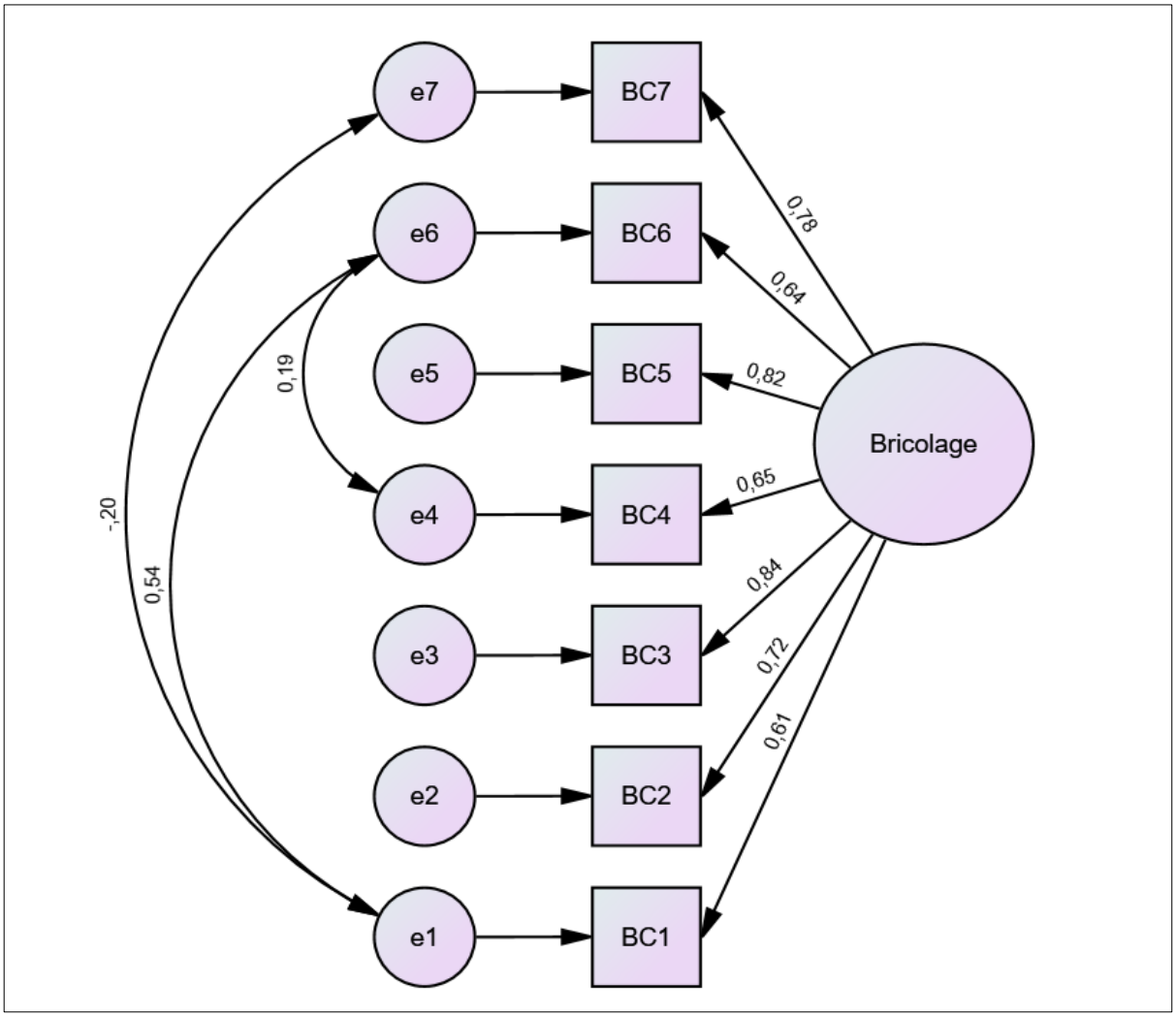


Table 12: *Model Fit Indices for Bricolage Capability*

Model index	Description	Acceptable fit value	Actual fit value
	Chi-squared	As insignificant as possible	
χ^2/df	Degrees of freedom	<=3	0.655
RMSEA	Root mean square error of approximation	<=0.08	0.000
IFI	Incremental fit index	>=0.9	1.008
TLI	Tucker-Lewis index	>=0.9	1.016
CFI	Comparative fit index	>=0.9	1,000
SRMS	Standard root mean square residual	<=0.10	0.0227

The CFA results shown in Table 12, indicated a good model fit χ^2 /df =0,655, RMSEA =0,000, IFI =1,008, TLI=1,016, CFI =1,000 and SRMS =0,0227.

Table 13 below, shows the construct validity and reliability indicators derived from the standardised regression weights and correlations of the scale items shown in Figure 5.

Table 13: Construct Reliability and Validity for Bricolage Capability

Scale Item	Standardised Regression Weight	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach's Alpha	Interrater
BC1	0,612				
BC2	0,724				
BC3	0,836				
BC4	0,648				
BC5	0,821				
BC6	0,64				
BC7	0,778				
		0.53	**0.886**	**0.890**	**0.882**

The AVE, CR, inter-rater reliability, and Cronbach's alpha were acceptable because they were all within the recommended thresholds. These high values of AVE and CR confirm the existence of convergent validity. Furthermore, in relation to this research instrument, they confirm high agreement amongst participants (interrater reliability= 0.882). Moreover, the high composite reliability and high internal consistency suggest that all items are reflective of bricolage capability.

3.6.4.6. Absorptive Capacity

The structure of the construct was determined using EFA and confirmed with CFA, from which convergent or divergent validity and reliability were also determined.

Exploratory Factor Analysis

The EFA results are shown in Table 14.

Table 14: *Rotation Component Matrix for Absorptive Capacity*

	Component				
Scale Item	F1	F2	F3	F4	F5
ACAP4code		.435	.579		
ACAP7code			.753		
ACAP13code			.680		
ACAP14code					.838
ACAP17code			.465		.428
ACAP20code			.509		.453
ACAP1		.774			
ACAP2		.753			
ACAP3	.572				
ACAP5	.543	.587			
ACAP6				.819	
ACAP8	.894				
ACAP9	.839				
ACAP10	.747				
ACAP11	.566			.557	
ACAP12	.642			.421	
ACAP15		.647			
ACAP16	.477	.622			
ACAP18		.587		.465	
ACAP19	.505	.474		.422	
ACAP21	.510	.457			

Note: F1 to F5 represent components of Absorptive Capacity (ACAP). Items shown with "code" are the reverse coded ones.

The Kaiser-Meyer-Olkin measure of sampling adequacy was .884, which is above the commonly recommended value of .60, and the Bartlett's test of sphericity was significant at p-value < 0.001. Using both the scree plot and eigenvalues > 1 to determine the underlying components, the analysis yielded five (5) components, explaining a cumulative contribution to total variance in the data of 79,67 percent.

Retaining the loadings that are greater than the stipulated threshold per column left only one item for component F4 and F5, respectively. However, the minimum number of items per component recommended is three (3) (Marsh, Hau, Balla, & Grayson, 1998). Therefore,

component F4 and F5 were discarded. Consequently, CFA was conducted using components F1, F2 and F3. The CFA yielded a statistically acceptable model. However, component F3 of the same model did not meet the construct validity condition. The component yielded an AVE of 0,28 (which is below 0,5) and a CR of 0,78 respectively. Consequently, component F3 was deleted. The resulting CFA model in Figure 6 with the accompanying model fit indices in Table 15 were determined.

Confirmatory Factor Analysis

Figure 6: *CFA structure for Absorptive Capacity*

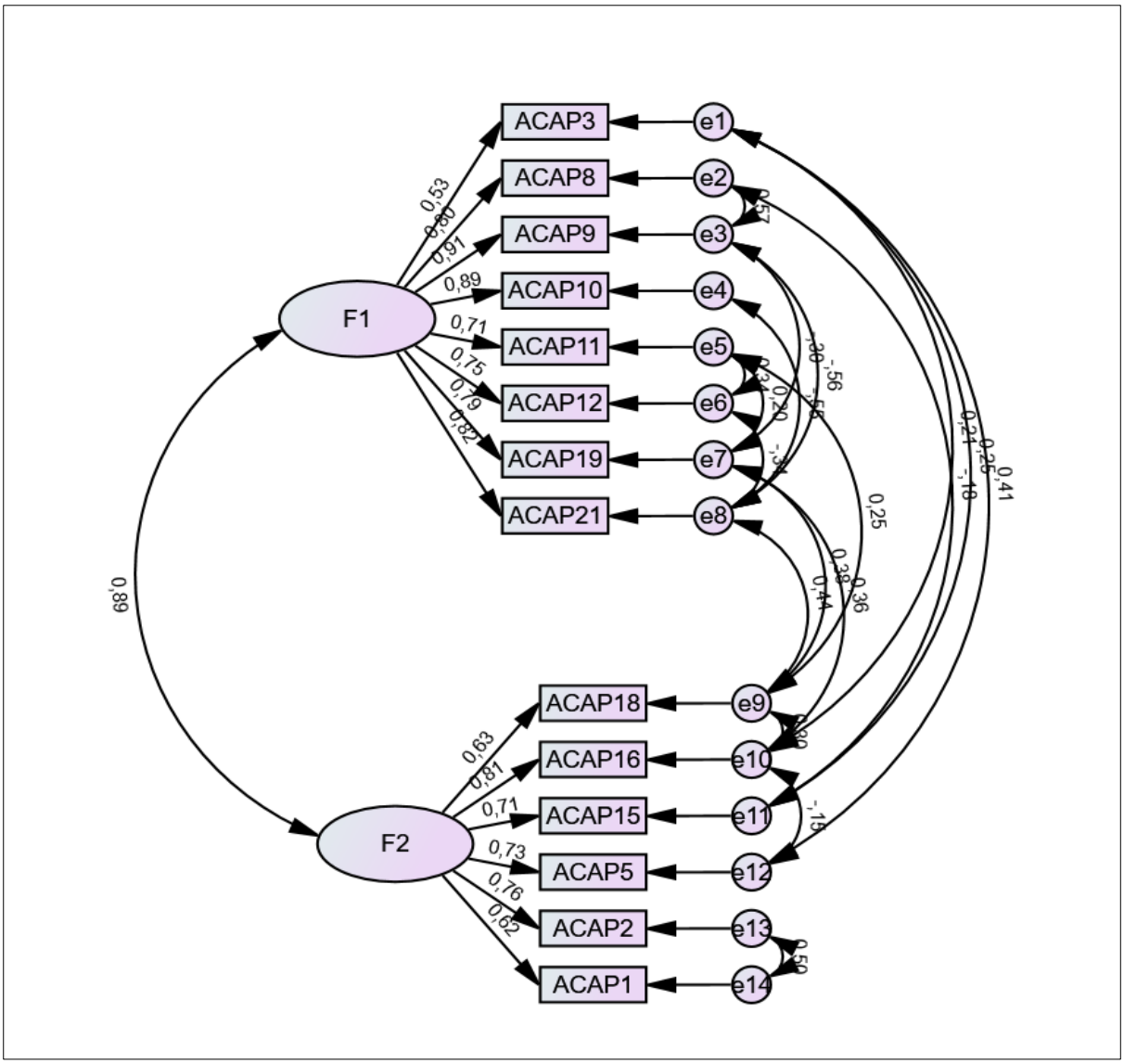


Table 15: *Model Fit Indices for Absorptive Capacity*

Model index	Description	Acceptable fit value	Actual fit value
CMIN	Chi-squared	As insignificant as possible	
χ^2/df	Chi-Squared over degrees of freedom	<=3	1.261
RMSEA	Root mean square error of approximation	<=0,08	0,046
IFI	Incremental fit index	>=0,9	0,989
TLI	Tucker-Lewis index	>=0,9	0,982
CFI	Comparative fit index	>=0,9	0,988
SRMS	Standard root mean square residual	<=0,10	0,0363

The CFA results shown in Table 15, indicated a good model fit, χ^2/df =1,261 ,RMSEA =0,046 , IFI =0.989 , TLI =0,982 , CFI =0,988 and SRMS =0,0363.

Table 16 below, shows the construct validity and reliability indicators derived from the standardised regression weights and correlations of the scale items shown in Figure 6.

Table 16: *Construct Validity and Composite Reliability of Absorptive Capacity*

Scale Item	Standardised Regression Weights	Component	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach Alpha	Inter-rater
ACAP3	0,535	F1	0,61	0,92	0,91	0,70
ACAP8	0,801	F1				
ACAP9	0,907	F1				
ACAP10	0,889	F1				
ACAP11	0,711	F1				
ACAP12	0,748	F1				
ACAP19	0,793	F1				
ACAP21	0,82	F1				
ACAP18	0,633	F2	0,51	0,86	0,87	0.70
ACAP16	0,805	F2				
ACAP15	0,706	F2				
ACAP5	0,733	F2				
ACAP2	0,758	F2				
ACAP1	0,622	F2				
Average			0.56	0.89	0.89	0.70

The AVE, inter-rater, CR and Cronbach's alpha were acceptable in both cases. These results confirm the existence of convergent validity, internal consistency, agreement amongst participants in both F1 and F2, respectively.

The average AVE is 0.56, average CR 0.89, average Cronbach's is 0.89 and average inter-rater reliability is 0.70. These suggest the presence of convergent validity, that participants agree that these two components are reflective of ACAP, and that the respective components are reflective of ACAP. The square root of the average AVE is 0.77, which is not greater than the correlation between F1 and F2 of 0.89 thus confirming convergent validity. Although the full four originally postulated components of ACAP (acquisition, assimilation, exploitation, and transformation) were not reproduced by the EFA, the items of F1 and F2 were satisfactorily representative or reflective of ACAP (approximately 67% coverage was achieved). This result is consistent with that of Kohtamäki et al. (2019).

3.6.4.7. Organisational Identity

The structure of the construct was determined using EFA and confirmed with CFA, from which convergent or divergent validity and reliability were also determined.

Exploratory Factor Analysis

EFA results are shown in Table 17.

Table 17:*Rotated Component Matrix for Organisational Identity*

Scale item	Components		Cumulative Contribution to Total Variance
	F1	F2	
OI_ACAP3	.880		54.14%
OI_ACAP1	.864		
OI_BC3	.830		
OI_BC1	.794		
OI_ACAP2		.953	79.67%
OI_BC2		.951	

Note: OI_ACAP represents the moderating relationship between OI and ACAP. Similarly, OI_BC represents the moderating relationship between OI and BC. F1 represents the "what are we?" and "what are becoming?" lenses of OI. F2 represents the "what are we no longer?" lens of OI.

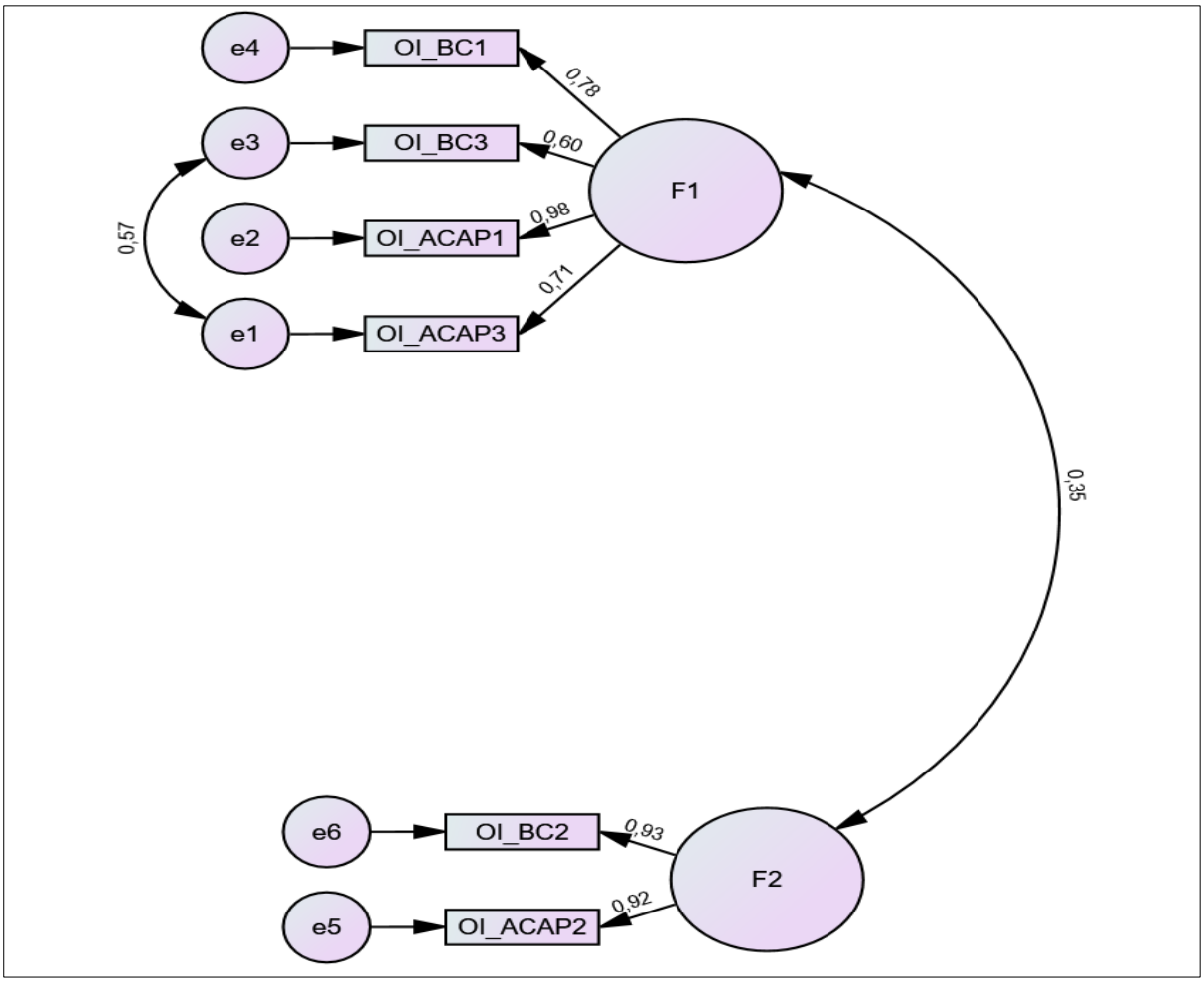
The Kaiser-Meyer-Olkin measure of sampling adequacy was .70, which is above the commonly recommended value of .60 and the Bartlett's test of sphericity was significant at p-value < 0.001. Using both the scree plot and eigenvalues >1 to determine the underlying components F1 and F2 respectively, the analysis yielded two components explaining a cumulative contribution to total variance in the data of 79,67% (F1 at 54,14% and F2 at 23,53% respectively) after rotation. The outcome of the EFA suggested that F1 represented the "who are we as a firm?" and "who we want to become as a firm?" lenses of OI and F2

represented the “what are we no longer?” lens of OI. These results suggest that OI as postulated in this study, is a two-dimensional construct. The result suggests that there is no difference between the “who are we as a firm” which is a reflection on the current state of a firm and “who do we want to become”, which is a reflection on the desired state of a firm.

Following the confirmation of the structure, the CFA model shown in Figure 7 with the accompanying model fit indices in Table 18 were determined.

Confirmatory Factor Analysis

Figure 7: CFA factor structure for Organisational Identity



Note: F1 represents the “who we are as a firm?” and “who do we want to become as a firm?” lenses of OI. F2 represents the “what are we no longer?” lens of OI.

Table 18 below shows the model fit indices for the organisational identity model shown in Figure 7.

Table 18: *Model Fit Indices for Organisational Identity*

Model index	Description	Acceptable fit value	Actual fit value
χ^2	Chi-squared	As insignificant as possible	1,422
χ^2/df	Degrees of freedom	<=3	0,203
RMSEA	Root mean square error of approximation	<=0.08	0,000
IFI	Incremental fit index	>=0.9	1,012
TLI	Tucker-Lewis index	>=0.9	1,026
CFI	Comparative fit index	>=0.9	1,000
SRMS	Standard root mean square residual	<=0.10	.0072

The CFA results shown in Table 18, indicated a good model fit χ^2 =1,422, χ^2/df =0,203, RMSEA =0,000, IFI =1,012 , TLI =1,026 , CFA =1,000 and SRMS =0,0072.

Table 19 below, shows the convergent validity and reliability indicators derived from the standardised regression weights and correlations of the scale items shown in Figure 7.

Table 19:*Construct Reliability and Validity for Organisational Identity*

Scale Item	Standardised Regression Weight	Component	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach Alpha	Inter-rater
OI_ACAP3	0,708					
OI_ACAP1	0,976	F1	0.60	0,86	0,88	
OI_BC3	0,6					
OI_BC1	0,778					
OI_ACAP2	0,923	F2	0.86	0,92	0,92	
OI_BC2	0,93					
Average			0.73	0.89	0.90	0.73

Note: these results cannot be compared with any scale due to the absence of similar scale.

The AVE, CR, inter-rater reliability, and Cronbach's alpha were acceptable. The average AVE is 0.73, average CR 0.89, average Cronbach is 0.80 and average inter-rater reliability is 0.73. These suggest the presence of convergent validity, that participants agree that these two components are reflective of ACAP, and that the respective components are reflective of Organisational identity. The square root of the average AVE is 0.85. The obtained correlation between F1 and F2 shown in

Figure 7 is 0,35. This is above the stated correlation value of 0,35, which implies that the two factors are divergent. To further confirm an ASV as recommended by Fornell and Larcker (1981) was calculated and was found to be 0.12 , which is less than the average AVE, thus confirming divergent validity. This implies that these two components measure

both contribute to organisational identity. This makes this instrument formative. However, due to the objectives of the current study, both reflective and formative models could be operationalised as composite constructs. Therefore, this result did not change the objective of the current study in respect of the operationalisation of this construct.

3.6.4.8. Implications of EFA and CFA on Constructs and Hypotheses

The inter-rater reliability results suggest that participants agreed on what these instruments represented and measured. The high internal consistency and CR indicated that the measurement items of the respective constructs reflected these constructs. Both the EFA and CFA results suggest that for purposes of this study, all the constructs that were analysed above have not lost their essence i.e., they could be used to measure or approximate what they were meant to approximate. Consequently, the postulated hypotheses remained unchanged.

3.7. ETHICAL CONSIDERATIONS

This research adhered to the strict guidelines provided by scholars (Bell & Bryman, 2007; Saunders et al., 2009a; Stanley, Sieber, & Melton, 1987): Participation in this study was voluntary and anonymous. The researcher obtained consent of participants. Before such consent was requested, participants were provided with an explanatory brief. Research instruments did not contain any offensive or discriminatory language. None of the well-established research instruments that were used were altered to measure what they were not designed to measure. The reliability and validity of all instruments were determined using rigorous statistical techniques prior to hypothesis testing. The input of participants was not altered in anyway. Following the Protection of Information Act (POPI Act) of the Republic of South Africa, the privacy and anonymity of participants was preserved throughout the research. The outcomes of the study will be made public to the South African and construction materials sector at large. However, following the Company Competitions Act of the Republic of South Africa, these outcomes will not mention specific firms or managers. This study adhered to strict source referencing norms using the APA system. The analysis and discussions from the data collected during this study was objective throughout. This objectivity was ensured the quantitative techniques and methods that were employed in the study. Prior to the commencement of the research, ethical clearance was obtained from the University. Ethical clearance was applied for using the University's electronic portal. Prior to receiving clearance from the University, a corrected research proposal and relevant application forms were submitted via the same portal to the research office. The ethical clearance certificate was issued under the protocol number H21/08/09 and is attached hereto in Appendix C.

3.8. CONCLUSION

In this chapter the epistemological and ontological underpinnings of the current study were defined. Consistent with this philosophical position, a quantitative methodology has been chosen, and due to the correlational nature of the study, access to data and contextual appropriateness, a descriptive research design as well as a retrospective cross-sectional and longitudinal approach were selected.

The results obtained from applying this methodology are presented in the next chapter.

CHAPTER 4: PRESENTATION OF RESULTS

4.1. INTRODUCTION

The results of the current study are presented in this chapter. The chapter is structured as follows: section 4.2. sample demographics and characteristics, 4.3 response rate, 4.4. correlation and collinearity diagnostics and 4.5. hypothesis testing. Section 4.4.is ordered by hypothesis.

4.2. SAMPLE DEMOGRAPHIC CHARACTERISTICS

Descriptive statistics pertaining to the sample demographics and characteristics are shown in Table 20.

Table 20: *Sample Characteristics*

Demographic	Quantity	Percentage
Firm Size (employees)		
0 to 10	20	16%
10 to 20	9	7%
20 to 30	3	2%
30 to 40	2	2%
above 40	92	73%
Total	**126**	**100%**
Firm Age (years)		
0 to 10	15	12%
10 to 20	29	23%
20 to 30	29	23%
30 to 40	12	10%
above 40	41	33%
Total	**126**	**100%**
Total Experience in Top Management (years)		
0 to 10	15	12%
10 to 20	30	24%
20 to 30	29	23%
30 to 40	18	14%
above 40	34	27%
Total	**126**	**100%**
Total Work Experience in Sector(years)		
0 to 10	9	7%
10 to 20	35	28%
20 to 30	41	33%
30 to 40	23	18%
above 40	18	14%
Total	**126**	**100%**
Total Work Experience (years)		
0 to 10	4	3%
10 to 20	32	25%
20 to 30	43	34%
30 to 40	29	23%
above 40	18	14%
Total	**126**	**100%**
Highest Qualification		
Pre-Tertiary	9	7%
National Diploma	29	23%
Bachelors	42	33%
Master's	45	36%
Doctorate	1	1%
Total	**126**	**100%**

Table *20*, shows with certainty that 88% of participants had experience in top management for a period of over 10 years and that the remaining 12% had top management experience of less than or equal 10 years, but still within the period in question. However, having experience less than or equal 10 years does not suggest that these participants were irrelevant to the study. Instead, their experience might not have covered the entire decade in

question, but their insight was still relevant to the study, because they might have been involved at other levels in their respective firms. This argument is supported by the total work experience (97% above 10 years) and total work experience in sector characteristics (93% above 10 years), respectively. Insofar as the educational level characteristics is concerned, 93% of participants had more than pre-tertiary education. In terms of firm age and using the same argument as for the “experience in top management” characteristics, it could be concluded that most firms (88%) were with certainty well established during the period in question.

In the Republic of South Africa, firms are differentiated by size. The main categories are: micro (0-10 employees), small (11-50), medium (51 -250) and large (above 250)(Zulu, 2019). Table 20 confirms that all these categories were covered by this study. Based on these findings, the following could be concluded: (a) the correct type of participant was sampled i.e., strategic decision-makers whose insight is relevant to make inferences about the EO vs. sustainable financial performance relationship that is under investigation; (b) representatives of relevant firms were investigated; and (c) the study covers a variety of firms and therefore generalises the above-mentioned studies.

4.3. RESPONSE RATE

A hundred and twenty-six (126) responses were received out of the two hundred and forty (240) that were administered. Dividing this 126 by the 240 yielded a response rate of 53 percent. A recent meta-analytical study on online surveys showed that the average response rate for such surveys was 44.1% (Wu, Zhao, & Fils-Aime, 2022). This study also showed that sending an online survey to more participants did not generate a higher response rate. Instead, the study showed that sending surveys to a clearly defined and refined population positively impacted the online survey response rate. In addition, the study showed that pre-contacting potential participants, and using phone calls to remind participants about the online survey could also yield a higher response rate. This study achieved a response rate of 53 percent. This is greater than the average reported in the meta-analytical study mentioned above. As was demonstrated in Chapter 3, in addition to WhatsApp messenger and LinkedIn platforms, this study used exactly the three online survey response rate success factors mentioned above. Therefore, this study validates the meta-analytical study of Wu et al. (2022). Furthermore, previous EO-As-Experimentation studies have yielded a response rate of between 18.64% and 62.8% (Gali, 2018; Revilla et al., 2016; Tang et al., 2008; Yoon & Solomon, 2017). This translates to an average response rate of 40.74 percent. Comparing

this average value to the response rate achieved in this study yet again suggests that this study's response rate aligns with other studies of its kind. All research instruments were completed. This was made possible by conditioning google forms such that no survey could be submitted if any of the questions were not answered.

4.4. CORRELATIONS AND COLLINEARITY DIAGNOSTICS

The correlations between the variables are shown in Table 21.

Table 21: *Mean values, standard deviations and correlations among the constructs and control variables.*

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Sustainable Financial Performance	2,97	1,12	1,00														
2	Innovativeness	4,44	1,44	0,16	1,00													
3	Proactiveness	4,79	1,38	.369**	.474**	1,00												
4	Risk-taking	4,26	1,26	.247**	.540**	.408**	1,00											
5	Entrepreneurial Orientation	4,49	1,44	.316**	.825**	.752**	.837**	1,00										
6	Organisational Identity	3,53	1,25	.373**	.392**	.329**	.458**	.493**	1,00									
7	Environmental Hostility	4,92	1,45	-.215*	-.190*	-.344**	-0,10	-.253**	-0,15	1,00								
8	Bricolage Capability	3,80	1,01	.278**	.330**	.207*	.431**	.411**	.551**	-0,08	1,00							
9	Absorptive Capacity	4,57	1,85	.414**	.452**	.418**	.421**	.533**	.634**	-0,16	.547**	1,00						
10	Firm Size	4,09	1,57	0,09	0,13	0,10	0,04	0,11	0,06	-0,07	-.191*	-0,01	1,00					
11	Firm Age	3,27	1,43	0,01	0,09	0,04	-0,10	0,00	0,03	.204*	-.245**	-0,11	.529**	1,00				
12	Total Experience in Sector	3,04	1,15	.209*	0,12	0,17	0,04	0,13	0,09	.255**	0,10	.252**	0,17	.347**	1,00			
13	Total Work Experience	3,19	1,07	0,11	0,15	0,03	0,08	0,10	0,06	.254**	0,10	.194*	0,12	.282**	.814**	1,00		
14	Total Work Experience in Top Management	3,21	1,38	0,08	0,06	0,06	0,12	0,10	.200*	0,13	.241**	.316**	0,07	0,15	.466**	.436**	1,00	
15	Qualification	3,00	0,95	-0,02	0,05	-0,09	0,06	0,01	.187*	0,06	0,07	0,05	0,15	.217*	-0,14	-0,11	-0,02	1,00

Notes: ** Correlation is significant at the p <0.01 level (2-tailed) and * Correlation is significant at the p< 0.05 level (2-tailed). SD stands for standard deviation.

Mean centered constructs are used to report correlations.

Sustainable financial performance was not correlated to innovativeness *r* (12) = .16, *p* >.05. However, it was weakly to moderately correlated positively to EO *r* (15) = .32, *p* < .01, proactiveness *r* (13) = .37, *p* < .01, risk-taking *r*(14) = .25, *p* < .01, *r*(53), organisational identity *r* (16) = .37, *p* < .01, *r*(53), bricolage capability *r* (18) = .28, *p* < .01 and absorptive capacity *r* (19) = .41, *p* < .01, respectively. Sustainable financial performance and environmental hostility were weakly and negatively correlated r (17) = -.22, *p* < .05.

EO was strongly and positively correlated to innovativeness, proactiveness and risk-taking with *r* (52) = .83, *p* < .01, *r* (53) = .76, *p* < .01 and *r* (54) = .83, *p* < .01, respectively. This was expected since EO was derived from these respective constructs. Furthermore, these high correlations were not viewed as a potential source of multicollinearity, because the constructs concerned were not used in the same model.

Table 22 shows the multicollinearity diagnostics between the independent variables.

Table 22: *Multicollinearity Diagnostics*

	Collinearity Statistics	
	Tolerance	VIF
Innovativeness	0,244	4,100
Proactiveness	0,283	3,536
Entrepreneurial Orientation	0,124	8,047
Organisational Identity	0,464	2,156
Environmental Hostility	0,718	1,394
Bricolage Capability	0,525	1,906
Absorptive Capacity	0,421	2,373

The results in Table 22 suggest the absence of multicollinearity between independent variables because the criteria VIF < 10 and Tolerance > 0,2 is satisfied.

4.5. HYPOTHESIS TESTING

Hypotheses were split into those that investigate the environmental hostility-bricolage capability-organisational identity and those that investigate the environmental hostility-absorptive capacity-organisational identity interactions on the EO-sustainable financial performance relationship, respectively. Due to the multidimensional operationalisation of the EO construct, the relationship between each of the three sub-dimensions of EO and sustainable financial performance are also presented under each of the hypotheses. Furthermore, to support each of these hypotheses, results pertaining to the EO-sustainable

financial Performance relationship where sustainable financial performance was measured from secondary data are also presented under each of these hypotheses.

4.5.1. EO-Sustainable Financial Performance with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effect

This category consists of the following hypotheses:

- ✓ ***H1:*** *The EO-sustainable financial performance relationship of the South African construction and materials sector exhibited a nonlinear(curvilinear) behaviour during the 2008-2019 period*.

- ✓ ***H2:*** *The EO-sustainable financial performance relationship of the South African construction and materials sector was negatively moderated by its hostile environment during the 2008-2019 period.*

- ✓ ***H3:*** *The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its bricolage capability in the hostile environment that prevailed during the 2008-2019 period.*

- ✓ ***H5(a):*** *In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its bricolage capability. Additionally, their interaction had a negative impact on its EO-sustainable financial performance relationship.*

The Analysis of Variance and Hierarchical Regression Analyses results for these hypotheses are shown in Table 23 and Table 24, respectively. Post hoc test results i.e. the effect sizes and Tukey HSD critical values are shown in Table 23. Results from both these tables are used to make inferences about the respective models.

Table 23: *Analysis of Variance results for hypotheses H1, H2, H3 and H5(a).*

Model	Hypothesis		Sum of Squares	df	Mean Square	F	p	ω²	Turkey HSD
1		Regression	8,69	6,00	1,45	1,47	.193	0.02	
		Residual	116,98	119,00	0,98				
		Total	125,67	125,00					
2		Regression	32,90	11,00	2,99	3,67	<,001	0.19	
		Residual	92,77	114,00	0,81				
		Total	125,67	125,00					
3	**H1**	Regression	36,89	12,00	3,07	3,91	<,001	0.22	0.38
		Residual	88,78	113,00	0,79				
		Total	125,67	125,00					
4	**H2**	Regression	39,36	14,00	2,81	3,62	<,001	0.23	0.39
		Residual	86,31	111,00	0,78				
		Total	125,67	125,00					
5	**H3**	Regression	40,72	16,00	2,54	3,27	<,001	0.22	0.40
		Residual	84,95	109,00	0,78				
		Total	125,67	125,00					
6	**H5(a)**	Regression	41,08	18,00	2,28	2,89	<,001	0.21	0.40
		Residual	84,59	107,00	0,79				
		Total	125,67	125,00					

Notes: Model 1 and Model 2 represent the results for the control variables and direct or main effects, respectively.

Table 24: *Hierarchical Regression Analyses for hypotheses H1, H2, H3 and H5(a).*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Beta	**p**	**Beta**	**p**	**Beta**	**p**	**Beta**	**p**	**Beta**	**p**	**Beta**	**p**	**Beta**	**p**
Dependent Variable	Sustainable Financial Performance													
Control Variables														
Firm Age	0,12	0,25	0,06	0,55	0,06	0,55	0,05	0,61	0,04	0,66	0,05	0,60	0,06	0,58
Firm Size	-0,14	0,21	0,00	0,97	0,00	0,99	0,00	0,97	0,00	0,99	0,00	0,99	-0,01	0,91
Total Experience in Sector	0,38	0,02*	0,30	0,05*	0,26	0,08	0,28	0,06	0,27	0,07	0,27	0,08	0,28	0,07
Total Work Experience	-0,17	0,28	-0,11	0,42	-0,07	0,64	-0,07	0,61	-0,06	0,67	-0,05	0,72	-0,06	0,65
Total Work Experience in TMT	-0,01	0,95	-0,11	0,26	-0,11	0,24	-0,10	0,30	-0,09	0,33	-0,09	0,33	-0,13	0,18
Qualification	0,03	0,79	-0,04	0,65	0,01	0,89	0,02	0,82	0,03	0,74	0,03	0,77	0,00	0,98
Main/Direct Effects														
Entrepreneurial Orientation (EO)			0,03	0,78	0,01	0,94	-0,05	0,65	-0,04	0,68	-0,06	0,59	-0,02	0,89
Organisational Identity (OI)			0,16	0,17	0,12	0,31	0,13	0,27	0,13	0,30	0,14	0,28	0,06	0,69
Environmental Hostility (ENV)			-0,17	0,06	-0,22	0,02*	-0,13	0,20	-0,14	0,20	-0,14	0,23	-0,21	0,03
Bricolage Capability (BC)			0,07	0,53	0,11	0,34	0,08	0,47	0,11	0,33	0,12	0,30	0,20	0,18
Absorptive Capacity (ACAP)			0,22	0,08	0,22	0,07	0,21	0,08	0,22	0,08	0,22	0,08	0,20	0,11
Non-linear Effects														
EO^2					-0,20	0,03*	-0,24	0,02*	-0,25	0,02*	-0,23	0,04*	-0,18	0,17
Moderating Effects														
ENVxEO							0,01	0,92	-0,02	0,86	-0,03	0,80		
$ENVxEO^2$							-0,20	0,08	-0,25	0,15	-0,25	0,17		
BCXEOxENV									0,16	0,23	0,20	0,25		
$BCXEO^2XENV$									-0,07	0,65	-0,13	0,54		
BCXEOxENVXOI											0,13	0,52		
$BCXEO^2xENVXOI$											-0,09	0,67		
Indirect Effects														
BCxEO													0,07	0,56
$BCxEO^2$													-0,19	0,34
BCxOIxEO													0,00	1,00
$BCxOIxEO^2$													-0,14	0,41

EOXOI							0,12	0,44
EO^2XOI							0,22	0,28
R square (R^2)	0,07	0,26	0,29	0,31	0,32	0,33	0,31	
Adjusted R squared (R^2)	0,02	0,19	0,22	0,23	0,22	0,21	0,19	
R squared change	0,07	0,19	0,03	0,02	0,01	0,00	0,02	
F Change	1,47	5,95	5,09	1,59	0,87	0,23	0,41	
Sig F Change	0,19	0,00	0,03	0,21	0,42	0,80	0,87	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. Indirect effects are shown in Model 7.

Model 1 tests the relationship between sustainable financial performance and control variables. Model 2 tests the relationship between sustainable financial performance and the main or direct effects i.e. EO, environmental hostility, bricolage capability, organisational identity, and absorptive capacity, respectively. Model 3 tests the relationship between EO and sustainable financial performance (hypothesis **H1**) in the context of the direct effects. Model 4 tests the moderating effects of environmental hostility the EO-sustainable financial performance relationship (hypothesis **H2**). Model 5 tests the moderating effects of the bricolage capability on the EO-sustainable financial performance relationship (hypothesis **H3**) in the context of environmental hostility. Model 6 tests the moderating effects of the organisational identity on bricolage capability in the context of environmental hostility and the extent to which their interaction moderate the EO-sustainable financial performance relationship (hypothesis **H5(a)**). Model 7 tests the indirect effects of bricolage capability, organisational identity as well as their interaction on EO and EO^2, respectively.

The control variables were found not to predict sustainable financial performance statistically significantly, F (6, 119) = 1.47, p = .193. The control variables explain 7% [R^2 =0.07] of the total variance and have a small effect [ω^2 = 0.02] on sustainable financial performance. This implies that control variables are not material in making causal links between the dependent and independent variables.

The direct effects were found to predict sustainable financial performance statistically significantly, F (11, 114) = 3.67, p < .001. The direct effect variables explain 19% [R^2 =0.19] of the total variation and have large effect [ω^2 = 0,19] on sustainable financial performance. However, none of the individual direct effects were found to predict sustainable financial performance statistically significantly.

The results for the respective hypotheses are presented henceforth.

4.5.1.1. *H1:* The EO-sustainable financial performance relationship of the South African construction and materials sector exhibited a non-linear (curvilinear) behaviour during the 2008-2019 period.

This hypothesis investigated whether the relationship between the EO and sustainable financial performance of the South African construction and material sector exhibited a nonlinear behaviour. The ANOVA results suggest that the direct and non-linear effects statistically significantly predicted sustainable financial performance, F (12, 113) = 3.94, $p <$ .001. Furthermore, they explained 26% [R^2 =0.26] of the total variance in sustainable financial performance and prove to have a large effect [ω^2 = 0.22] on sustainable financial performance.

The hierarchical regression analysis shows that environmental hostility directly and negatively predicted sustainable financial performance (*beta = -0.22 and p =0.03*). Furthermore, the results show that EO^2 statistically significantly predicted sustainable financial performance (*beta=-0.20 and p= 0.03*). Consequently, hypothesis **H1** is supported.

The Tukey HSD test indicate that the mean difference (Appendix Table 17) between EO^2 and the other predictor variables is statistically significant i.e. (*MD* =0.9) > 0.38 the critical Tukey value shown in Table 23. The 95% confidence interval (CI) of the respective pairs are: EO^2-EO 0.9±0.2, EO^2-OI 0.9±0.2, EO^2-BC 0.9±0.98, EO^2-ENV 0.9±1.93 and EO^2-ACAP 0.9±0.28. This supports the regression analysis. Furthermore, it clarifies which predictor variable contributed to the significance and effect size that was established in the ANOVA.

Considering the statistically significant and non-significant direct and non-linear effects and formulating an appropriate regression equation:

$-0.20xEO^2-0.01xEO+0.12xOI+0.11xBC+0.22xACAP-0.22xENV$ from which Figure 8 is produced.

Figure 8: *EO-Sustainable Financial Performance Relationship*

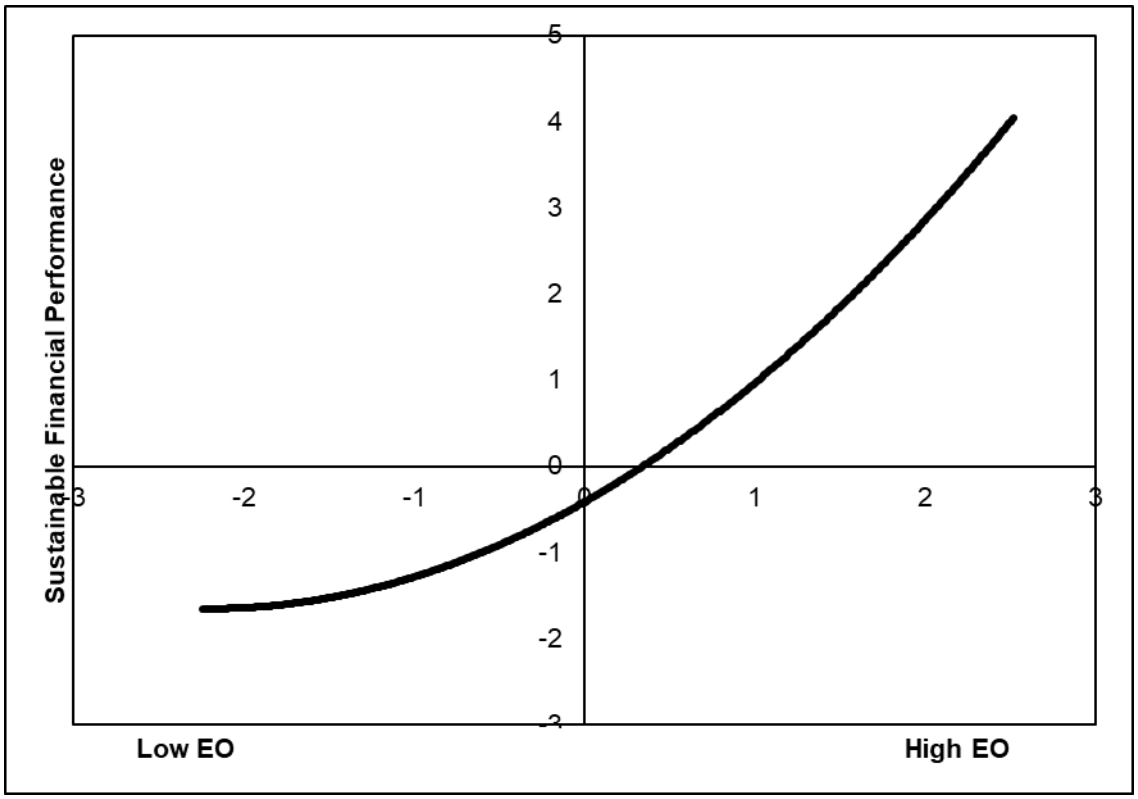


Figure 8 shows that the EO-Sustainable Financial Performance relationship was J-shaped.

In the following sections, the contribution of the respective sub-dimensions of EO to hypothesis H1 is presented. ANOVA and Hierarchical Regression Analysis results in Appendix D are used for this purpose.

4.5.1.1.1. Contribution of EO sub-dimensions to Hypothesis H1

(I) Contribution of the Innovativeness-Sustainable Financial Performance Relationship to Hypothesis H1

The ANOVA results in Appendix Table 1 reveal that the direct and nonlinear effects statistically significantly predicted sustainable financial performance, F (12, 113) = 4.01, $p < .001$. Furthermore, they explained 30% [R^2 =0,30] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,23] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 2 reveal that environmental hostility directly and negatively predicts sustainable financial performance (*beta* = -0,24 and *p* =0.01). Furthermore, the results also show that absorptive capacity positively and directly statistically significantly predicted sustainable financial performance (*beta*=0.28, *p*=0.02). Lastly, the results show that INNO² statistically significantly predict sustainable financial performance (*beta*=-0.19, and *p*= 0.03). The results show that the innovativeness-sustainable financial performance relationship supports hypothesis H1. Considering the statistically significant and non-significant direct and non-linear effects and formulating an appropriate regression equation:

-0.19xINNO²-0.17xINNO+0.16xOI+0.11xBC+0.28xACAP-0.24xENV, the Innovativeness-Sustainable Financial Performance graph is plotted.

Figure 9:*Innovativeness-Sustainable Financial Performance*

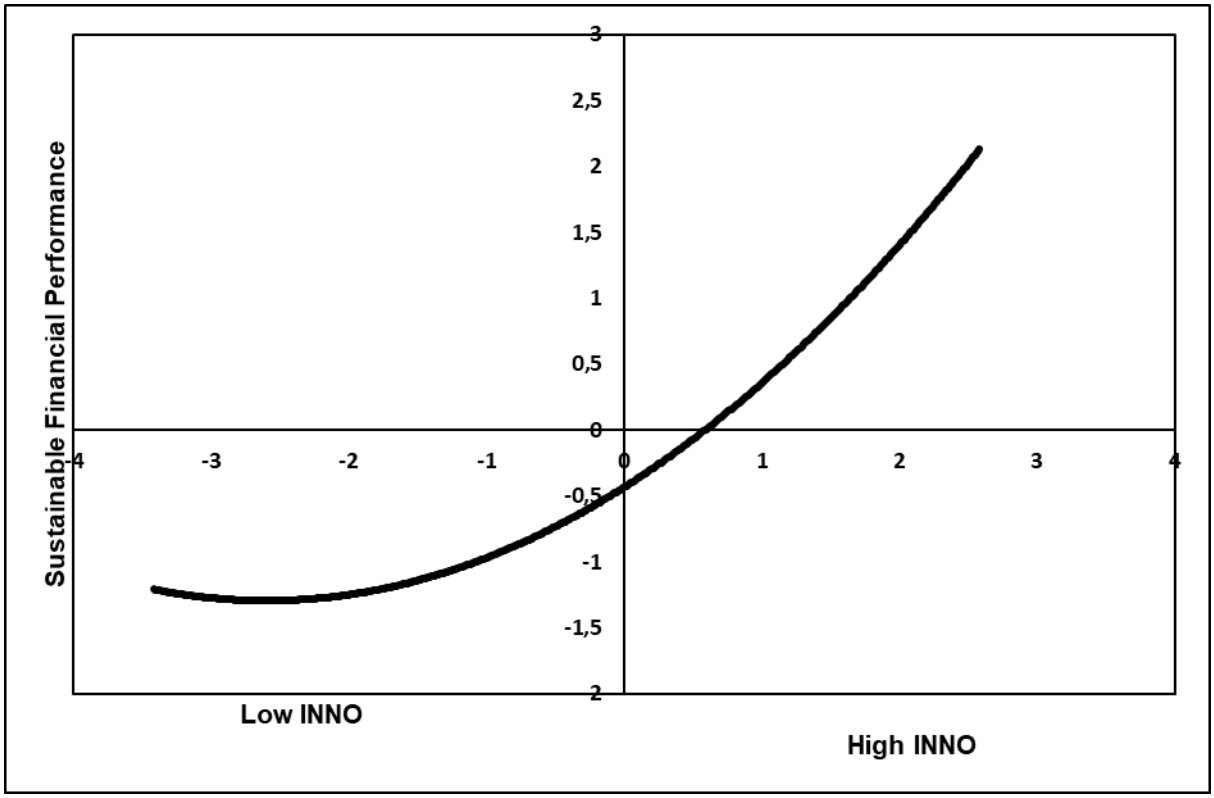


Figure 9:*Innovativeness-Sustainable Financial* Figure 9 shows that the Innovativeness-Sustainable Financial Performance relationship was J-shaped.

(II) Contribution of the Proactiveness-Sustainable Financial Performance Relationship

The ANOVA results in Appendix Table 3 reveal that direct and non-linear effects statistically significantly predicted sustainable financial performance, F (12, 113) = 4.12, p < .001. Furthermore, they explain 30% [R^2 =0,30] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,23] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 4 reveal that only PROCT² statistically significantly predicted sustainable financial performance (beta=-0,18, and p= 0.03). The results show that the proactiveness-sustainable financial performance relationship supports hypothesis H1. Considering the statistically significant and non-direct and non-linear effects and formulating an appropriate regression equation:

-0.19xPROCT² -0.17xPROCT + 0.16xOI + 0.11xBC + 0.28xACAP -0.24xENV, the Proactiveness-Sustainable Financial Performance graph is plotted.

Figure 10:*Proactiveness-Sustainable Financial Performance*

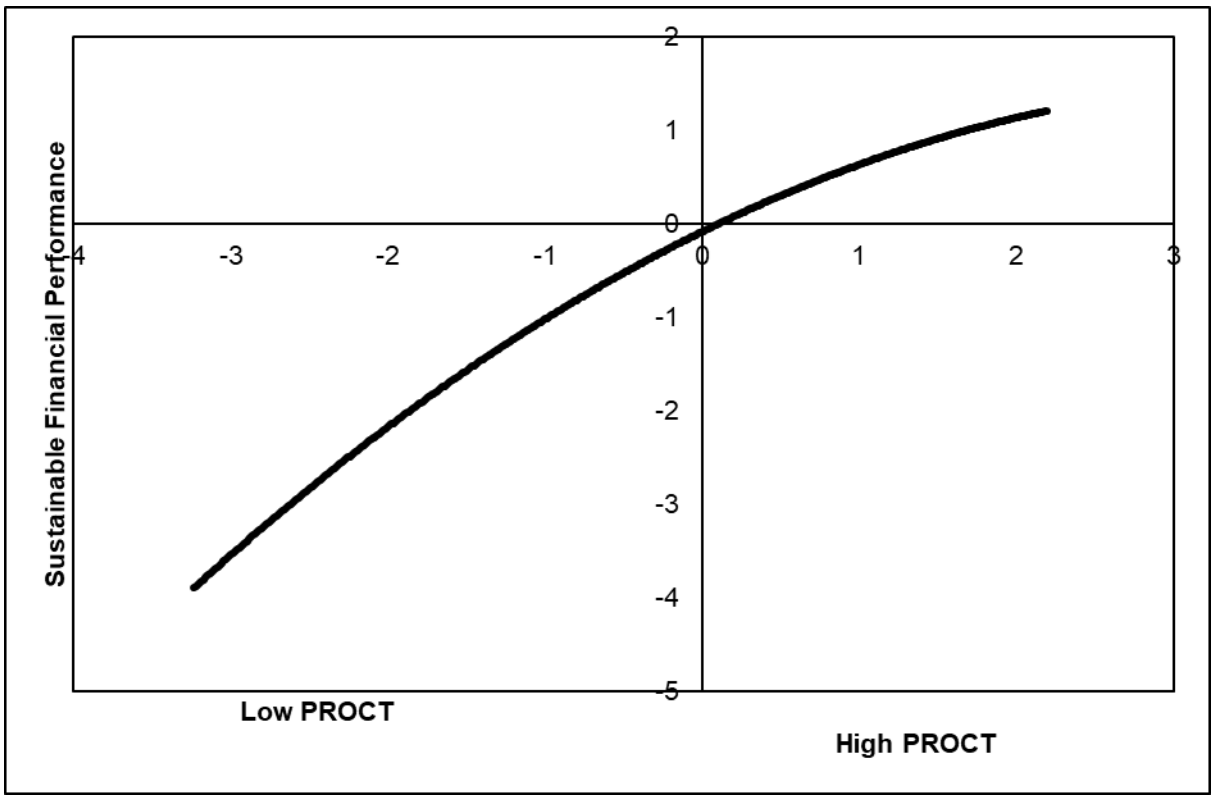


Figure 10 shows that the Proactiveness-Sustainable Financial Performance relationship exhibited positive non-linear (curvilinear) behaviour.

(III) Contribution of the Risk-Taking-Sustainable Financial Performance Relationship

The ANOVA results in Appendix Table 5 reveal that direct and non-linear effects statistically significantly predicted sustainable financial performance, F (12, 113) = 3.81, $p < .001$. Furthermore, they explain 26% [R^2 =0,29] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,21] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 6 reveal that environmental hostility directly and negatively predicts sustainable financial performance (*beta* = -0.21 and p =0,02). Furthermore, the results show that RISK² statistically significantly predicted sustainable financial performance (*beta*=-0.17, and p= 0.05). The results show that the risk-taking-sustainable financial performance relationship supports hypothesis H1. Considering the statistically significant and non-significant direct and nonlinear effects and formulating an appropriate regression equation:

-0.17xRISK² +0.01xRISK+ 0.13xOI + 0.12xBC + 0.21xACAP -0.21xENV, the Risk-Taking-Sustainable Financial Performance graph is plotted.

Figure 11:*Risk-Taking-Sustainable Financial Performance*

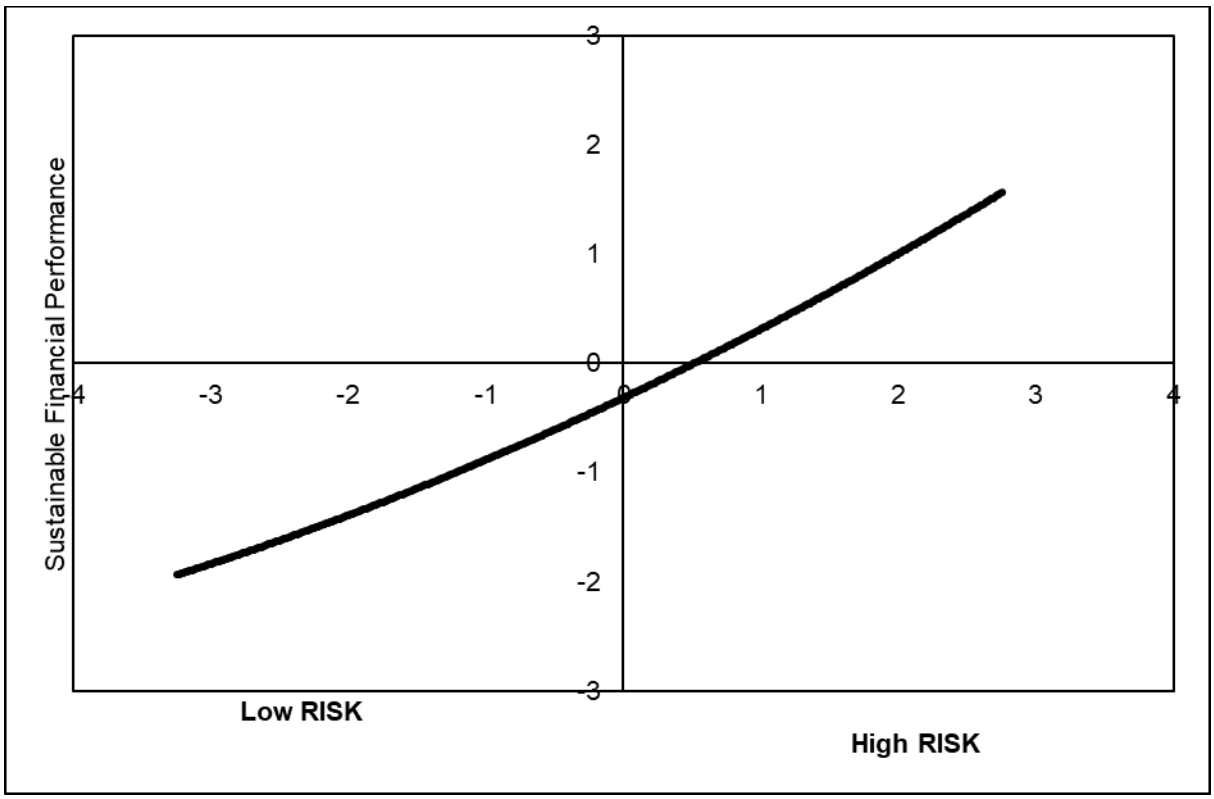


Figure 11 shows that the Risk-Taking-Sustainable Financial Performance relationship exhibited a positive non-linear (curvilinear).

4.5.1.1.2. Testing Hypothesis H1 with Objective Measures of Sustainable Financial Performance

The ANOVA and Hierarchical regression analyses in Appendix F are used for this analysis.

The ANOVA results in Appendix Table 13 reveal that the direct and non-linear effects statistically significantly predicted sustainable financial performance, F (12, 27) = 4.15 p < .001. Furthermore, the independent variables explain 65% [R^2 =0,65] of the total variance in sustainable financial performance and have a very large effect [ω^2 = 0,49] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 14 reveal that EO^2 statistically significantly predicted sustainable financial performance (*beta*=-0,47, and p= 0.01). Consequently, hypothesis **H1** is also supported in this configuration.

4.5.1.1.3. Conclusion on Hypothesis H1

The results reveal that the EO-Sustainable Financial Performance relationship of the South African construction and materials sector was non-linear during the 2008-2019 period.

The results reveal that this relationship was statistically significantly contributed towards by all the respective sub-dimensions of EO.

The results reveal that EO-Sustainable Financial Performance of the South African construction and materials sector, where Sustainable Financial Performance was measured, using secondary data from a significant subset of participants in the sector, was non-linear. This suggests that that subjective and objective measures are equally usable in EO studies. This is consistent with the pioneering study of (Tang et al., 2008) and subsequent meta-analyses (Rauch et al., 2009; Soares & Perin, 2020) and other recent studies (Morić, 2022; Naskar, 2023) on the EO-Firm Performance relationship studies.

4.5.1.2. *H2:* The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its hostile environment during the 2008-2019 period.

This hypothesis investigated whether the EO-Sustainable Financial Performance of the South African construction and material sector was negatively moderated by its hostile environment during the 2008-2019 period. The ANOVA results reveal that the direct, non-linear and moderating effects statistically significantly predicted sustainable financial performance, F (14, 111) = 3.62, $p < .001$. Furthermore, they explain 31% [R^2 =0,31] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,22] on sustainable financial performance.

The hierarchical regression analysis reveals that no direct and moderating effects statistically significantly predicted sustainable financial performance. However, the results show that EO^2 statistically significantly predict sustainable financial performance (*beta*=-0,21, and p= 0.02). Consequently, the hypothesis **H2** is not supported.

The Tukey HSD test indicate that the mean differences (see Appendix Table 17), from EO^2 to the EOxENV (3.52±2.07), and EO^2xENV (3.35±3.87) moderating effects, are statistically significant i.e. 3.52 and 3.35 are greater than 0.39 the critical Tukey value shown in Table 23 than the mean difference between these moderating effects and any other predictor variable and interaction in this model. Therefore, this supports the regression analysis. Furthermore,

it clarifies which predictor variable contributed to the significance and effect size that was established in the ANOVA.

Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

$-0{,}20xEO^2-0.05xEO+0.13xOI+0.08xBC+0{,}21xACAP-0{,}13xENV+0.01xENVxEO-0.20xENVxEO^2$, the EO-Sustainable Financial Performance graph is plotted.

Figure 12:*EO-Sustainable Financial Performance Graph with Environmental Hostility Moderating Effects*

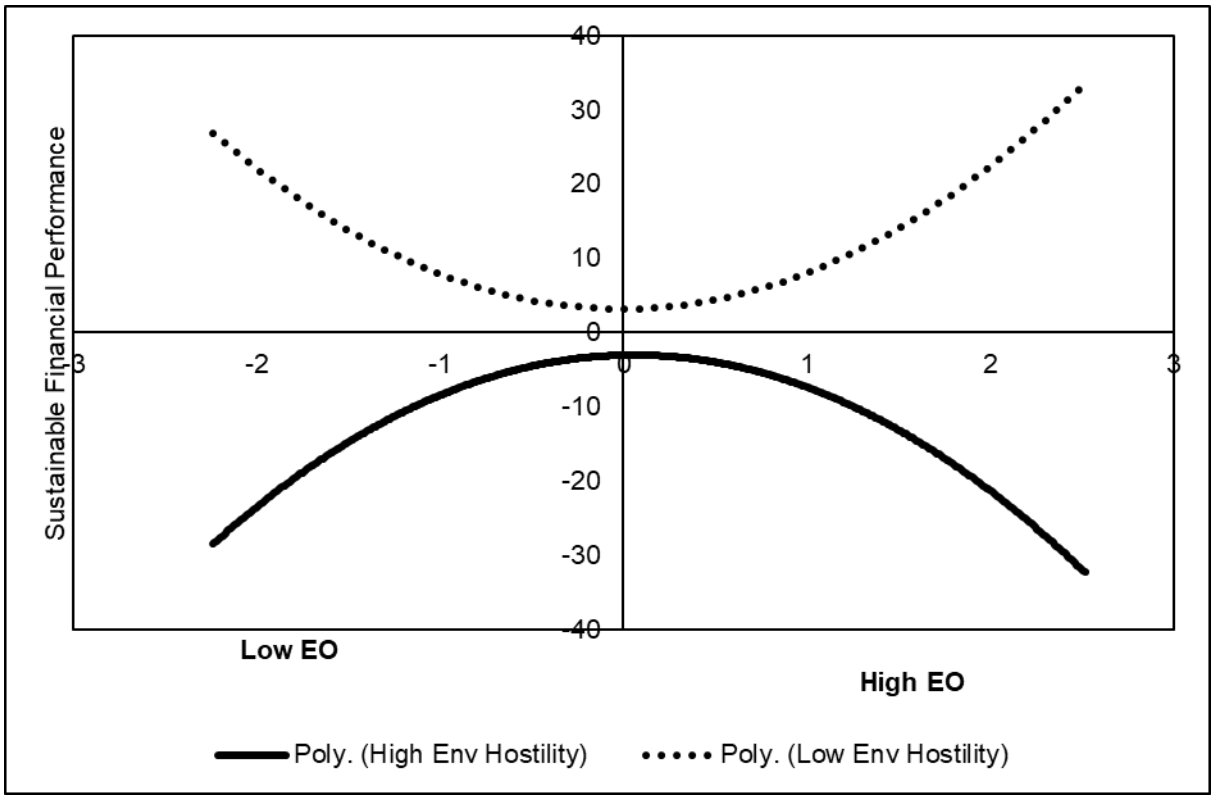


Figure 12 shows that the EO-Sustainable Financial Performance relationship of the South African construction and materials sector was not straightforward, but rather, exhibited U-shaped at low environmental hostility and inversed U-shaped at high environmental hostility.

In the following sections, the contribution of the respective sub-dimensions of EO to hypothesis H2 is presented. ANOVA and Hierarchical Regression Analysis results in Appendix D are used for this purpose.

4.5.1.2.1. Contribution of EO sub-dimensions to Hypothesis H2

(I) Contribution of the Innovativeness – Sustainable Financial Performance Relationship to Hypothesis H2

The ANOVA results in Appendix Table 1 reveal that the direct, non-linear and moderating effects statistically significantly predicted sustainable financial performance, F (14, 111) = 3.76, p < .001. Furthermore, they explain 32% [R^2 =0,32] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,23] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 2 reveal that, except for absorptive capacity (*beta*=0.28, *p*=0.02), innovativeness (*beta*=-0.21, *p*=0.05), and INNO² (*beta*=-0.24, and *p*= 0.01), no other interaction statistically significantly predicts sustainable financial performance. This implies the innovativeness-sustainable financial performance relationship contributes to the overall rejection of hypothesis **H2**.

Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation.

-0.24xINNO²-0.21xINNO+0.19xOI+ 0.07xBC+0.28xACAP-0.16xENV+0.00xENVxINNO-0.19xENVxINNO², the Innovativeness-Sustainable Financial Performance graph is plotted.

Figure 13: *Innovativeness-Sustainable Financial Performance Rerlationship with Environmental Hostility Moderating Effects*

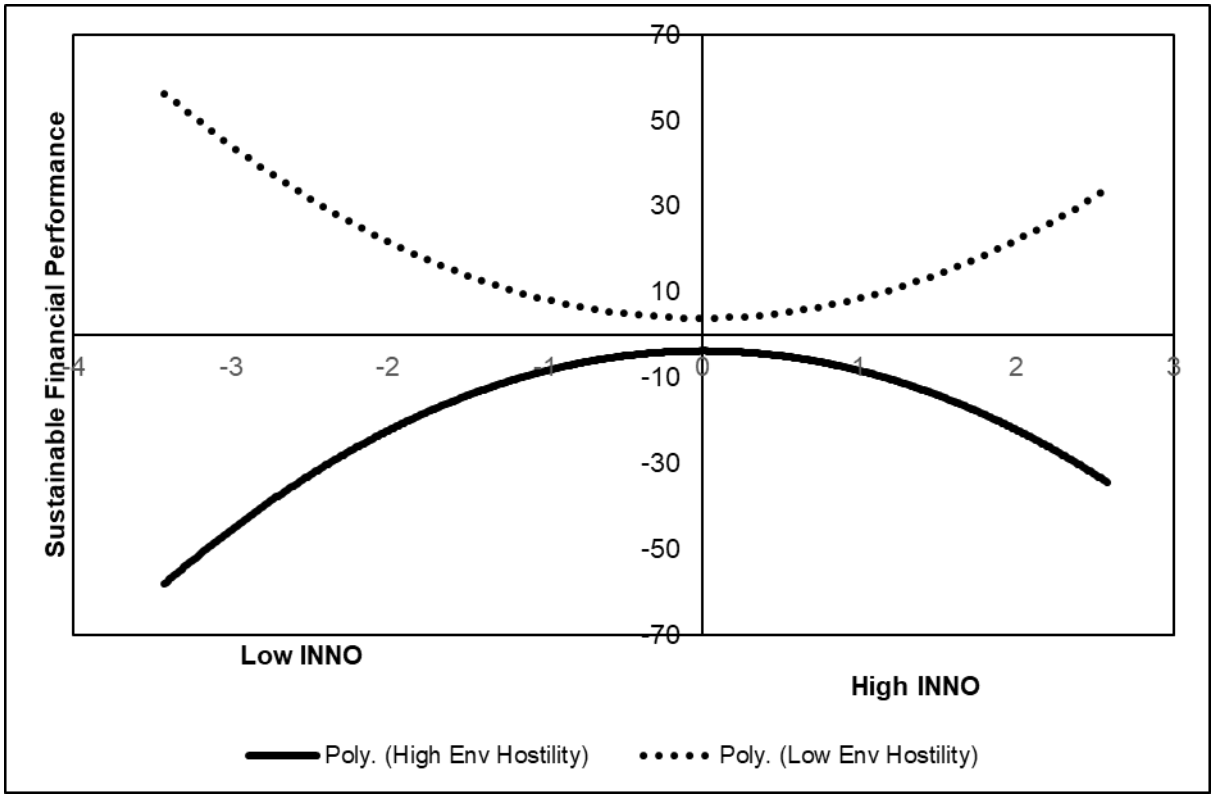


Figure 13 shows that the Innovativeness-Sustainable Financial Performance relationship of the South African construction and materials sector was U-shaped at low environmental hostility and inversed U-shaped at high environmental hostility.

(II) Contribution of the Proactiveness – Sustainable Financial Performance Relationship to Hypothesis H2

The ANOVA results in Appendix Table 3 reveal that the direct, non-linear and moderating effects statistically significantly predict sustainable financial performance, F (14, 111) = 3.68, p < .001. Furthermore, they explain 32% [R^2 =0,32 of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,23] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 4 reveal that except for PROCT² (*beta*=-0.17, and p= 0.03), no other interaction statistically significantly predicted sustainable financial performance. This implies the proactiveness-sustainable financial performance relationship contributes to the overall rejection of hypothesis H2.

Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

$-0.20xPROCT^2+0.02xPROCT+0.12xOI+0.08xBC+0.19xACAP-0.08xENV-0.05xENVxPROCT-0.17xENVxPROCT^2$,

the Proactiveness-Sustainable Financial Performance graph is plotted.

Figure 14*:Proactiveness-Sustainable Financial Performance Graph with Environmental Hostility Moderating Effects*

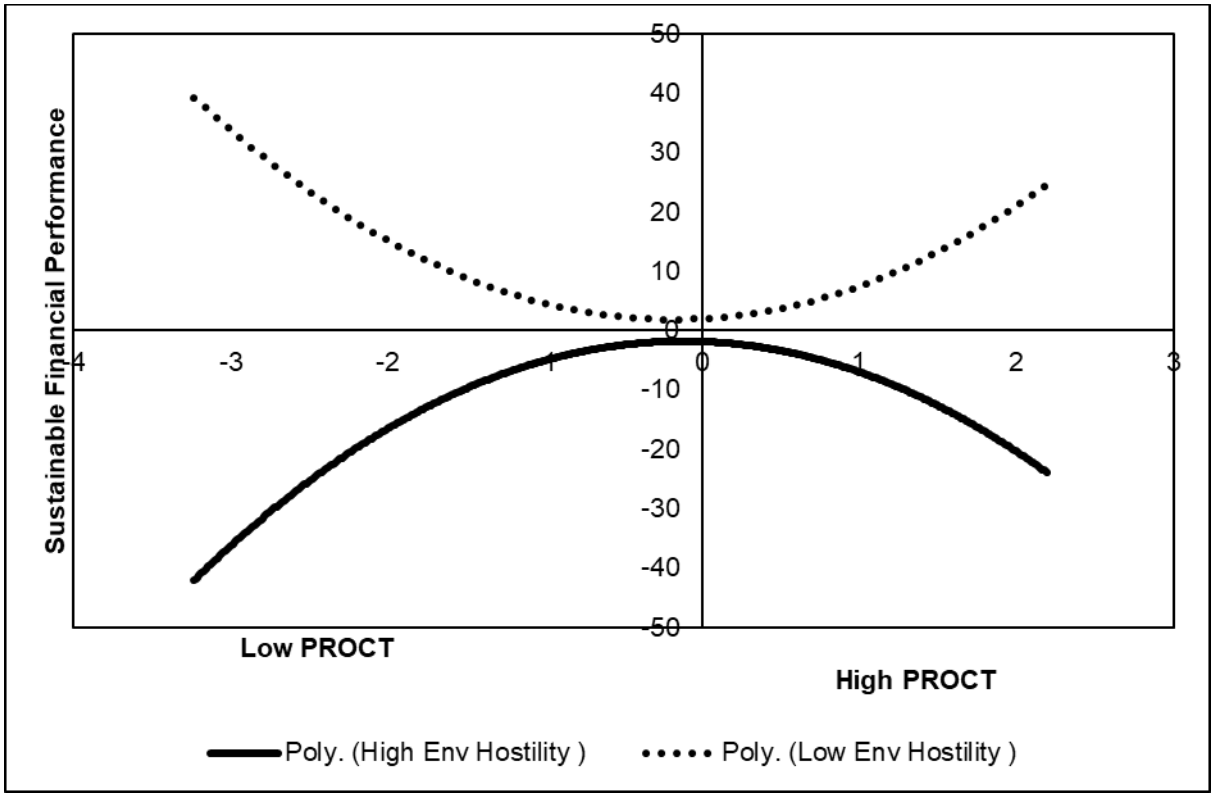


Figure 14 shows that the Proactiveness-Sustainable Financial Performance relationship of the South African construction and materials sector exhibited a U-shaped at low environmental hostility and inversed U-shaped at high environmental hostility.

(III) Contribution of the Risk-Taking – Sustainable Financial Performance Relationship to Hypothesis H2

The ANOVA results in Appendix Table 5 reveal that the direct, non-linear and moderating effects statistically significantly predict sustainable financial performance, F (14, 111) = 3.34, $p < .001$. Furthermore, they explain 30% *[R^2* =0,30 of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,21] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 6 reveal that none of the interactions statistically significantly predicted sustainable financial performance. This implies the risk-sustainable financial performance relationship contributes to the overall rejection of hypothesis H2.

Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

-0.20xRISK²+0.02xRISK+0.12xOI+ 0.08xBC+0.19xACAP-0.08xENV-0.05xENVxRISK-0.17xENVxRISK², the Risk-taking – Sustainable Financial Performance graph is plotted.

***Figure 15**: Risk-Taking-Sustainable Financial Performance Graph with Environmental Hostility Moderating Effects*

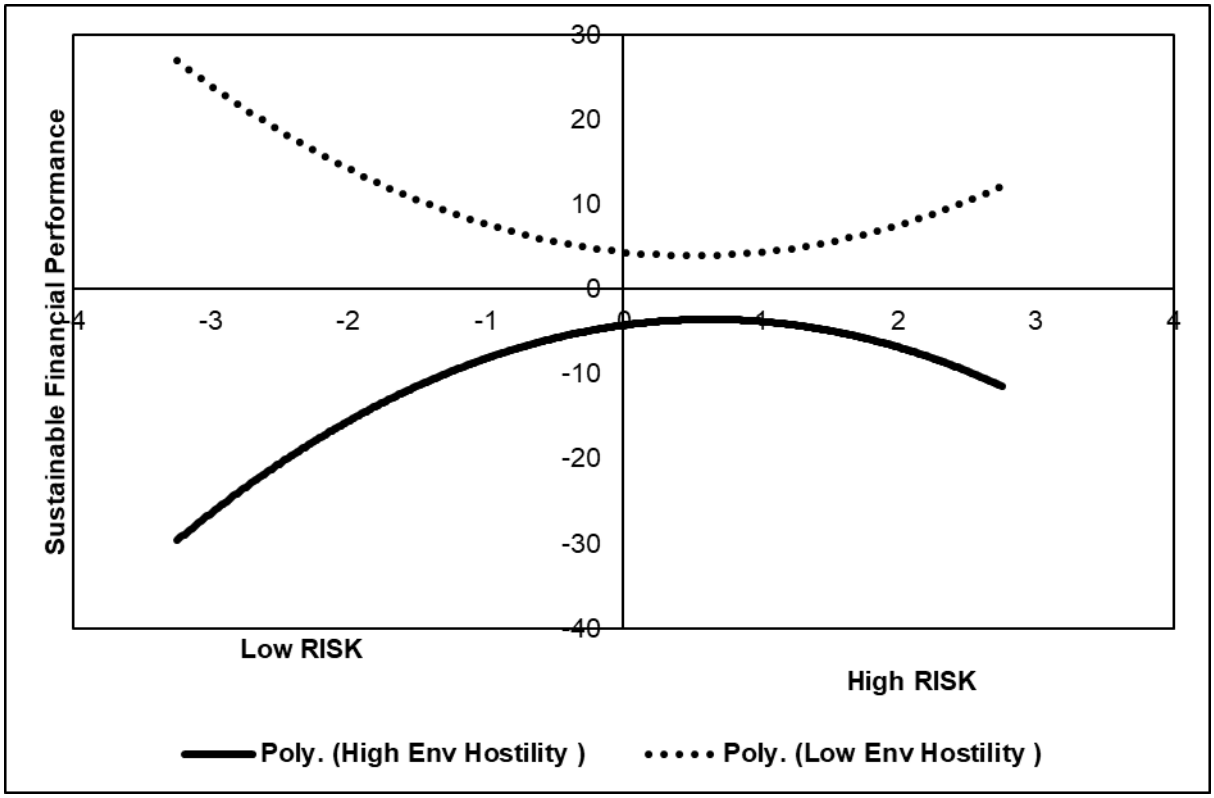


Figure 15 shows that the Risk-taking – Sustainable Financial Performance relationship of the South African construction and materials sector was U-shaped at low environmental hostility and inversed U-shaped at high environmental hostility.

4.5.1.1.2. Testing Hypothesis H2 with Objective Measures of Sustainable Financial Performance

The ANOVA and Hierarchical regression analyses in Appendix F are used for this analysis.

The ANOVA Appendix Table 13 reveal that the direct, non-linear and moderating effects statistically significantly predicted sustainable financial performance, F (14, 25) = 4.29 p < .001. Furthermore, the independent variables explain 71% [R^2 =0,71] of the total variance in sustainable financial performance and have a very large effect [ω^2 = 0,54] on sustainable financial performance.

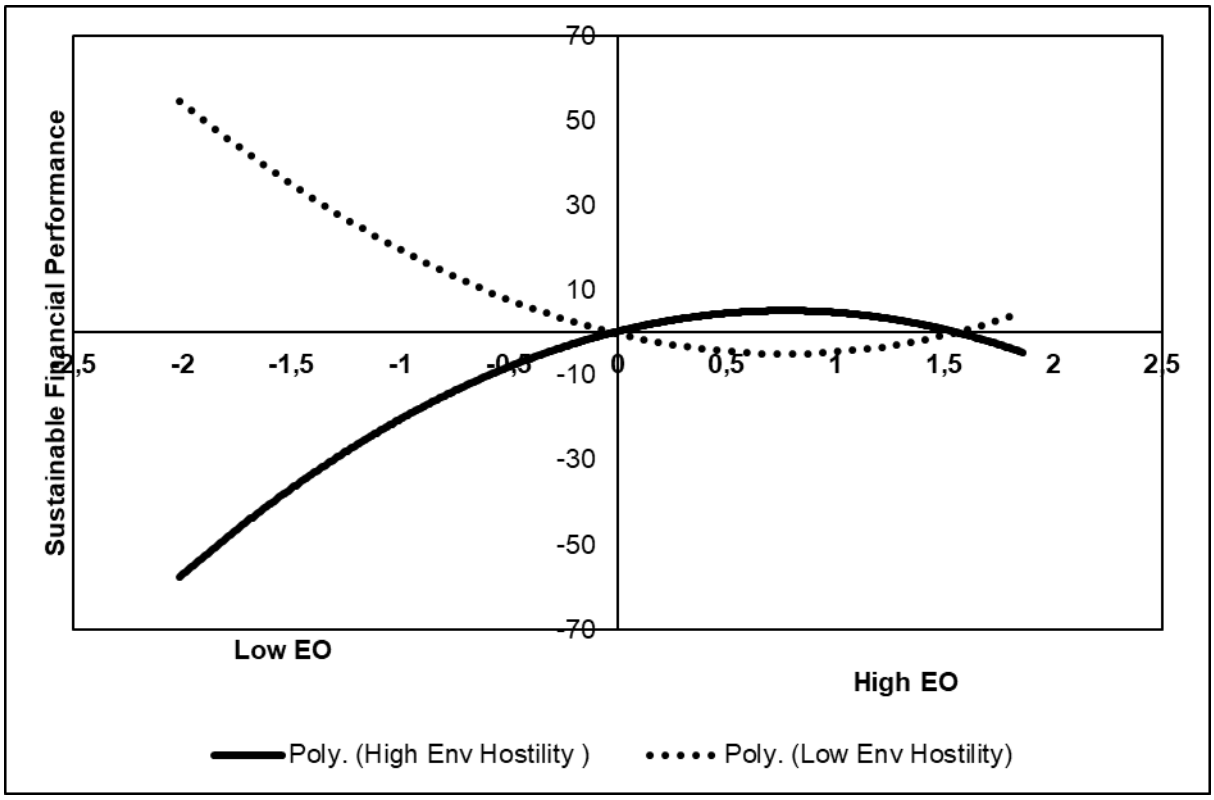
The hierarchical regression analysis in Appendix Table 14 reveal that, except for organisational identity (*beta*=-0.52, and p= 0.02) and ENVxEO (*beta*=0.54, and p= 0.04),

none of the other interactions statistically significantly predicted sustainable financial performance. Consequently, hypothesis **H2** is also rejected in this configuration.

Considering the statistically significant and non-significant direct, non-linear and moderating effects and formulating an appropriate regression equation:

$-0{,}31xEO^2+0.04xEO+0.52xOI-0.37xBC+0{,}25xACAP+0{,}02xENV+0.54xENVxEO-0.34xENVxEO2$, a graph of EO-Sustainable Financial Performance is produced.

Figure 16: *EO-Sustainable Financial Performance Relationship with Environmental Hostility Moderating Effects*



As with the EO–Sustainable Financial Performance relationship in the subjective measurement regime, the moderating effects of environmental hostility are also shown to be nonlinear in this regime. Figure 16 shows that at low environmental hostility, the EO-Sustainable Financial Performance relationship of the South African construction and materials sector exhibited U-shaped behaviour. It also shows that at high environmental hostility, this relationship exhibited an inversed U-shaped behaviour.

Conclusion on Hypothesis H2

The environmental hostility moderating effects on the EO-Sustainable Financial performance relationship of the South African construction and materials sector were non-linear.

The results reveal that this relationship was statistically significantly contributed to by the respective sub-dimensions of EO.
The similarity in results, particularly the graphical evidence (Figure 12 and *Figure 16*) once more reveal that, as with objective measures of constructs, subjective measures are equally usable in EO studies (Morić, 2022; Naskar, 2023; Rauch et al., 2009; Tang et al., 2008).

4.5.1.3. *H3:* The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its bricolage capability in the hostile environment that prevailed during the 2008-2019 period.

This hypothesis investigated whether the EO-sustainable financial performance of the South African construction and material sector was negatively moderated by its bricolage capability in the context of its environmental hostility. The ANOVA results reveal that the direct, non-linear and moderating effects statistically significantly predicted sustainable financial performance, $F(16, 109) = 3.27$, $p < .001$. Furthermore, they explain 32% [R^2 =0,32] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,22] on sustainable financial performance.

The hierarchical regression analysis reveals that neither the direct nor the indirect (BCxEO and BCxEO²) and moderating effects statistically significantly predicted sustainable financial performance. However, the results show that EO² statistically significantly predicted sustainable financial performance (*beta*=-0,25, and *p*= 0.02). Consequently, hypothesis H3 is not supported.

The Tukey HSD test indicate that the mean differences from EO² to the BCxEOxENV (13.37±13.91) and BCxEO²xENV (30.60±29.11) moderating effects, are statistically significant (i.e. 13.37 and 30.64 > 0.40 the critical Tukey value shown in Table 23) than the mean difference between these moderating effects and any other predictor variable and interaction in this model. Therefore, this supports the regression analysis. Furthermore, it clarifies which predictor variable contributed to the significance and effect size that was established in the ANOVA.

Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

-0,25xEO² -0.04xEO + 0.13xOI + 0.11xBC + 0,22xACAP -0,14xENV-0.02xENVxEO-0.25xENVxEO²+0.16xBCxENVxEO-0.07xBCxENVxEO^2, the EO-Sustainable Financial Performance graph is plotted.

Figure 17:*EO-Sustainable Financial Performance Relationship with Environmental Hostility and Bricolage Capability interactions*

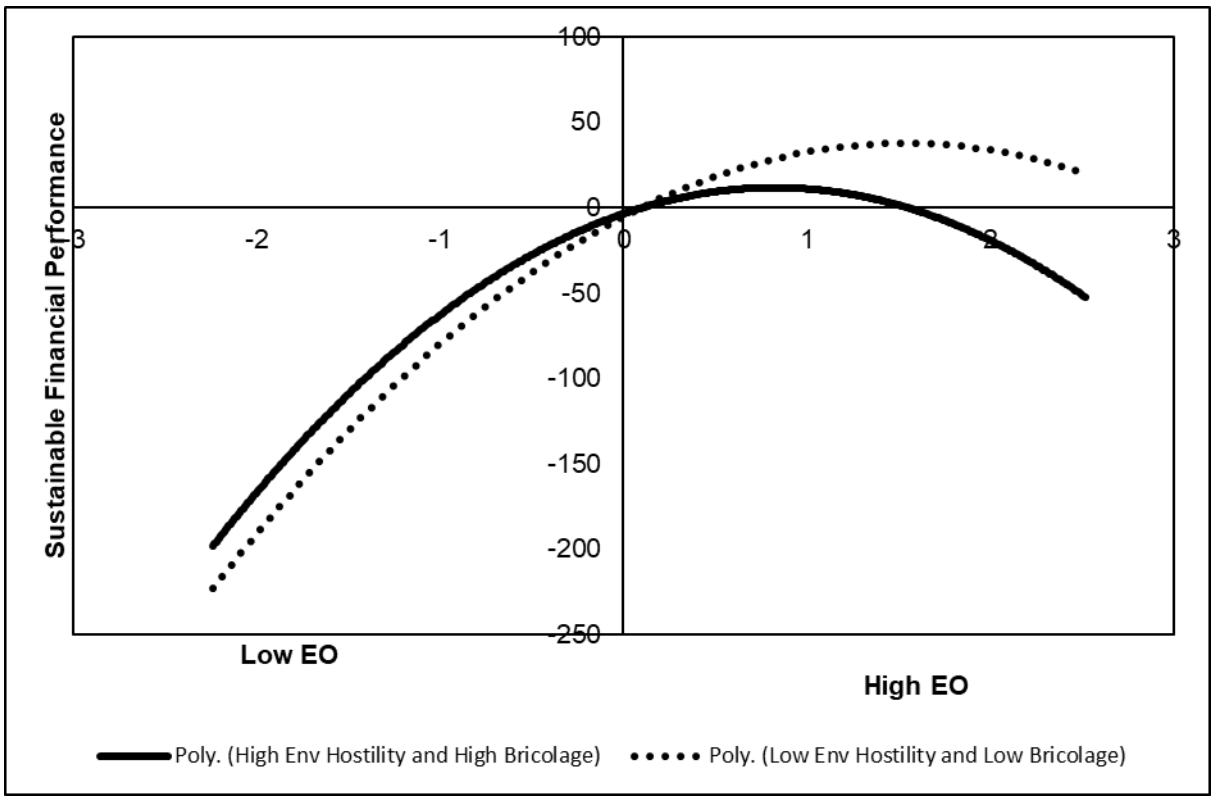


Figure 17 shows that the moderating effect of the environmental hostility-bricolage capability interaction on the EO-Sustainable Financial Performance relationship of the South African construction and materials sector could not be found to be a straightforward negative or positive one, but was instead, non-linear.

4.5.1.3.1. Contribution of EO sub-dimensions to Hypothesis H3

(I) Contribution of the Innovativeness – Sustainable Financial Performance Relationship to Hypothesis H3

The ANOVA results in Appendix Table 1 reveal that the direct, non-linear and moderating effects statistically significantly predicted sustainable financial performance, F (16, 109) = 3.72, p < .001. Furthermore, they explain 32% [R^2 =0,32] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,26] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 2 reveal that, except for innovativeness (*beta* =-0.25; *p*=0.05), absorptive capacity (*beta* =-0.28; *p*=0.02) and $INNO^2$(*beta* =-0.28; *p*<.00), none of the other direct and moderating effects statistically significantly predict sustainable financial performance. However, the indirect effects BCxINNO (*beta* =0.23; *p*=0.04), and BCx$INNO^2$(*beta* =-0.30; *p*=0.04), statistically significantly predict sustainable financial performance. These results suggest that the innovativeness-sustainable financial performance relationship contributes to the overall rejection of hypothesis H3. Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

-0.20xINNO+0.19xOI-0.15xENV+0.09xBC+0.28xACAP-0.28x$INNO^2$-0.01xENVxINNO-0.25xENVx $INNO^2$+0.24xBCxINNOxENV-0.19xBCxENVx $INNO^2$. the Innovativeness - Sustainable Financial Performance graph is plotted.

Figure 18:*Innovativeness-Sustainable Financial Performance with Environmental Hostility and Bricolage Capability interactions*

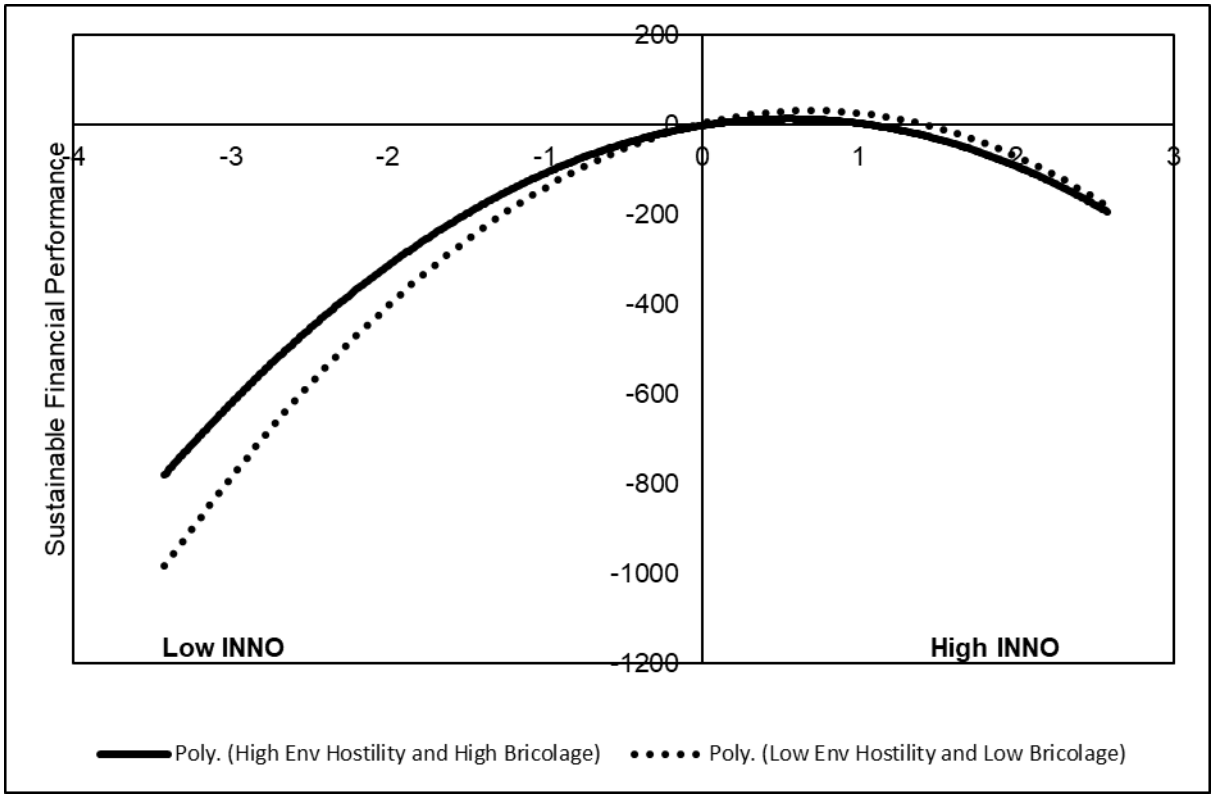


Figure 18 shows that the moderating effect of the environmental hostility-bricolage capability interaction on innovativeness – Sustainable Financial Performance were not straight forward negative or positive but instead non-linear.

(II) Contribution of the Proactiveness – Sustainable Financial Performance Relationship to Hypothesis H3

The ANOVA results in Appendix Table 3 reveal that the direct, non-linear, and moderating effects statistically significantly predicted sustainable financial performance, $F(16, 109) = 3.19$, $p < .001$. Furthermore, they explain 32% [$R^2 = 0{,}32$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0{,}22$] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 4 reveal that, except for proactiveness (*beta* =-0.22; *p*=0.04 none of the other direct, indirect, and moderating effects statistically significantly predict sustainable financial performance. These results suggests that the proactiveness - sustainable financial performance relationship contributes to the

overall rejection of hypothesis H3. Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

0.02xPROCT+0.11xOI-0.06xENV+0.07xBC+0.19xACAP-0.22xPROCT^2-0.07xENVxPROCT-0.22xENVxPROCT^2-0.03xBCxPROCTxENV+0.06xBCxENVxPROCT^2.

The Proactiveness – Sustainable Financial Performance graph is plotted.

Figure 19: *Proactiveness – Sustainable Financial Performance relationship with with Environmental Hostility and Bricolage Capability interactions*

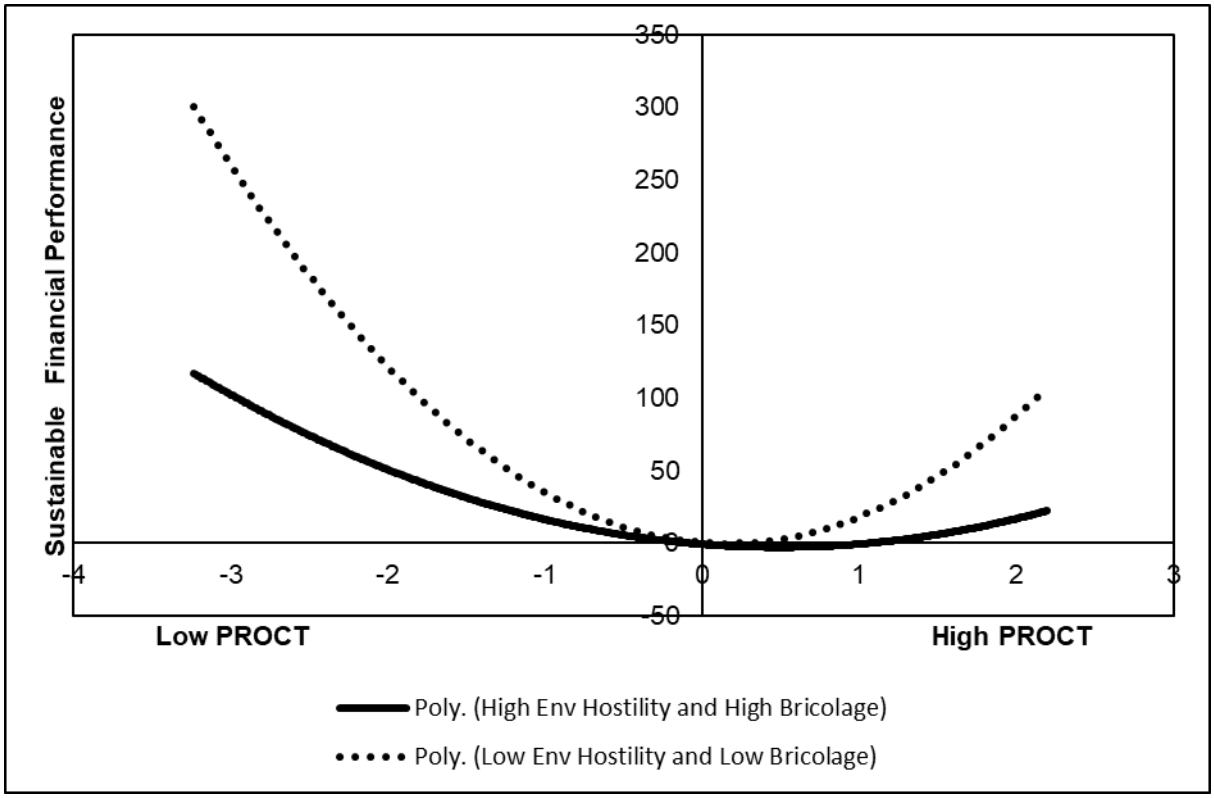


Figure 19 shows that in both environmental hostility-bricolage configurations, the proactiveness – sustainable financial relationship of the South African construction and materials sector exhibited non-linear behaviour.

(III) Contribution of the Risk-Taking – Sustainable Financial Performance Relationship to Hypothesis H3

The ANOVA results in Appendix Table 5 reveal that the direct, non-linear and moderating effects statistically significantly predict sustainable financial performance, F (16, 109) = 3.04,

$p < .001$. Furthermore, they explain 31% [R^2 =0,31] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,21] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 6 reveals that, except for RISK²(*beta* =-0.25; *p*=0.04 none of the other direct, indirect, and moderating effects statistically significantly predict sustainable financial performance These results suggests that the risk-taking-sustainable financial performance relationship contributes to the overall rejection of hypothesis H3. Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation.

0.03xRISK+0.14xOI-0.18xENV+0.10xBC+0.19xACAP-0.25xRISK²+0.07xENVxRISK-0.16xENVx RISK²+0.18xBCxRISKxENV-0.12xBCxENVx RISK²., a Risk-Taking –Sustainable Financial Performance graph is plotted.

Figure 20: *Risk-Taking – Sustainable Financial Performance Relationship with Environmental Hostility and Bricolage Capability interactions*

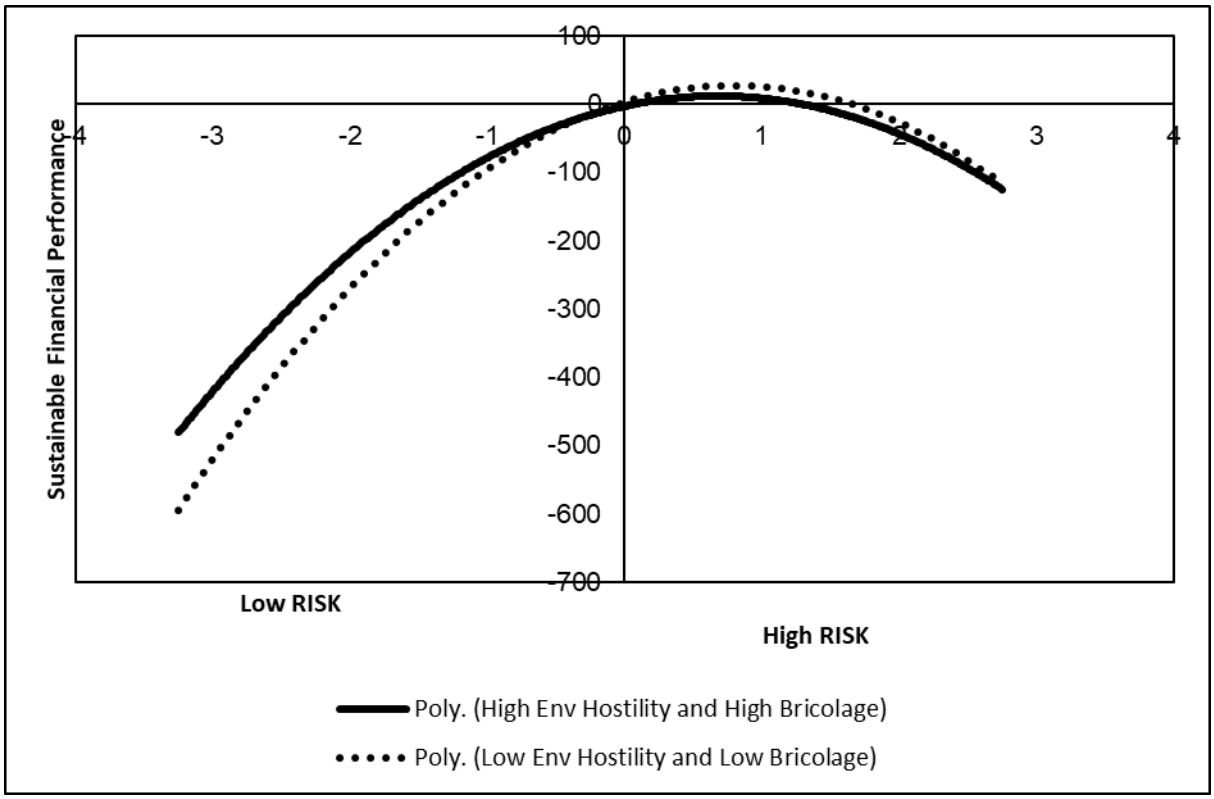


Figure 20 shows the difference configurations of the environmental hostility-bricolage capability interaction on the RISK – Sustainable Financial Performance relationship exhibited a non-linear behaviour.

4.5.1.3.2. Testing Hypothesis H3 with Objective Measures of Sustainable Financial Performance

The ANOVA and Hierarchical regression analyses in Appendix F are used for this analysis.

The ANOVA results in Appendix Table 13 reveal that the direct, non-linear and moderating effects statistically significantly predict sustainable financial performance, F (16, 23) = 4.42 p < .001. Furthermore, they explain 75% [R^2 =0,75] of the total variance in sustainable financial performance and have a very large effect [ω^2 = 0,58] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 14 reveals that, except for organisational identity (*beta*=-0.54, and p= 0.02), bricolage capability (*beta*=-0.45, and p= 0.04) and EO^2 (*beta*=-0.46, and p= 0.03), none of the other interactions statistically significantly predict sustainable financial performance. Consequently, hypothesis **H3** is not supported as well in this configuration. Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

$-0{,}46xEO^2+0.33xEO+0.54xOI-0.45xBC+0{,}15xACAP-0{,}05xENV+0.52xENVxEO+0.33xENVxEO^2+0.06xBCxENVxEO-0.49xBCxENVxEO^2$ a graph of EO – Sustainable Financial Performance is produced.

Figure 21 *EO–Sustainable Financial Performance with Environmental Hostility and Bricolage Capability interactions*

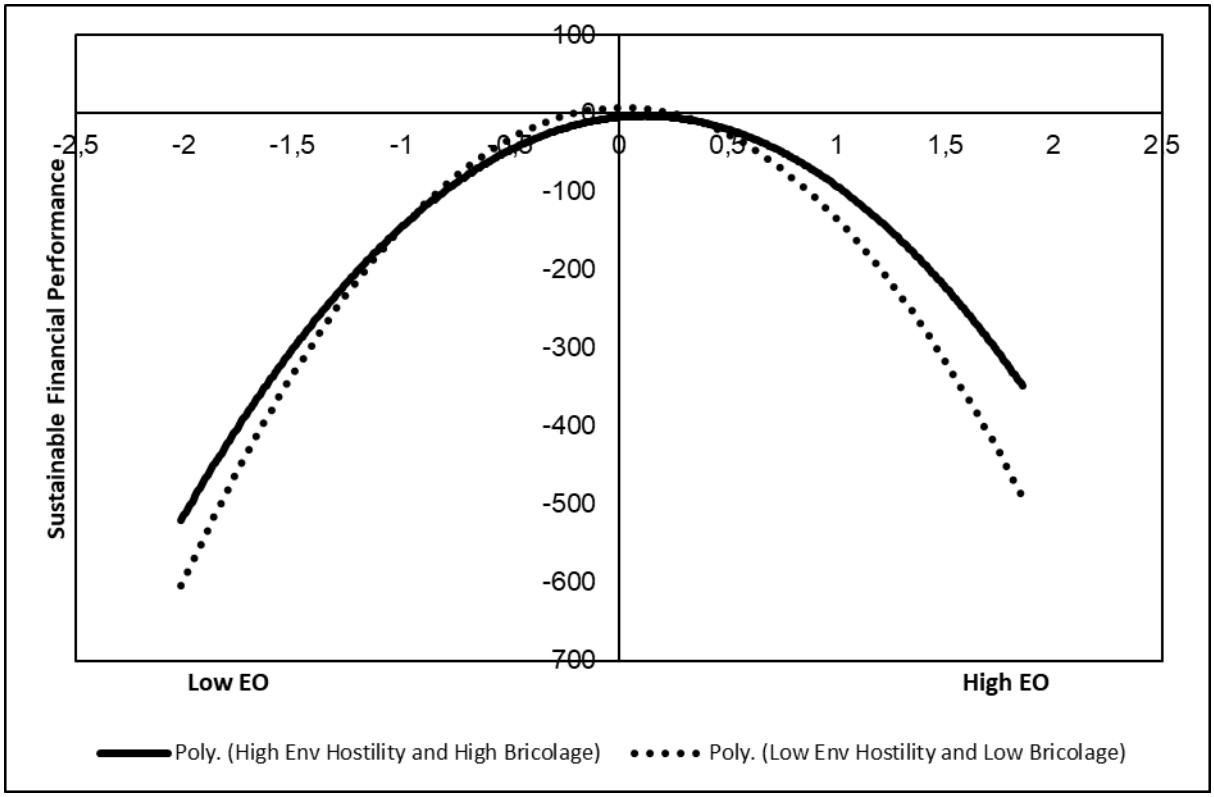


Figure 21 shows that, regardless of environmental hostility-bricolage capability configuration, the EO – sustainable financial performance relationship of the South African construction and materials sector exhibited a nonlinear behaviour. Furthermore, the similarities between Figure 21 (objective measures of sustainable financial performance) and Figure 17, once more assert that subjective and objective measures are equally important in EO research.

4.5.1.3.3. Conclusion on Hypothesis H3

The EO–sustainable financial performance relationship of the South African construction and materials sector in the context of environmental hostility, was neither negatively nor positively moderated its bricolage capability. The direction of the relationship depended on the mix between EO, environmental hostility, and bricolage capability. The sub-dimensions of EO contributed to the direction of this relationship and their contribution varied.

The EO–sustainable financial performance relationship where sustainable financial performance was measured as an objective construct, exhibited a similar behaviour to the EO-sustainable financial performance relationship in the subjective configuration.

4.5.1.4. *H5(a):* In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its bricolage capability. Additionally, their interaction had a negative impact on its EO-sustainable financial performance relationship.

This hypothesis investigated whether in the context of environmental hostility, the organisational identity of the South African construction and materials sector negatively moderated its bricolage capability as well as whether the environmental hostility-bricolage capability-organisational identity interaction negatively impacted the EO–sustainable financial performance relationship.

The ANOVA results suggest that the direct, non-linear, and moderating effects statistically significantly predicted sustainable financial performance, F (18, 107) = 2.89 p < .001. Furthermore, they explain 33% [R^2 =0,33] of the total variance in sustainable financial performance and have a very large effect [ω^2 = 0,21] on sustainable financial performance.

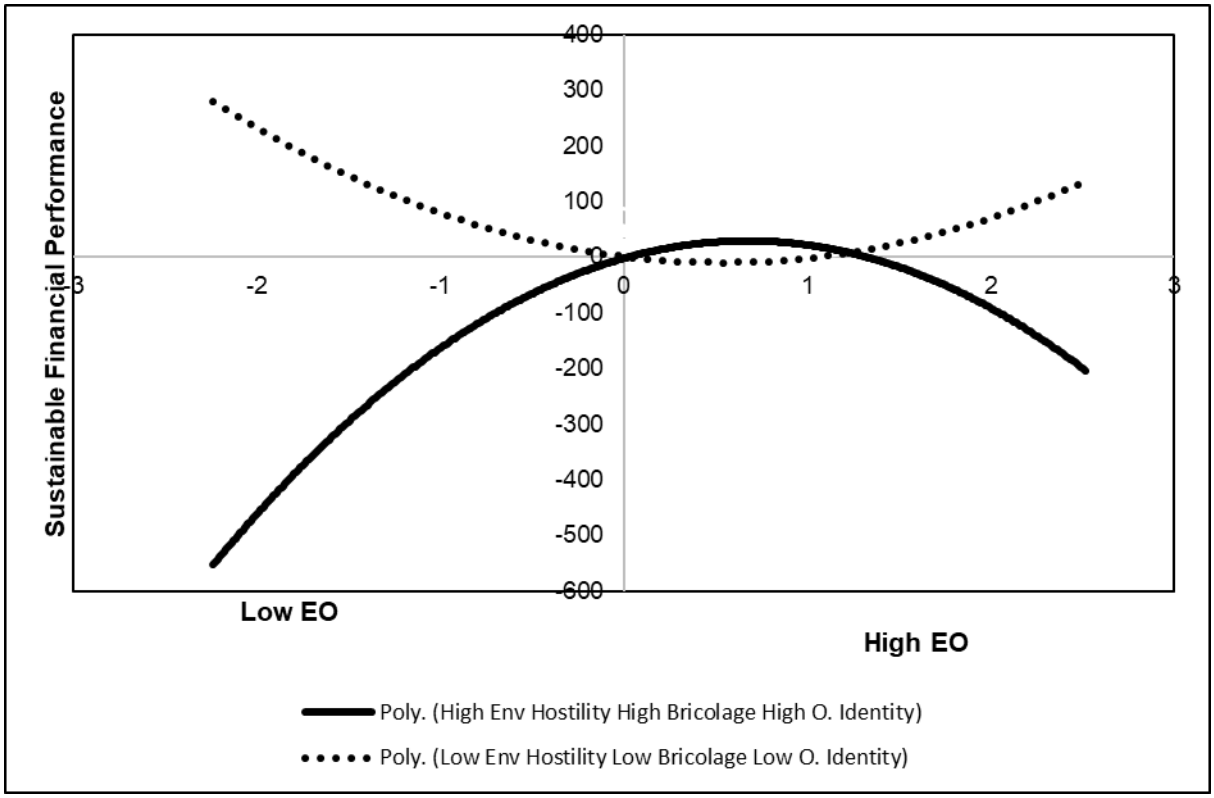
The hierarchical regression analysis shows that except for EO² (*beta*=-0.23, and p= 0.04), none of the other interactions statistically significantly predict sustainable financial performance. Consequently, hypothesis H5(a) is not supported.

The Tukey HSD test indicate that the mean difference from EO² to the BCxEOxENVxOI (18.54±18.17) and BCxEO²xENVxOI (21.47±41.9) moderating effects, is statistically significant (i.e. 18.54 and 21.47 > 0.40 the critical Tukey value shown in Table 23) than the mean differences between these moderating effects and any other predictor variable and interaction in this model. Therefore, this supports the regression analysis. Furthermore, it clarifies which predictor variable contributed to the significance and effect size that was established in the ANOVA.

Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

-0.06xEO+0.14xOI-0.14xENV+0.12xBC+0.22xACAP-0.23xEO²-0.03xENVxEO-0.25xENVxEO²+0.20xBCxEOxENV-0.13xBCxENVxEO²+0.13xBCxEOxENVxOI-0.0.9xBCxEO²xENVxOI, the following EO-Sustainable Financial Performance graph is plotted.

Figure 22*: EO–Sustainable Financial Performance with Environmental Hostility-Bricolage Capability-Organisational identity Interactions.*



The graph shows that the EO-sustainable financial performance relationship exhibited non-linear behaviour for different configurations of the environmental hostility-bricolage-capability-organisational identity interaction.

4.5.1.4.1. Contribution of EO sub-dimensions to Hypothesis H5(a)

(I) Contribution of the Innovativeness – Sustainable Financial Performance Relationship to Hypothesis H5(a)

The ANOVA results in Appendix Table 1 reveal that the direct, non-linear and moderating effects statistically significantly predict sustainable financial performance, $F(18, 107) = 3.61$, $p < .001$. Furthermore, the independent variables explain 38% [$R^2 = 0{,}38$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0{,}27$] on sustainable financial performance.

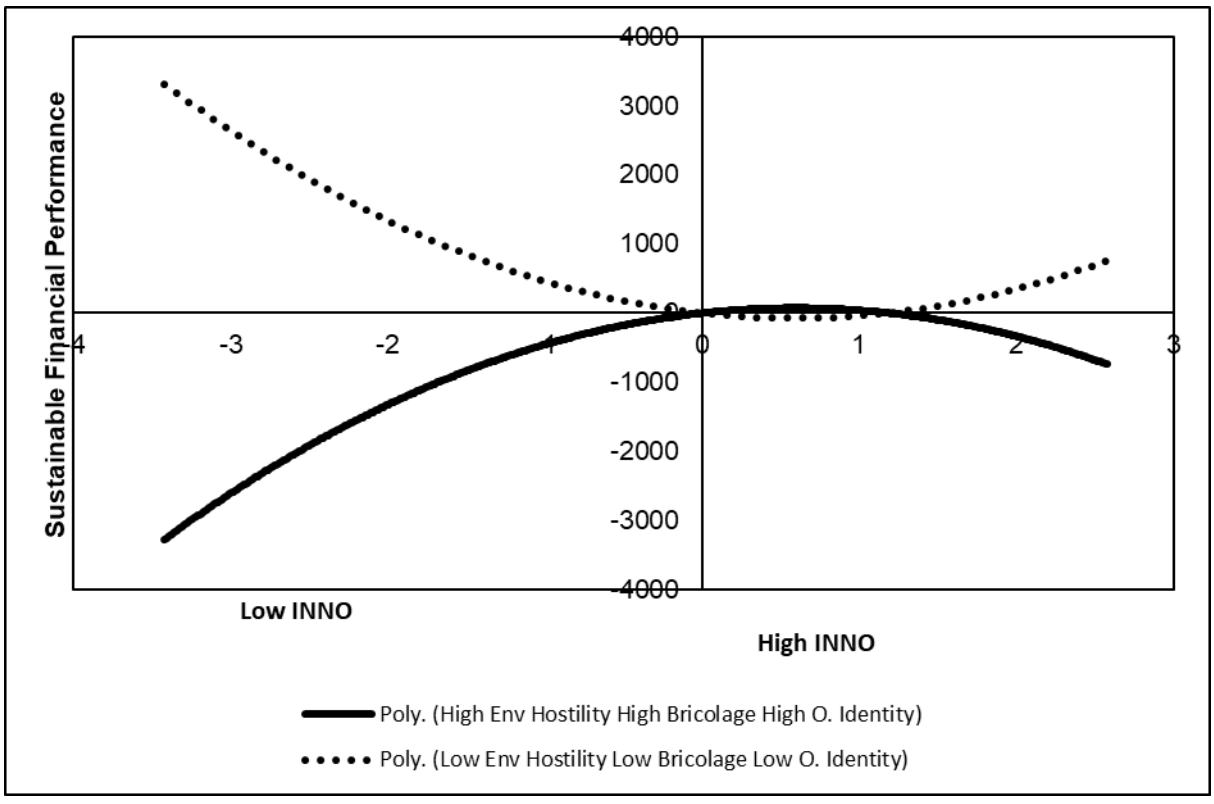
The hierarchical regression analysis in Appendix Table 2 reveal that innovativeness (*beta* =-0.27; *p*=0.05), and absorptive capacity (*beta* =0.30 and *p*=0.01), no other direct

or main effect statistically significantly predict sustainable financial performance. Furthermore the analysis reveal that INNO²(beta =-0.30; p<.00), statistically significantly predict sustainable financial performance. Moreover, the results reveal that ENVxINNO² (beta =-0.39; p=0.03), BCxENVxINNO (beta =0.38; p=0.03) and BCxENVxINNOxOI (*beta* =0.45; *p*=0.04), statistically significantly predict sustainable financial performance.

The results also reveal that the indirect effects BCxINNO (*beta* =0.23; *p*=0.04), BCxINNO²(*beta*=-0.30; *p*=0.04), BCxINNOxOI (*beta* =0.30; *p*=0.04) and BCxINNO²xOI (*beta* =-0.32; *p*=0.04) also statistically significantly predict sustainable financial performance. These results suggests that the innovativeness–sustainable financial performance relationship partially contributes to the overall rejection of hypothesis H5(a). Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

-0.27xINNO+0.19xOI-0.10xENV+0.12xBC+0.30xACAP-0.30xINNO²-0.09xENVxINNO-0.34xENVxINNO²+0.38xBCxINNOxENV-0.30xBCxENVxINNO²-.45xBCxENVxINNOxOI-0.36xBCxENVxOIxINNO². the INNO-Sustainable Financial Performance graph is plotted.

Figure 23 *Innovativeness–Sustainable Financial Performance Relationship with Environmental Hostility-Bricolage Capability-Organisational identity interactions.*



The graph shows that the innovativeness – sustainable financial performance relationship of the South African construction and materials sector in the context of the environmental hostility-bricolage capability-organisational identity was non-linear.

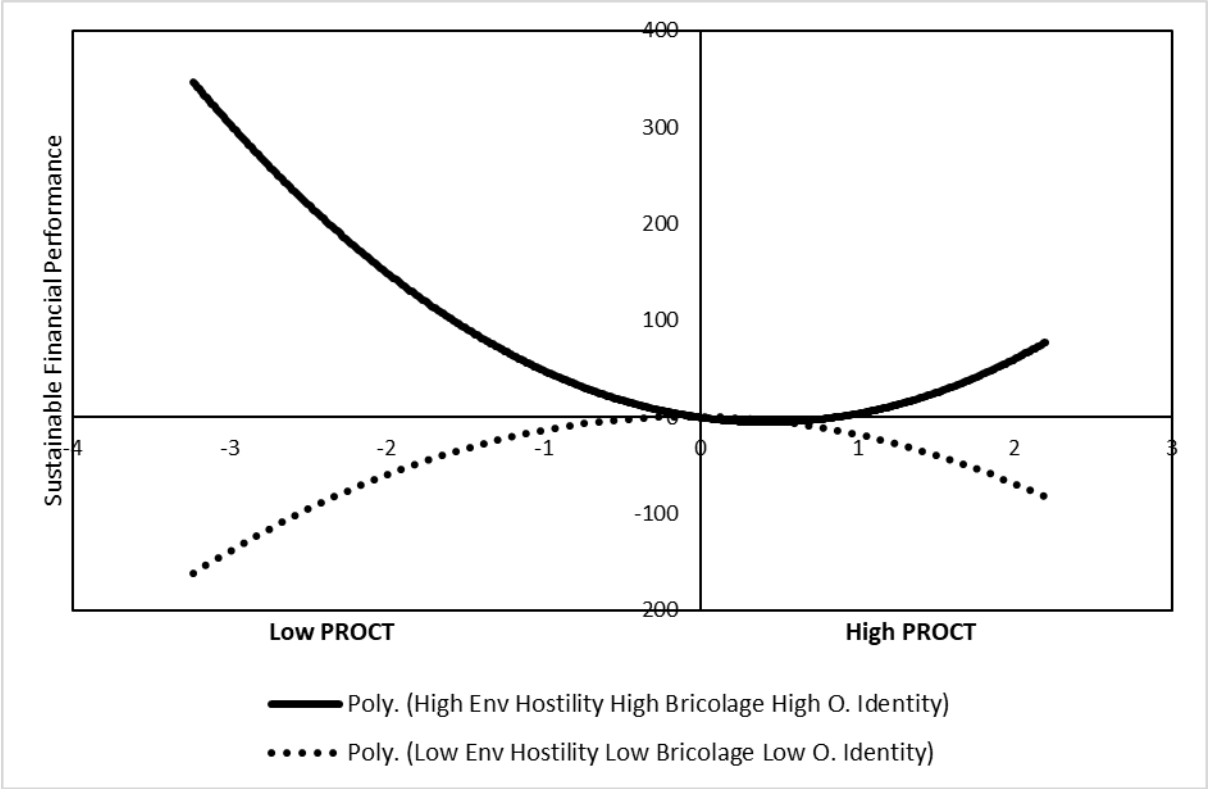
(II) Contribution of the Proactiveness–Sustainable Financial Performance Relationship to Hypothesis H5(a)

The ANOVA results in Appendix Table 3 reveal that the direct, non-linear, and moderating effects statistically significantly predict sustainable financial performance, $F(18, 107) = 2.80$, $p < .001$. Furthermore, the independent variables explain 32% [$R^2 = 0{,}32$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0{,}20$] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 4 reveal that none of the direct or main effect, moderating effects and indirect effects statistically significantly predict sustainable financial performance. These results suggests that the proactiveness-sustainable financial performance relationship contributes to the overall rejection of hypothesis **H5(a).** Considering the statistically significant and non-significant direct, nonlinear and moderating effects and formulating an appropriate regression equation:

$$0.01xPROCT+0.11xOI-0.06xENV+0.06xBC+0.20xACAP-0.22xPROCT^2-0.06xENVxPROCT-0.23xENVxPROCT^2-0.06xBCxPROCTxENV+0.06xBCxENVx\ PROCT^2-0.02xBCxPROCTxENVxOI+0.05xBCxENVxOIx\ PROCT^2.$$

Figure 24: *Proactiveness Sustainable Financial Performance with Environmental Hostility-Bricolage Capability-Organisational Identity interactions.*



The graph shows that the proactiveness–sustainable financial performance relationship of the South African construction and materials sector in the context of the environmental hostility-bricolage capability-organisational identity was non-linear.

(III) Contribution of the Risk-Taking-Sustainable Financial Performance Relationship to Hypothesis H5(a)

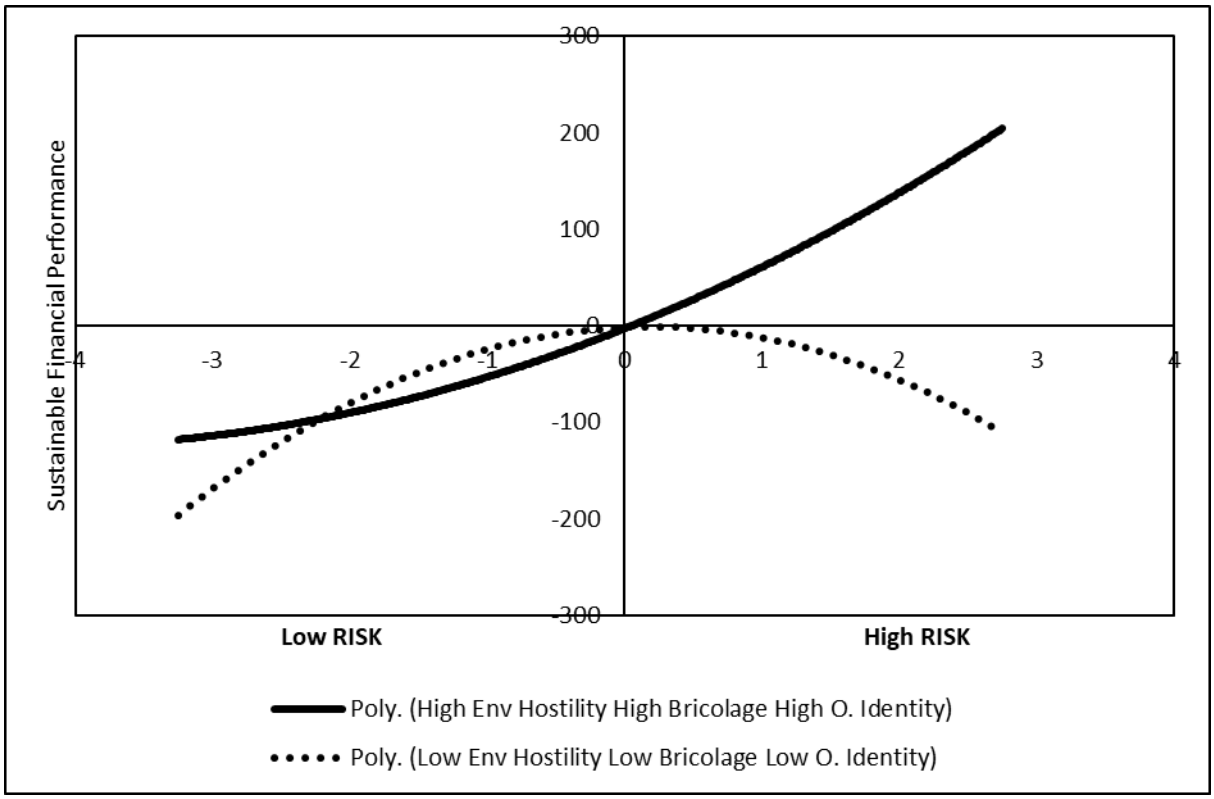
The ANOVA results in Appendix Table 5 reveal that the direct, non-linear and moderating effects statistically significantly predict sustainable financial performance, $F(18, 107) = 2.66$, $p < .001$. Furthermore, the independent variables explain 31% [$R^2 = 0{,}31$] of the total variance in sustainable financial performance and have a significant effect [$\omega^2 = 0{,}19$] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 6 reveal that, except for $RISK^2$(*beta* =-0.25; *p*=0.04), none of the direct or main effect, moderating effects, and indirect effects statistically significantly predict sustainable financial performance. These results suggest that the risk-taking-sustainable financial performance relationship

contributes to the overall rejection of hypothesis **H5(a).** Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

0.03xRISK+0.15xOI-0.17xENV+0.10xBC+0.20xBC+0.20xACAP-0.25RISK²+0.07xENVxRISK-0.17xENVxRISK²+0.16xBCxENVxRISK-0.16xBCxENVx RISK²+0.05xBCxENVxRISKxOI+0.03xBCxENVxOIx RISK².

Figure 25: *Risk-taking – Sustainable Financial Performance Relationship with Environmental Hostility-Bricolage Capability-Organisational Identity interactions.*



The graph shows that the risk-taking – sustainable financial performance relationship of the South African construction and materials sector in the context of the environmental hostility-bricolage capability-organisational identity was non-linear.

4.5.1.4.2. Testing Hypothesis H5(a) with Objective Measures of Sustainable Financial Performance

The ANOVA and Hierarchical regression analyses in Appendix F are used for this analysis. The ANOVA results in Appendix Table 13 reveal that the direct, nonlinear and moderating effects statistically significantly predict sustainable financial performance, $F(18, 21) = 4.33$, $p < .001$. Furthermore, they explain 79% [$R^2 = 0{,}79$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0{,}60$] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 14 reveal that except for $BCxENVxEO^2$ (*beta* =-1.78; *p*=0.04), Bricolage Capability (*beta* =-0.56; *p*=0.02) and Organisational Identity (*beta* =0.84; *p*=0.00), none of the direct or main effect, moderating effects and indirect effects statistically significantly predict sustainable financial performance. Consequently, hypothesis **H5(a)** is not supported as well in this configuration. Considering the statistically significant and non-significant direct, nonlinear, and moderating effects and formulating an appropriate regression equation:

$$0{,}04xEO+0{,}5xOI-0{,}2xENV-0{,}37xBC+0{,}47xACAP-0{,}39xEO^2+0{,}52xENVxEO-0{,}01xENVxEO^2+0{,}76xACAPxENVxEO-0{,}79xACAPxENVxEO^2+0{,}42xACAPxEOxENVxOI-0{,}58xACAPxENVxOIxEO^2$$

Figure 26 *EO-Sustainable Financial Performance Relationship with Environmental Hostility-Bricolage Capability and Organisational identity interactions.*

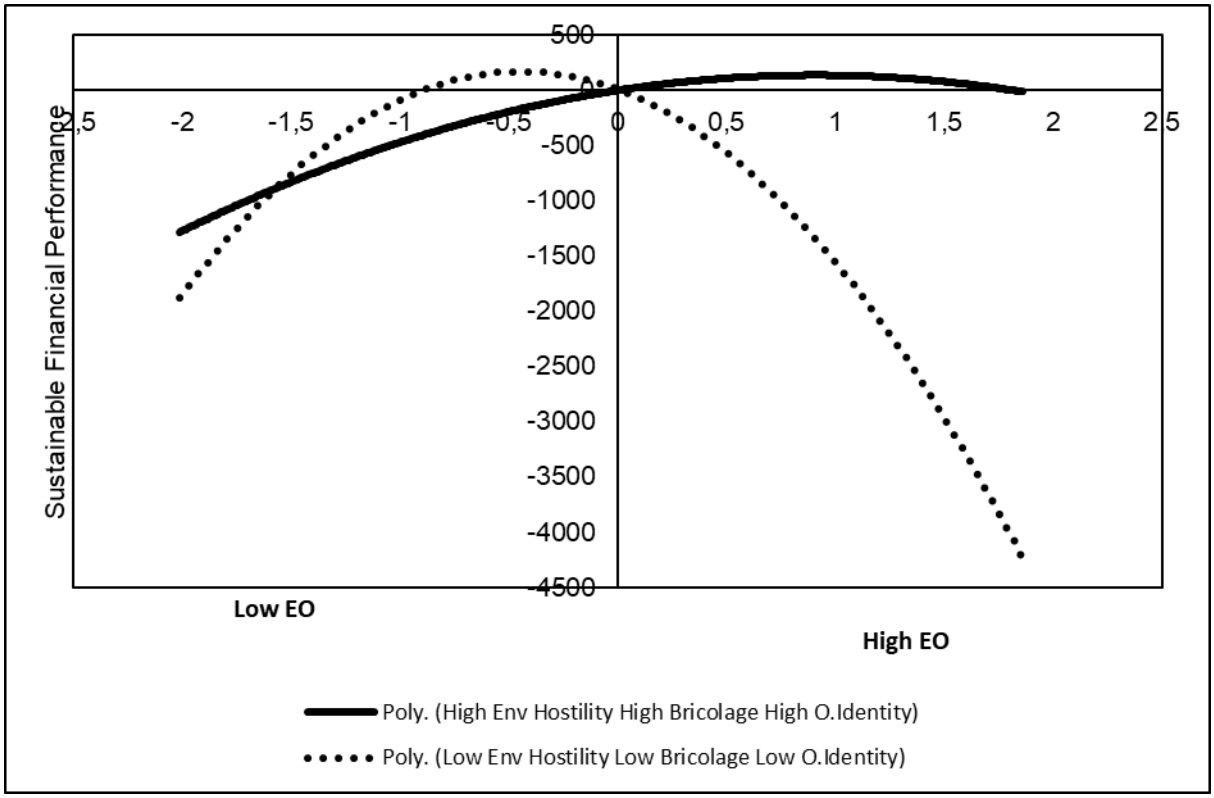


Figure 26 shows that regardless of the environmental hostility-bricolage capability-organisational identity configuration the EO-Sustainable Financial Performance relationship of the South African construction and materials sector exhibited a nonlinear behaviour. Furthermore, the similarities between Figure 26 (objective measures of sustainable financial performance) and Figure 22, once more assert that subjective and objective measures are equally important in EO research.

4.5.1.4.3. Conclusion on Hypothesis H5(a)

The results show that the moderating effects of the organisational identity on bricolage capability and the effect of the environmental hostility-bricolage capability-organisational identity interaction on the EO–sustainable financial performance relationship of the South African construction and materials sector is neither a simple positive or negative effect, but a non-linear one. Furthermore, the results show that the respective sub-dimensions of EO contributed to this nonlinearity.

The EO-Sustainable Financial Performance relationship where sustainable financial performance was measured as an objective construct, exhibited similar behaviour to the EO – sustainable financial performance relationship in the subjective configuration.

4.5.2. EO–Sustainable Financial Performance with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects

This category consists of the following hypotheses:

- ✓ ***H4:*** *The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its absorptive capacity in the hostile environment that prevailed during the 2008-2019 period.*

- ✓ ***H5(b):*** *In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its absorptive capacity. Additionally, their interaction had a negative impact its EO-sustainable financial performance relationship.*

The Analysis of Variance and Hierarchical Regression Analyses results for these hypotheses are shown in Table 25 and Table 26, respectively. Post hoc test results, i.e. the effect sizes and Tukey HSD critical values are shown in Table 25. Results from both these tables are used to make inferences about the respective models.

Table 25: *Analysis of Variance results for hypotheses, H4 and H5(b).*

Model	Hypothesis		Sum of Squares	df	Mean Square	F	Sig.	ω²	Tukey HSD
1		Regression	8,69	6,00	1,45	1,47	.193[b]	0,02	
		Residual	116,98	119,00	0,98				
		Total	125,67	125,00					
2		Regression	32,90	11,00	2,99	3,67	<,001[c]	0,19	
		Residual	92,77	114,00	0,81				
		Total	125,67	125,00					
3		Regression	36,89	12,00	3,07	3,91	<,001[d]	0,22	
		Residual	88,78	113,00	0,79				
		Total	125,67	125,00					
4		Regression	39,36	14,00	2,81	3,62	<,001[e]	0,23	
		Residual	86,31	111,00	0,78				
		Total	125,67	125,00					
5	**H4**	Regression	40,36	16,00	2,52	3,22	<,001[f]	0,22	0.39
		Residual	85,31	109,00	0,78				
		Total	125,67	125,00					
6	**H5(b)**	Regression	41,65	18,00	2,31	2,95	<,001[g]	0,22	0.40
		Residual	84,02	107,00	0,79				
		Total	125,67	125,00					

Table 26 *Hierarchical regression analysis for the EO – Sustainable Financial Performance Relationship for hypotheses H4 and H5(b)*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Beta	**p**	**Beta**	**p**	**Beta**	**p**	**Beta**	**p**	**Beta**	**p**	**Beta**	**p**	**Beta**	**P**
Dependent Variable	Sustainable Financial Performance													
Control Variables														
Firm Age	0,12	0,25	0,06	0,55	0,06	0,55	0,05	0,61	0,05	0,61	0,06	0,53	0,09	0,37
Firm Size	-0,14	0,21	0,00	0,97	0,00	0,99	0,00	0,97	0,01	0,93	0,01	0,94	-0,05	0,63
Total Experience in Sector	0,38	0,02	0,30	0,05	0,26	0,08	0,28	0,06	0,28	0,06	0,28	0,07	0,22	0,16
Total Work Experience	-0,17	0,28	-0,11	0,42	-0,07	0,64	-0,07	0,61	-0,07	0,61	-0,06	0,66	0,00	0,97
Total Work Experience in TMT	-0,01	0,95	-0,11	0,26	-0,11	0,24	-0,10	0,30	-0,09	0,33	-0,08	0,42	-0,08	0,43
Qualification	0,03	0,79	-0,04	0,65	0,01	0,89	0,02	0,82	0,02	0,83	0,03	0,75	-0,01	0,95
Main/Direct Effects														
Entrepreneurial Orientation (EO)			0,03	0,78	0,01	0,94	-0,05	0,65	-0,07	0,52	-0,07	0,52	-0,01	0,94
Organisational Identity (OI)			0,16	0,17	0,12	0,31	0,13	0,27	0,13	0,28	0,12	0,35	0,08	0,59
Environmental Hostility (ENV)			-0,17	0,06	-0,22	0,02	-0,13	0,20	-0,13	0,24	-0,15	0,20	-0,18	0,06
Bricolage Capability (BC)			0,07	0,53	0,11	0,34	0,08	0,47	0,08	0,49	0,09	0,45	0,00	0,97
Absorptive Capacity (ACAP)			0,22	0,08	0,22	0,07	0,21	0,08	0,25	0,05	0,28	0,03	0,21	0,14
Nonlinear Effects														
EO^2					-0,20	0,03	-0,24	0,02	-0,23	0,03	-0,22	0,05	-0,27	0,03
Moderating Effects														
ENVxEO							0,01	0,92	-0,03	0,81	-0,05	0,72		
ENVxEO2							-0,20	0,08	-0,31	0,06	-0,34	0,06		
ACAPXEOxENV									0,17	0,28	0,33	0,15		
$ACAPXEO^2XENV$									-0,02	0,89	-0,37	0,29		
ACAPXEOxENVXOI											0,41	0,22		
$ACAPXEO^2xENVXOI$											-0,16	0,53		
Indirect Effects														
ACAPxEO													-0,19	0,30
$ACAPxEO^2$													-0,40	0,21
ACAPxOIxEO													0,54	0,06
$ACAPxOIxEO^2$													0,15	0,40

EOXOI							0,17	0,27
EO²XOI							0,00	1,00
R square (R^2)	0,07	0,26	0,29	0,31	0,32	0,33	0,34	
Adjusted R squared (R^2)	0,02	0,19	0,22	0,23	0,22	0,22	0,22	
R squared change	0,07	0,19	0,03	0,02	0,01	0,01	0,04	
F Change	1,47	5,95	5,09	1,59	0,64	0,82	1,13	
Sig F Change	0,19	0,00	0,03	0,21	0,53	0,44	0,35	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. Indirect effects are shown in model 7.

Model 1 to Model 4 is common to both categories of hypotheses and are therefore not described in this section. Model 5 tests the moderating effects of the absorptive capacity i on the EO-sustainable financial performance relationship (hypothesis **H4**) in the context of environmental hostility. Model 6 tests the moderating effects of the organisational identity on absorptive capacity in the context of environmental hostility and the extent to which their interaction moderates the EO-sustainable financial performance relationship hypothesis **H5(b)**). Model 7 tests the indirect effects of absorptive capacity, organisational identity, the absorptive capacity-organisational identity on the EO and EO^2 respectively.

The results for the respective hypotheses are presented henceforth.

4.5.2.1. *H4:* The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its absorptive capacity in the hostile environment that prevailed during the 2008-2019 period.

This hypothesis investigated whether the EO-sustainable financial performance of the South African construction and material sector was negatively moderated by its absorptive capacity in the context of its environmental hostility. The ANOVA results reveal that the direct, non-linear, and moderating effects statistically significantly predict sustainable financial performance, $F (16, 109) = 3.22$, $p < .001$. Furthermore, the independent variables explain 32% [$R^2 = 0,32$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0,22$] on sustainable financial performance.

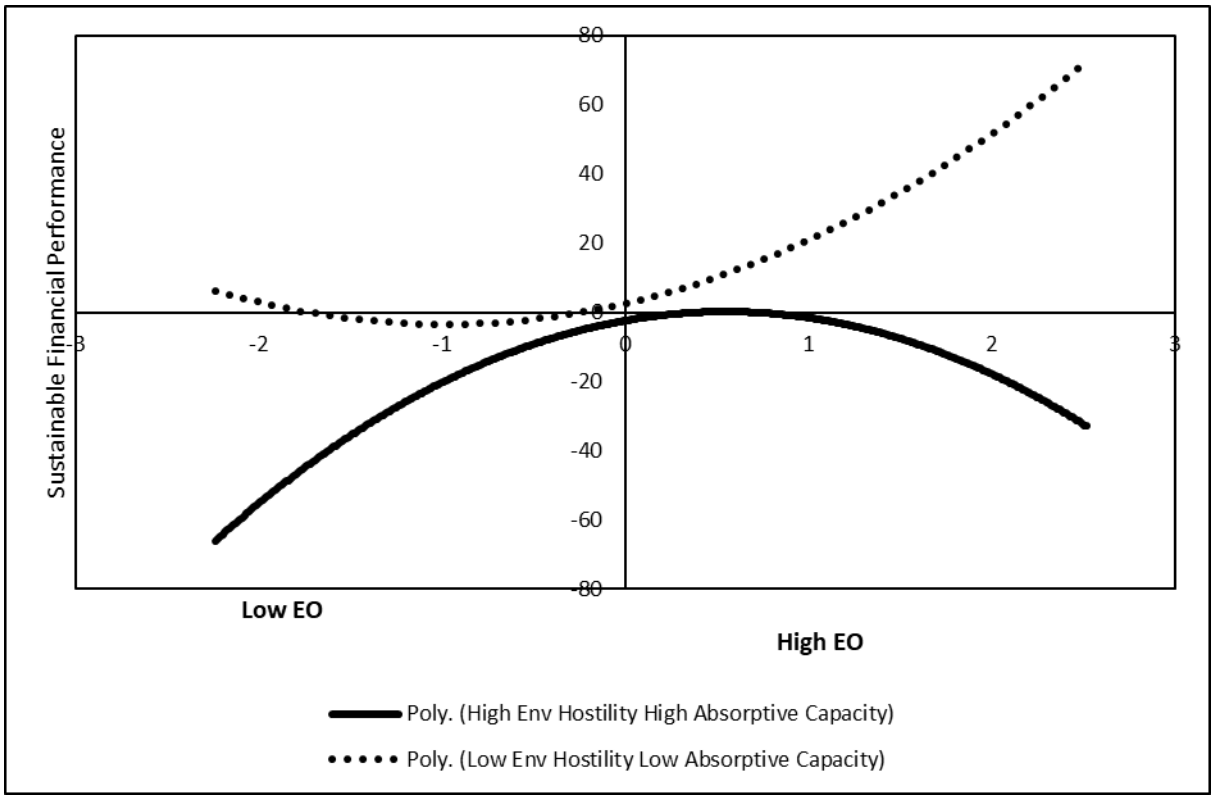
The hierarchical regression analysis shows that except for absorptive capacity (*beta*=-0,25, and *p*= 0.02) and EO^2(*beta*=-0,21, and *p*= 0.05). None of the other direct, indirect, and moderating effects statistically significantly predict sustainable financial performance. Consequently, the hypothesis H4 is not supported.

The Tukey HSD test indicate that the mean differences (Appendix Table 18) from EO^2 to the ACAPxEOxENV (2.95±3.05) and ACAPxEO^2xENV (6.04±6.70) moderating effects, are statistically significant (2.95 and 6.04 > 0.39 the critical Tukey value shown in Table 25) than the mean difference between these moderating effects and any other predictor variable and interaction in this model. Therefore, this supports the regression analysis. Furthermore, it clarifies which predictor variable contributed to the significance and effect size that was established in the ANOVA.

Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

-0.07xEO+0.13xOI-0.13xENV+0.08xBC+0.25xACAP-0.23xEO²-0.03xENVxEO-0.31xENVx EO²+0.17xACAPxENVxEO-0.02xACAPxENVx EO²- is used to plot the EO–sustainable Financial Performance relationship with the environmental hostility-absorptive capacity interactions.

Figure 27 *EO-Sustainable Financial Performance Relationship with Environmental Hostility-Absorptive Capacity Interactions.*



The graph shows that the EO-sustainable financial performance relationship of the South African construction and materials sector exhibited non-linear behaviour in the context of its environmental hostility-absorptive capacity interaction.

In the following sections, the contribution of the respective sub-dimensions of EO to hypothesis H4 is presented. ANOVA and Hierarchical Regression Analysis results in Appendix E are used for this purpose.

4.5.2.1.1. Contribution of EO sub-dimensions to Hypothesis H4

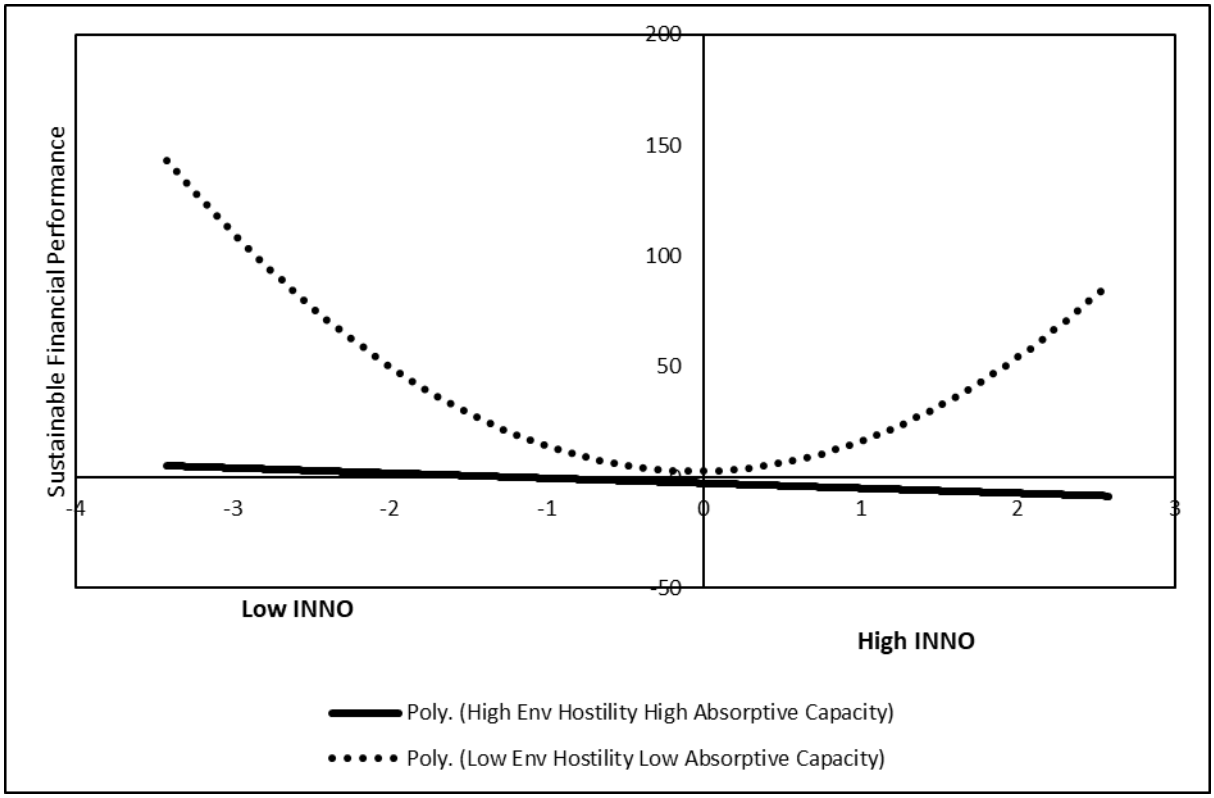
(I) Contribution of the Innovativeness-Sustainable Financial Performance Relationship to Hypothesis H4

The ANOVA results in Appendix Table 7 reveal that the direct, non-linear, and moderating effects statistically significantly predict sustainable financial performance, $F (16, 109) = 3.28$, $p < .001$. Furthermore, they explain 32% [$R^2 = 0,32$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0,22$] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 8 that except for absorptive capacity (beta=0,31, and p= 0.02) and $INNO^2$ (*beta*=-0,27, and p= 0.01) none of the other direct, indirect, and moderating effects statistically significantly predict sustainable financial performance. Consequently, H4 is not supported by the innovativeness-sustainable financial performance relationship. Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation.

$-0.21xINNO+0.19xOI-0.15xENV+0.06xBC+0.31xACAP-0.27xINNO^2-0.07xENVxINNO-0.24xENVxINNO^2-0.01xACAPxENVxINNO+0.10xACAPxENVxINNO^2$ is used to plot the innovativeness–sustainable financial performance relationship with the environmental hostility-absorptive capacity interactions.

Figure 28 *Innovativeness – Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity interactions.*



The graph shows that the Innovativeness–sustainable financial performance relationship of the South African construction and materials sector exhibited a non-linear behaviour in the context of its environmental hostility-absorptive capacity interaction.

(II) Contribution of the Proactiveness-Sustainable Financial Performance Relationship to Hypothesis H4

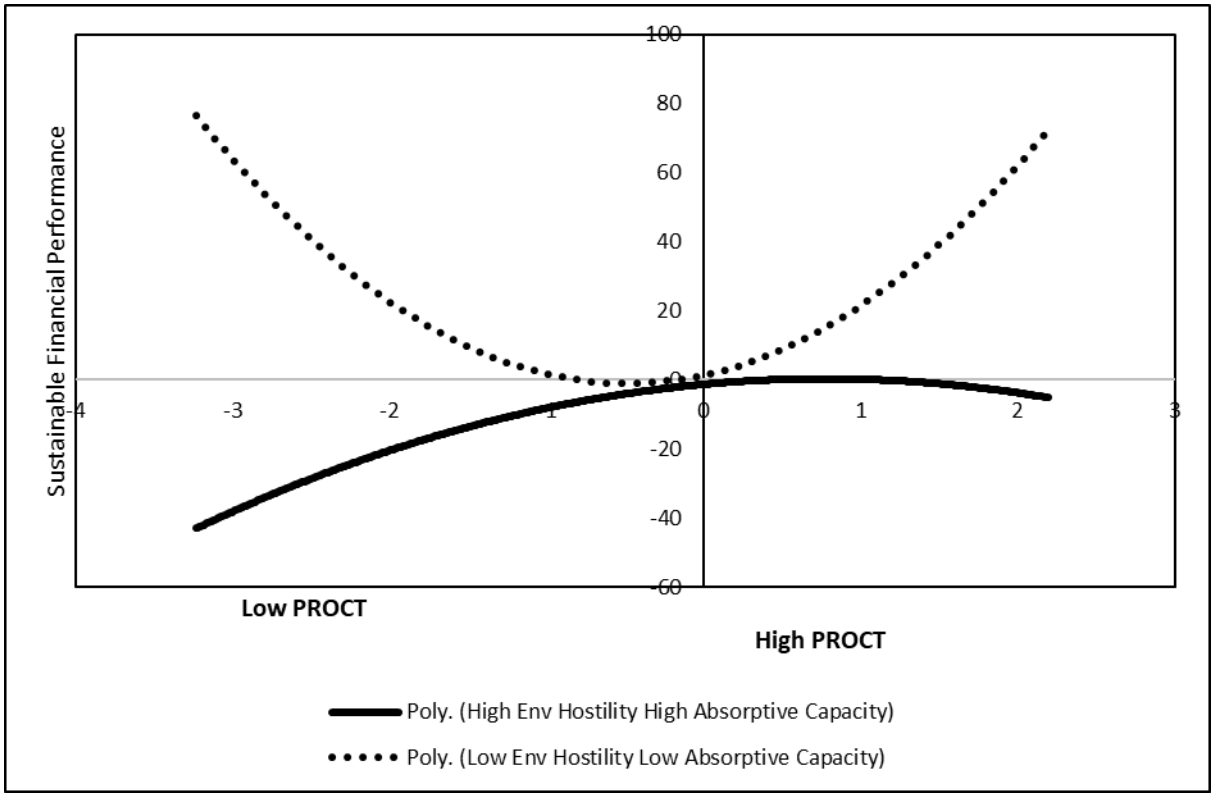
The ANOVA results in Appendix Table 9 reveal that the direct, non-linear, and moderating effects statistically significantly predict sustainable financial performance, $F(16, 109) = 3.32$, $p < .001$. Furthermore, the independent variables explain 33% [R^2 =0,33] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,20] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 10 that none of the other direct, indirect, and moderating effects statistically significantly predict sustainable financial performance. Consequently, the hypothesis H4 is not supported is not by the proactiveness-sustainable financial performance relationship. Considering the statistically significant and

non-significant direct, nonlinear, and moderating effects and formulating an appropriate regression equation:

-0.01xPROCT+0.11xOI-0.08xENV+0.07xBC+0.23xACAP-0.18xPROCT²-0.1xENVxPROCT-0.26xENVxPROCT²+0.11xACAPxENVxPROCT+0.06xACAPxENVxPROCT² is used to plot the proactiveness – sustainable financial performance relationship with the moderating effects of the environmental hostility-absorptive capacity interaction.

Figure 29 *Proactiveness–Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity interactions.*



The graph shows that the proactiveness–sustainable financial performance relationship of the South African construction and materials sector exhibited non-linear behaviour in the context of its environmental hostility-absorptive capacity interaction.

(III) Contribution of the Risk-Taking – Sustainable Financial Performance Relationship to Hypothesis H4

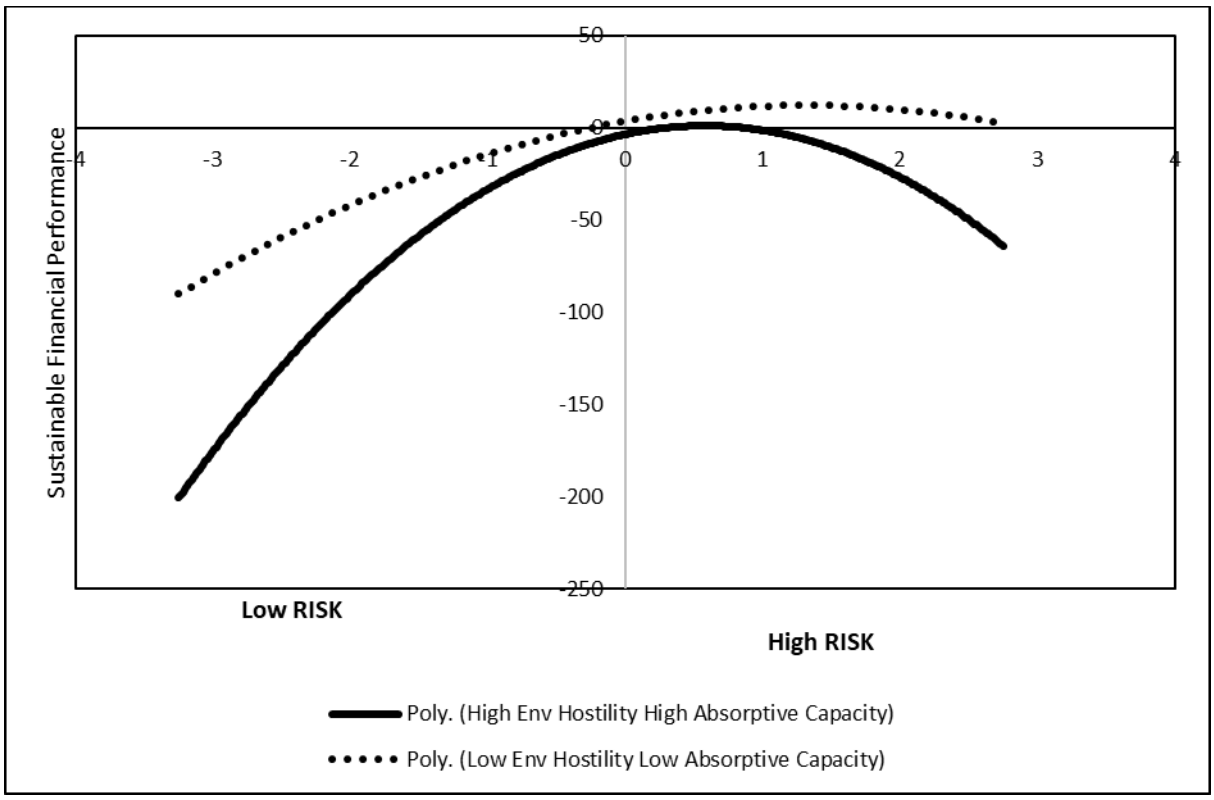
The ANOVA results suggest that the direct, non-linear, and moderating effects statistically significantly predict sustainable financial performance, F (16, 109) = 3.05, p < .001.

Furthermore, they explain 31% [R^2 =0,31] of the total variance in sustainable financial performance and have a large effect [ω^2 = 0,21] on sustainable financial performance.

The hierarchical regression analysis shows that except for $RISK^2$ (beta =-0.23 and p =0.03) none of the other direct, indirect, and moderating effects statistically significantly predict sustainable financial performance. Consequently, the hypothesis H4 is not supported is not by the risk-taking-sustainable financial performance relationship. Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

0.02xRISK+0.14xOI-0.17xENV+0.11xBC+0.21xACAP-0.23x$RISK^2$+0.1xENVxRISK-.21xENVx$RISK^2$+0.23xACAPxENVxRISK-0.15xACAPxENVx$RISK^2$ is used to plot the risk-taking–sustainable financial performance relationship with the environmental hostility-absorptive capacity interactions.

Figure 30 *Risk-Taking–Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity interactions.*



The graph shows that the risk-taking–sustainable financial performance relationship of the South African construction and materials sector exhibited a nonlinear behaviour in the context of its environmental hostility-absorptive capacity interaction.

4.5.2.1.2. Testing Hypothesis H4 with Objective Measures of Sustainable Financial Performance

The ANOVA results in Appendix Table 15 reveal that the direct, non-linear, and moderating effects statistically significantly predict sustainable financial performance, $F(16, 23) = 4.22$, $p < .001$. Furthermore, the independent variables explain 75% [$R^2 = 0{,}75$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0{,}58$] on sustainable financial performance.

The hierarchical regression analysis Appendix Table 16 reveal that except for ENVxEO (*beta* =0.61; *p*=0.02), EO^2 (*beta* =-0.48; *p*=0.05) and Organisational Identity (*beta* =0.53; *p*=0.02), none of the direct or main effect, moderating effects, and indirect effects statistically significantly predict sustainable financial performance. Consequently, hypothesis H4 is not supported as well in this configuration. Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

-0.08xEO+0.53xOI-0.10xENV-0.38xBC+0.53xBC+0.53xACAP-0.48x EO^2+0.61xENVxEO-0.48xENVx EO^2+0.57xACAPxENVxEO-0.52xACAPxENVx EO^2, the EO–sustainable financial performance graph is plotted.

Figure 31 *EO–Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity Interactions.*

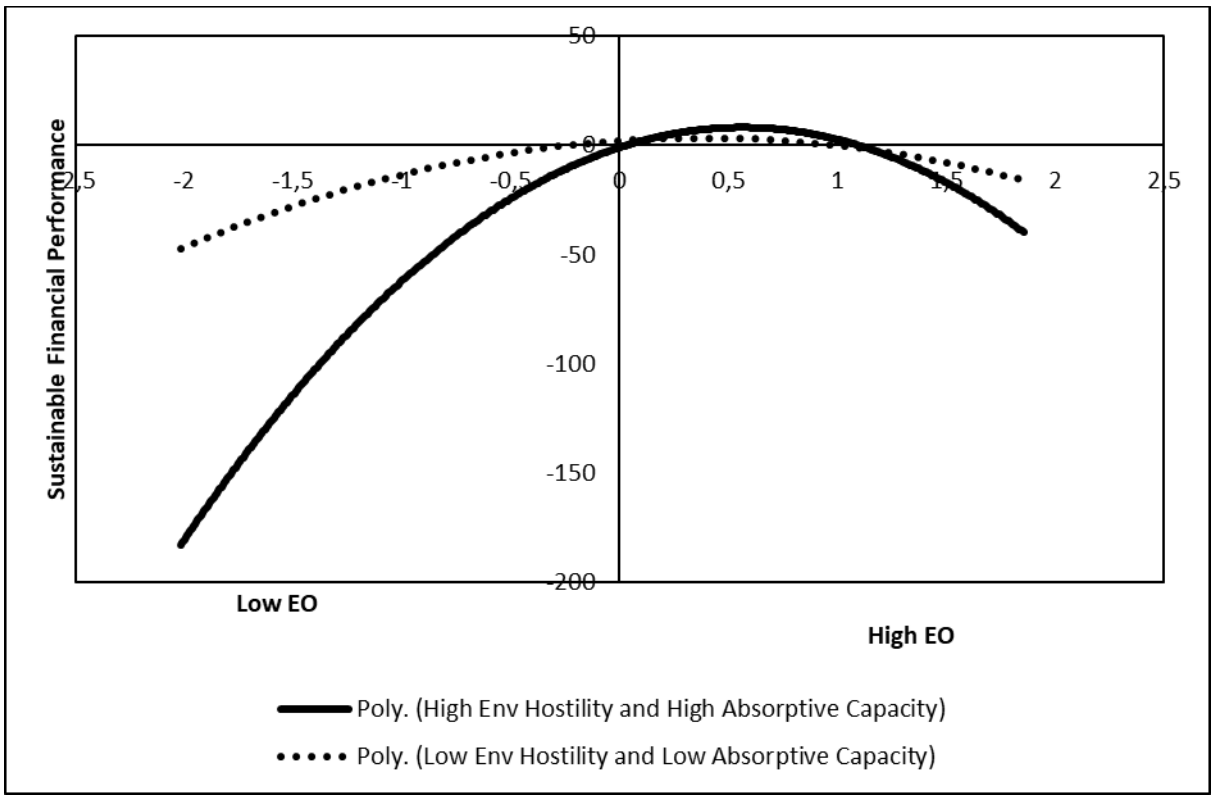


Figure 31 shows that regardless of the environmental hostility-absorptive capacity interaction configuration the EO–sustainable financial performance relationship of the South African construction and materials sector exhibited a non-linear behaviour. Furthermore, the similarities between Figure 31 (objective measures of sustainable financial performance) and Figure 27, once more assert that subjective and objective measures are equally important in EO research.

4.5.2.1.3. Conclusion on Hypothesis H4

The EO–sustainable financial performance relationship of the South African construction and materials sector in the context of environmental hostility, was neither negatively nor positively moderated its absorptive capacity. The direction of the relationship depended on the mix between EO, environmental hostility, and absorptive capacity. The sub-dimensions of EO contributed to the direction of this relationship and their contribution varied.

The EO–sustainable financial performance relationship where sustainable financial performance was measured as an objective construct, exhibited a similar behaviour to the EO – sustainable financial performance relationship in the subjective configuration.

4.5.2.2. *H5(b):* In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its absorptive capacity. Additionally, their interaction had a negative impact its EO-sustainable financial performance relationship.

This hypothesis investigated whether in the context of environmental hostility, the organisational identity of the South African construction and materials sector negatively moderated its absorptive capacity and whether the environmental hostility-absorptive capacity-organisational identity interaction negatively impacted the EO–sustainable financial performance relationship.

The ANOVA results reveal that the direct, non-linear, and moderating effects statistically significantly predict sustainable financial performance, $F\ (18, 107) = 2.95$, $p < .001$. Furthermore, they explain 33% [$R^2 = 0{,}33$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0{,}22$] on sustainable financial performance.

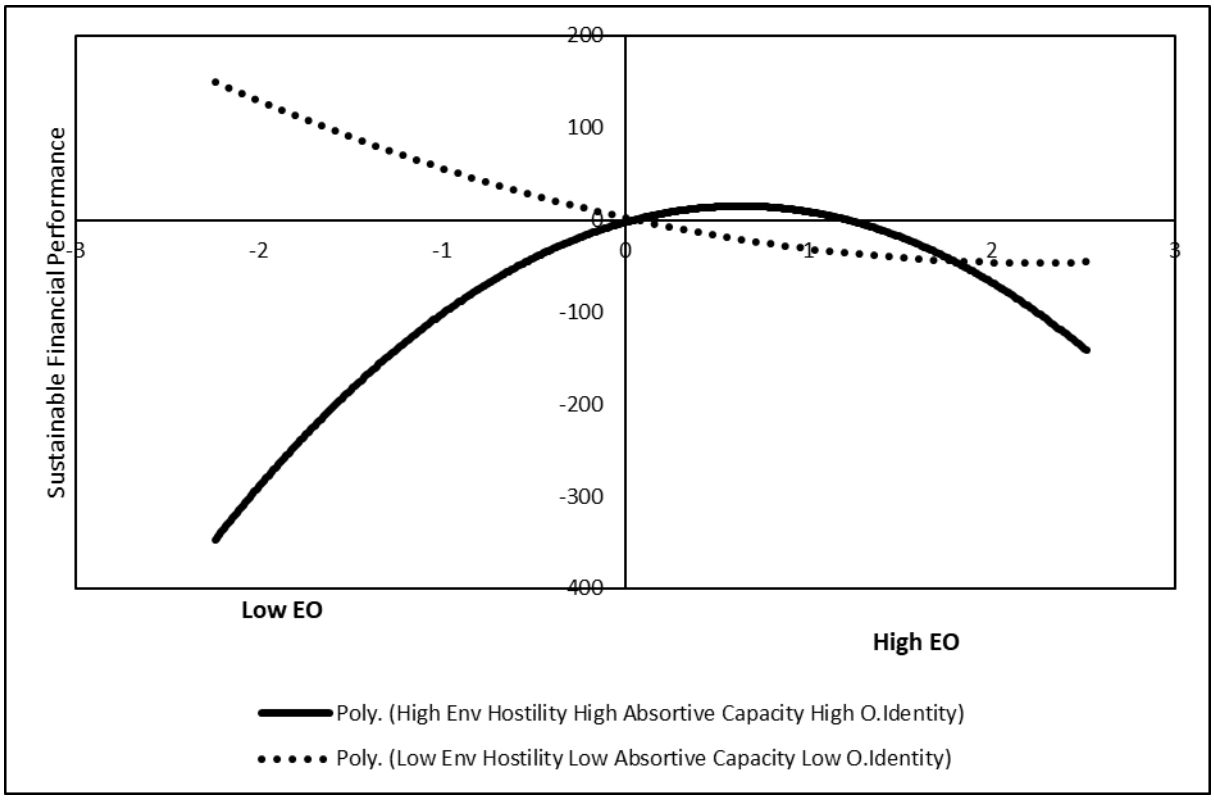
The hierarchical regression analysis shows that, except for absorptive capacity (*beta*=0,28, and *p*= 0.03), EO^2 (*beta*=-0,22 *p* =0.03), none of the other direct, indirect and moderating effects statistically significantly predict sustainable financial performance. Consequently, the hypothesis H5(b) is not supported.

The Tukey HSD test indicate that the mean difference(Appendix Table 18) from EO^2 to the ACAPxEOxENVxOI (4.56±4.25) and ACAPxEO^2xENVxOI (8.20±10.9) moderating effects, are statistically significant (i.e. 4.56 and 8.20 > 0.40 the critical Tukey value shown in Table 25) than the mean differences between these moderating effects and any other predictor variable and interaction in this model. It should be noted that absorptive capacity was found to be significant in the regression analysis. However, the post hoc analysis treated this variable like all others. Therefore, the post hoc analysis supports the regression analysis only insofar as the non-linear term is concerned. As with the other hypotheses, this post hoc result clarifies which predictor variable contributed to the significance and effect size that was established in the ANOVA.

Considering the statistically significant and non-significant direct, non-linear, and moderating effects and formulating an appropriate regression equation:

$-0.07xEO+0.12xOI-0.15xENV+0.09xBC+0.28xACAP-0.22xEO^2-0.03xENVxEO-0.34xENVxEO^2+0.33xACAPxENVxEO-0.37xACAPxENVxEO^2+0.41xACAPxENVxEOxOI-0.16xACAPxENVxEO^2xOI$ is used to plot the EO–sustainable financial performance relationship with the the environmental hostility-absorptive capacity-organisational identity interaction.

Figure 32 *EO-Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.*



The graph shows that the EO–sustainable financial performance relationship of the South African construction and materials sector exhibited a non-linear behaviour in the context of its environmental hostility-absorptive capacity-organisational identity interaction.

In the following sections, the contribution of the respective sub-dimensions of EO to hypothesis H5(b) is presented. ANOVA and Hierarchical Regression Analysis results in Appendix E are used for this purpose.

4.5.2.2.1. Contribution of EO sub-dimensions to Hypothesis H5(b)

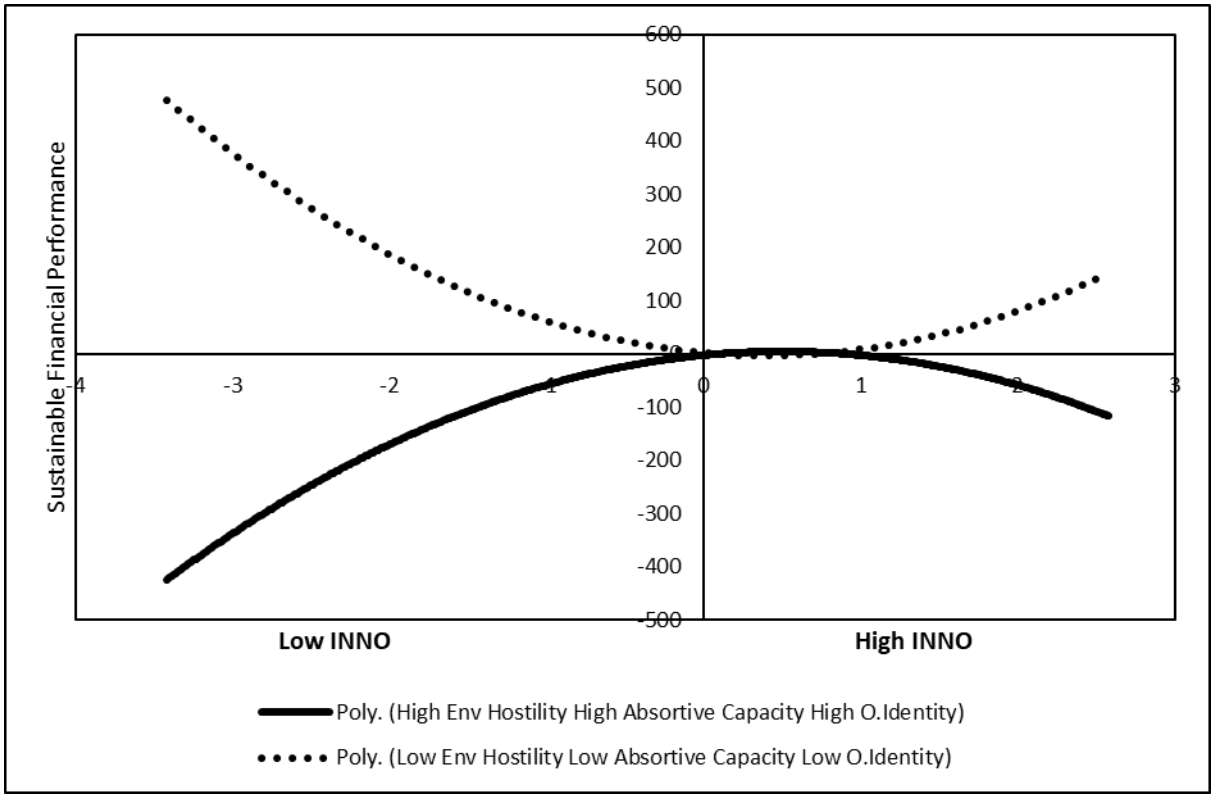
(I) Contribution of the Innovativeness–Sustainable Financial Performance Relationship to Hypothesis H5(b)

The ANOVA results in Appendix Table 7 reveal that the direct, non-linear, and moderating effects statistically significantly predict sustainable financial performance, $F(18, 107) = 2.92$, $p < .001$. Furthermore, they explain 33% [$R^2 = 0{,}33$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0{,}21$] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 8 reveals that, except for absorptive capacity (*beta*=0,33 and *p*= 0.01), INNO²(*beta*=-0,29 and *p*= 0.01), INNO(*beta*=-0.22 and *p*= 0.05) none of the other direct, indirect and moderating effects statistically significantly predict sustainable financial performance. Consequently, the hypothesis H5(a) is not supported is not by the innovativeness-sustainable financial performance relationship. Considering the statistically significant and non-significant direct, non-linear and moderating effects and formulating an appropriate regression equation:

-0.22xINNO+0.18xOI-0.15xENV+0.06xBC+0.33xACAP-0.29xINNO²-0.1xENVxINNO-0.28xENVxINNO²+0.15xACAPxENVxINNO-0.07xACAPxENVxINNO²+0.24xACAPxINNOxENVxOI-0.19xACAPx INNO²xENVxOI is used to plot the Innovativeness-Sustainable Financial Performance relationship with the environmental hostility-absorptive capacity-organisational identity interaction.

Figure 33 *Innovativeness–Sustainable Financial Performance with Absorptive Capacity-Environmental Hostility-Organisational Identity interactions.*



The graph shows that the Innovativeness–sustainable financial performance relationship of the South African construction and materials sector exhibited a non-linear behaviour in the context of its environmental hostility-absorptive capacity-organisational identity interaction.

(II) Contribution of the Proactiveness-Sustainable Financial Performance Relationship to Hypothesis H5(b)

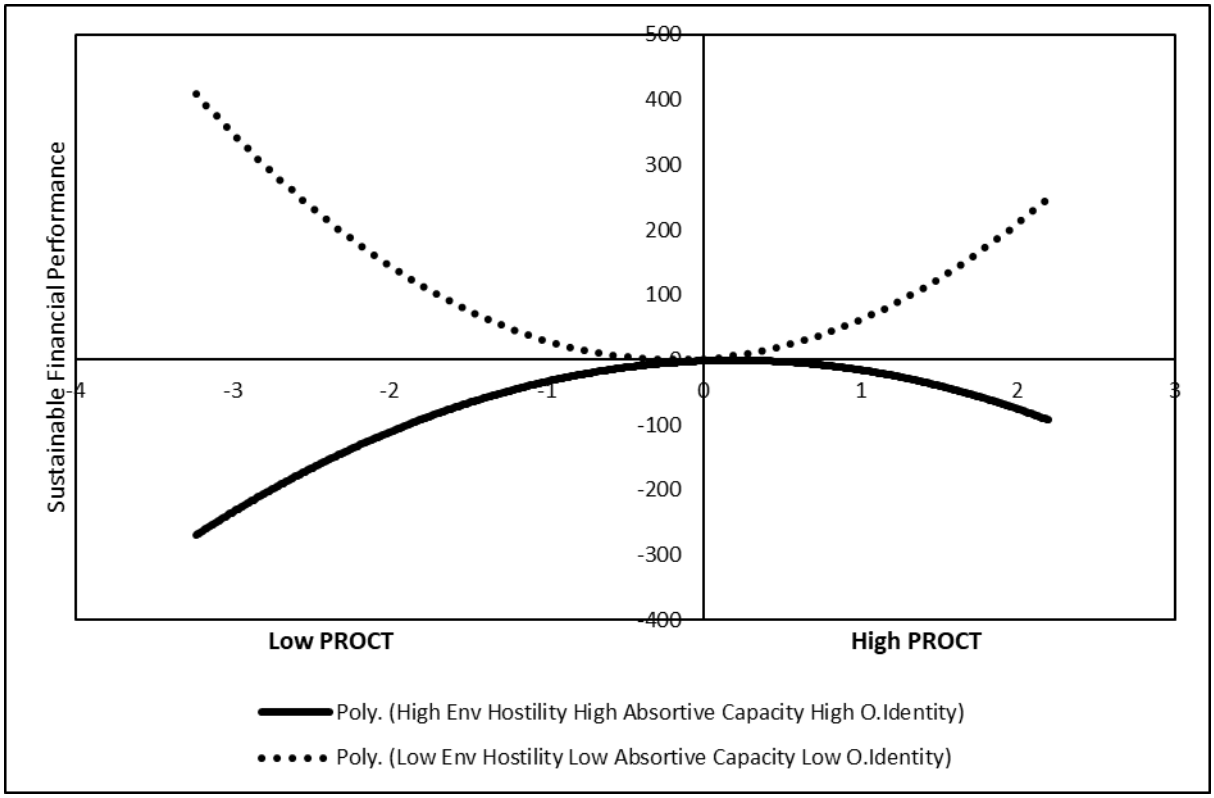
The ANOVA results in Appendix Table 9 reveal that the direct, non-linear, and moderating effects statistically significantly predict sustainable financial performance, $F(18, 107) = 2.97$, $p < .001$. Furthermore, they explain 33% [$R^2 = 0{,}33$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0{,}20$] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 10 reveals that none of the direct, indirect, and moderating effects statistically significantly predict sustainable financial performance. Consequently, the hypothesis H5(a) is not supported is not by the proactiveness-sustainable financial performance relationship. Considering the statistically

significant and non-significant direct, non-linear and moderating effects and formulating an appropriate regression equation:

0.00xPROCT+0.11xOI-0.10xENV+0.05xBC+0.23xACAP-0.21xPROCT²-0.12xENVxPROCT-0.23xENVxPROCT²+0.20xACAPxENVxPROCT+0.13xACAPxENVxPROCT²+0.00xACAPxPROCTxENVxOI-0.17xACAPx PROCT²xENVxOI

Figure 34 *Proactiveness – Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.*



The graph shows that the proactiveness–sustainable financial performance relationship of the South African construction and materials sector exhibited a non-linear behaviour in the context of its environmental hostility-absorptive capacity-organisational identity interaction.

(III) Contribution of the Risk-Taking – Sustainable Financial Performance Relationship to Hypothesis H5(b)

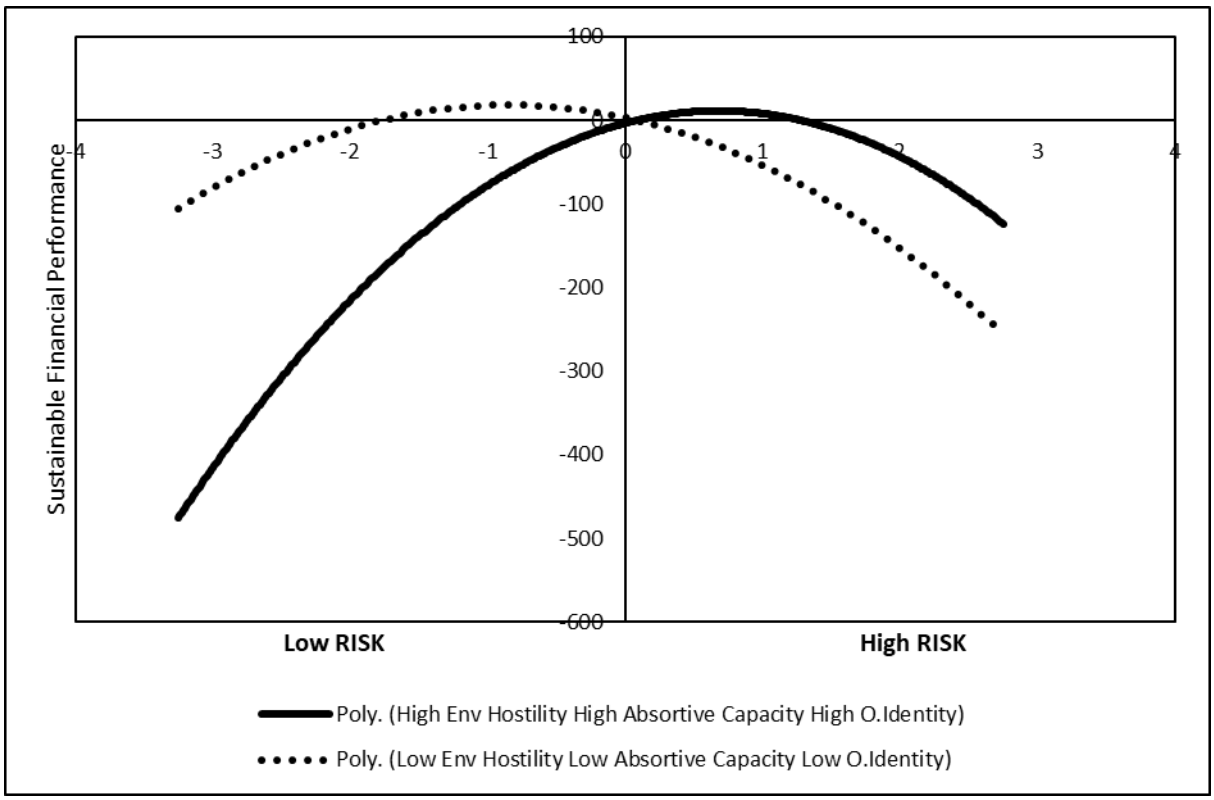
The ANOVA results in Appendix Table 11 reveal that the direct, non-linear and moderating effects statistically significantly predict sustainable financial performance, $F(18, 107) = 2.72$, $p < .001$. Furthermore, they explain 31% [$R^2 = 0{,}31$] of the total variance in sustainable

financial performance and have a large effect [ω² = 0,20] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 12 reveals that, except for RISK²(*beta=-0.24* and *p=0.03),* none of the direct, indirect, and moderating effects statistically significantly predict sustainable financial performance. Consequently, the hypothesis H5(a) is not supported is not by the proactiveness-sustainable financial performance relationship. Considering the statistically significant and non-significant direct, non-linear and moderating effects and formulating an appropriate regression equation:

0.02xRISK+0.13xOI-0.18xENV+0.12xBC+0.22xACAP-0.24xRISK²+0.10xENVxRISK-0.23xENVxRISK²+0.23xACAPxENVxRISK-0.43xACAPxENVxRISK²+0.30xACAPxRISKxENVxOI-0.01xACAPx RISK²xENVxOI

Figure 35 *Risk-Taking – Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.*



The graph shows that the risk-taking–sustainable financial performance relationship of the South African construction and materials sector exhibited a non-linear behaviour in the context of its environmental hostility-absorptive capacity-organisational interaction.

4.5.2.2.2. Testing Hypothesis H5(b) with Objective Measures of Sustainable Financial Performance

The ANOVA results in Appendix Table 15 reveal that the direct, non-linear and moderating effects statistically significantly predict sustainable financial performance, $F(18, 21)=3.68$, $p<.003$. Furthermore, they explain 76% [$R^2 =0,76$] of the total variance in sustainable financial performance and have a large effect [$\omega^2 = 0,60$] on sustainable financial performance.

The hierarchical regression analysis in Appendix Table 16 reveal that except for ENVxEO (*beta* =0.61; *p*=0.02), EO^2 (*beta* =-0.48; *p*=0.05) and Organisational Identity (*beta* =0.50; *p*=0.04), none of the direct or main effect, moderating effects and indirect effects statistically significantly predict sustainable financial performance. Consequently, hypothesis H5(b) is not supported as well in this configuration. Considering the statistically significant and non-significant direct, non-linear and moderating effects and formulating an appropriate regression equation:

$-0.04xEO+0.50xOI-0.20xENV-0.37xBC+0.47xACAP-0.39xEO^2+0.52xENVxEO-0.01xENVxEO^2+0.76xACAPxENVxEO-0.79xACAPxENVxEO^2+0.42xACAPxENVxEOxOI-0.58xACAPxENVxEO^2xOI$, the EO–sustainable financial performance graph is plotted.

Figure 36 *EO–Sustainable Financial Performance with Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.*

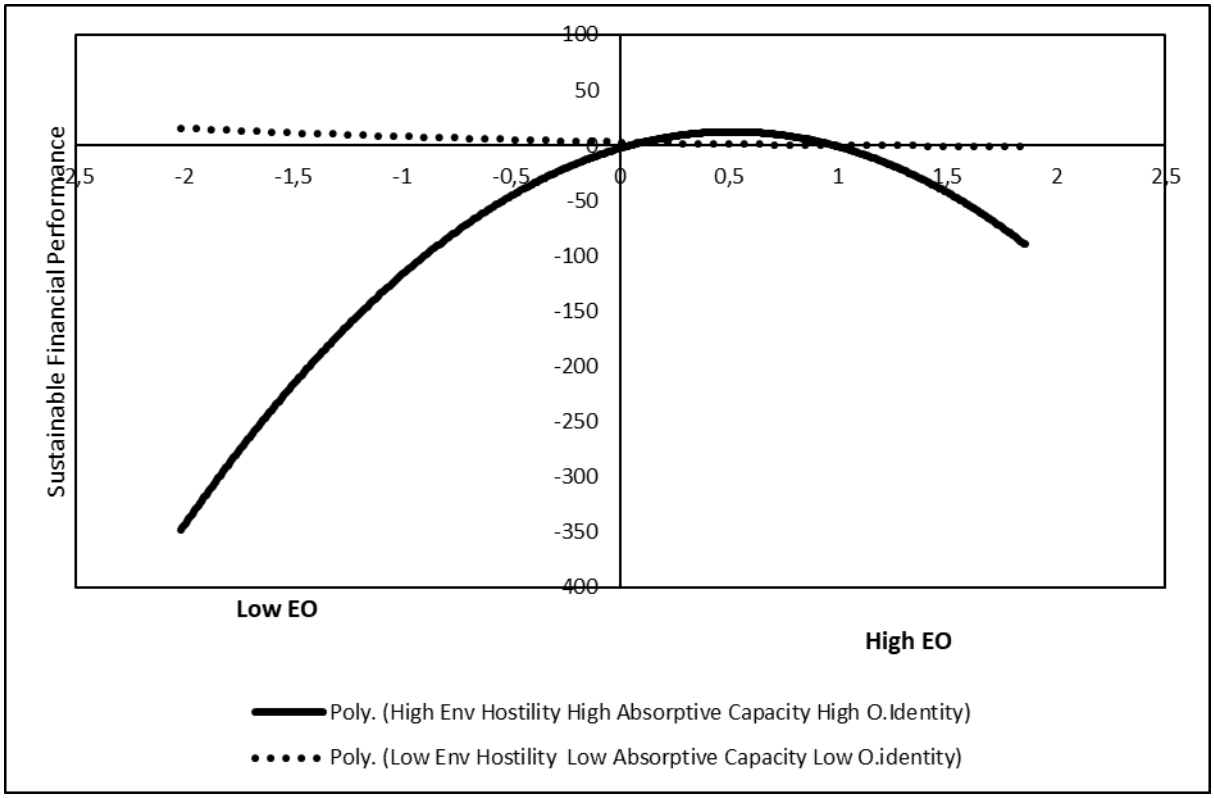


Figure 36 shows that regardless of the environmental hostility–absorptive capacity-organisational identity interaction configuration, the EO – sustainable financial performance relationship of the South African construction and materials sector exhibited no-linear behaviour. Furthermore, the similarities between Figure 36(objective measures of sustainable financial performance) and Figure 32, once more assert that subjective and objective measures are equally important in EO research.

4.5.2.2.3. Conclusion on Hypothesis H5(b)

The results show that the moderating effects of the organisational identity on absorptive capacity and the effect of the environmental hostility-absorptive capacity-organisational identity interaction on the EO–sustainable financial performance relationship of the South African construction and materials sector is neither a simple positive or negative effect, but a non-linear one. Furthermore, the results show that the respective sub-dimensions of EO contributed to this nonlinearity.

The EO–sustainable financial performance relationship where sustainable financial performance was measured as an objective construct, exhibited a similar behaviour to the EO-sustainable financial performance relationship in the subjective configuration.

4.5.6.9. Summary

Table 27 summarises which hypotheses are supported, and which are not. Furthermore, the table indicates the contribution of the respective dimensions of EO to the respective hypotheses.

Table 27: *Summary of results for main hypotheses*

		Contribution of EO dimensions		
Hypothesis	**Result**	**Innovativeness**	**Proactiveness**	**Risk-Taking**
H1	Supported	Supported	Supported	Supported
H2	Not Supported	Not Supported	Not Supported	Not Supported
H3	Not Supported	Not Supported	Not Supported	Not Supported
H5(a)	Not Supported	Not Supported	Not Supported	Not Supported
H4	Not Supported	Not Supported	Not Supported	Not Supported
H5(b)	Not Supported	Not Supported	Not Supported	Not Supported

CHAPTER 5: DISCUSSION OF RESULTS

5.1. INTRODUCTION

The persistent sustainable financial performance decline of the South African construction and materials sector during the 2008-2019 period, could be correlated to external environmental factors. However, the relationship between this decline and the internal organisational resources and capabilities of this sector during the same period had until this study, not been investigated.

Leveraging on EO-As-Experimentation literature and approximating the strategic internal resources and capabilities of top management teams in this sector with EO and its dimensions, the external environment that prevailed during this period with environmental hostility, the other existing resources and capabilities with bricolage capability and absorptive capacity respectively; the following hypotheses were formulated:

- **H1:** The EO – sustainable financial performance relationship of the South African construction and materials sector exhibited a nonlinear behavior during the 2008-2019 period.
- **H2:** The EO – sustainable financial performance relationship of the South African construction and materials sector was negatively moderated by its environmental hostility during the 2008-2019 period.
- **H3:** The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its bricolage capability in the hostile environment that prevailed during the 2008-2019 period.
- **H4:** The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its absorptive capacity in the hostile environment that prevailed during the 2008-2019 period.
- **H5(a):** In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its bricolage capability. Additionally, their interaction had a negative impact on its EO-sustainable financial performance relationship.
- **H5(b):** In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its absorptive capacity. Additionally, their interaction had a negative impact on its EO-sustainable financial performance relationship.

This quantitative confirmatory-descriptive study collected primary data using survey questionnaires and secondary data from listed firms. In both cases, data analytical techniques were analysis of variance, hierarchical regression analysis, and simple slope analysis.

The purpose of this chapter is to interpret the results that were presented in the previous chapter, contextualise, and evaluate them within and against the entrepreneurship and South African construction and materials literature as well as the theoretical framework that was employed.

This chapter is arranged thematically according to the hypotheses.

5.2. HYPOTHESIS TESTING

5.2.1. H1: The EO – sustainable financial performance relationship of the South African construction and materials sector, exhibited a nonlinear behavior during the 2008-2019 period.

This hypothesis investigated whether the EO-sustainable financial performance relationship of the South African Construction and materials sector exhibited a nonlinear behaviour during the 2008-2019 period. The results support this hypothesis. The results suggests that this relationship exhibited a J-shaped nonlinear behaviour. This J-shaped behaviour suggests that low EO levels translated into a negative and subsequently constantly low sustainable financial performance growth i.e., the rate of change of sustainable financial performance with respect to a change in EO. Furthermore, this J-shaped behaviour also suggests that high levels of EO translated into a positive sustainable financial performance growth rate.

The negative and constantly low sustainable financial performance growth at low EO levels largely stemmed, according to the results from low levels of innovativeness than it did from low levels of proactiveness or risk-taking, respectively. Like, at low levels of EO, low levels of innovativeness translated into negative and constantly low sustainable financial performance growth. However, low proactiveness translated into a positive sustainable financial performance growth. In addition, low risk-taking also translated into a positive sustainable financial performance growth although slower than proactiveness.

The negative and constantly low sustainable financial performance at low innovativeness was caused by the direct and negative effects of the hostile environment of the South African construction and materials sector that was suggested by the results. In previous sections, the latter was shown to be characterised by intense competition, harsh, overwhelming business climates, and the relative lack of exploitable opportunities. Contingency theory posits that sustainable financial performance depends on a best fit between innovativeness and environmental hostility. Therefore, the negative and constantly low sustainable financial performance could be because of the lack of such a best fit between low levels of innovativeness and the hostile environment within which the sector operated. The lack of such a fit could be because of the bounded rationality or limited cognitive capabilities of TMT in respect of low levels of innovativeness in a hostile environment. These limitations could have stemmed from the variance inherent in environmental hostility (Camillus, 2016; Yoon & Solomon, 2017).

Conversely, the growth in sustainable financial performance at high EO levels stemmed according to the results, largely from high levels of innovativeness, followed by high levels of proactiveness and high levels of risk-taking, respectively. The growth in sustainable financial performance at high innovativeness stems from the significant and direct effects of environmental hostility and absorptive capacity on the innovativeness-sustainable financial performance relationship that were suggested by the results. Studies have shown that the environmental hostility construct could induce an increase in firm performance (Covin & Slevin, 1989b, 1991; Dele-Ijagbulu et al., 2021; Kreiser et al., 2019; Lumpkin & Dess, 2001; Miller, 1983; Zhang, Teng, Le, & Li, 2023). A possible explanation for this is that this construct induces a type of self-assessment in firms that enhance the cognitive capabilities of TMTs in respect of making optimal decisions. Absorptive capacity involves acquisition and processing of current and reliable information. Consequently, it could be inferred that the growth in sustainable financial performance at high innovativeness stemmed from the enhancement of the cognitive capabilities of TMTs in respect of acquiring and processing reliable and current information for the creation new products, processes, and services, and that such enhancement was due to the self-assessment induced by the direct and negative effects of environmental hostility that were shown to be detrimental at low innovativeness.

The growth in sustainable financial performance at low proactiveness was realised because TMTs were able to make optimum decisions in this respect. Optimal decisions were realised because the cognitive capabilities of TMTs were not limited by environmental hostility effects. As the results suggest, environmental hostility effects were non-significant in this respect. However, the decrease in sustainable financial performance growth at high

proactiveness suggests that the effects of environmental hostility became prominent as proactiveness increased. This points to an increase in variance from this sub-dimension of EO.

The growth in sustainable financial performance was also realised at low risk-taking. This growth was also realised due to optimal TMTs decisions, where engaging in low levels of risk-taking. Optimum decisions were realised because the cognitive capabilities of TMTs were not limited by environmental hostility effects, even though environmental hostility had a significant effect in this case (albeit to a lesser extent when compared to the effects of environmental hostility on innovativeness). However, the decrease in growth at high risk-taking suggests that the effects of environmental hostility became prominent with an increase in risk-taking, which as for other EO sub-dimensions, is characterised with high variance.

The EO-sustainable financial performance relationship was formulated based on the first principle of the RBV. In other words, this condition posited that a strategic resource or capability could yield sustainable performance if it remained valuable rare imitable and in substitutable (VRIN). The increase in sustainable financial performance due to EO and all its three dimensions suggests that such VRIN was maintained, especially at high levels of EO, which affirms this principle. However, one of the key limitations of the RBV is its inability to explain how such a VRIN could be achieved (Kraaijenbrink et al., 2010). The result of this study indicates that the enhancement of the cognitive capabilities of TMTs through an underlying self-assessment mechanism induced by the direct effects of environment hostility and absorptive capacity could provide a possible solution to the removal of this limitation. Therefore, using the findings of this study and the explanations provided in this respect, could be explored more comprehensively in future research.

This current study was placed in the EO-As-Experimentation perspective. Irrespective of context, research design, and methodology, the non-linearity of the EO-sustainable financial performance that was established in the current study is consistent with other studies in this perspective (Ferreras-Méndez et al., 2022; Gali, 2018; Gupta & Gupta, 2015; Kohtamäki et al., 2019; Morić, 2022; Tang et al., 2008). However, in terms of the J-shaped EO-sustainable financial performance relationship, the findings of the current study are only consistent with those of Kohtamäki et al. (2019). However, in this respect, and in respect of other EO-As-Experimentation, studies in which the EO-firm performance relationship was found to exhibit an inversed U-shaped behaviour (Gali, 2018; Morić, 2022; Tang et al., 2008), the results of the study assert that the nature of this relationship may vary based on contextual setting.

In terms of the multidimensionality of EO and due to a shortage of such studies in extant literature, the current study is only comparable to the studies of Morić (2022), Gali (2018), and Calic and Shevchenko (2020). The current study established that the innovativeness-sustainable financial performance relationship of the South African construction and materials sector exhibited a J-shaped behaviour, and that the statistically significant direct effects of environmental hostility and absorptive capacity were responsible for this behaviour. These findings are contrary to those reported in extant literature, where Moric (2022) and Gali (2018) established that innovativeness directly and positively predicted firm performance. In addition, Calic and Shevchenko (2020), established that innovativeness-firm performance exhibited an inversed U-shaped behaviour. None of the extant literature provide an interpretation similar to that provided in the current study. The reason for this could be inherent in the different conceptual models that were investigated.

The current study established that the proactiveness-sustainable financial performance relationship of the South African construction and materials sector exhibited a monotonic behaviour. Despite the different contexts, this is consistent with Moric (2022), Calic and Shevchenko (2020) and Gali (2018), respectively. The current study attributed this behaviour to the non-significant direct effects of environmental hostility. Although Moric (2022) also includes direct environmental effects in his study, he did not provide any explanation for his findings. Furthermore, as is to be expected, the interpretation provided in the current study in this respect was not provided by Calic and Shevchenko (2020) and Gali (2018). The reason for this could be inherent in the different conceptual models that were investigated. However, the common results amongst the three studies assert the external validity of the proactiveness-firm performance relationship.

The current study established that the risk-taking-sustainable financial performance relationship of the South African construction and materials sector exhibited a monotonic behaviour. Despite the different contexts, this is consistent with Gali (2018), and contradicts Moric (2022) and Calic and Shevchenko (2020), who respectively established an inversed U-shaped risk-taking-firm performance behaviour. The current study attributed this behaviour to the non-significant effects of environmental hostility and extant studies did not provide any plausible explanation for their findings.

This study makes several significant contributions to EO-As-Experimentation literature: firstly, it empirically extends the largely non-African EO-As-Experiment perspective EO-firm performance debate by adding a South African perspective. In this respect, this study is

original in the sense that it is the first to place the South African construction and materials sector in the EO-As-Experimentation perspective.

Secondly, the literature review has revealed that in this perspective, there are very few studies that operationalise EO as a multidimensional construct. Consequently, in this regard, this study empirically and methodologically expands this body of knowledge, by not only showing how EO (and its dimensions) are related to sustainable financial performance as other studies have done but by providing a plethora of plausible explanations for all interactions that might spark future research.

Thirdly, the current study uses an African perspective to support previous studies that showed that subjective measures of firm performance were as credible as their objective counterparts in EO studies. Moreover, in the EO-A-Experiment perspective, this study is only second to that of Tang et al. (2008).

This study is comparable to none in the literature of the South African construction and material sector. As such, its findings contribute original and significant new insights into the South African construction and materials literature in the following way: In the literature review, it was demonstrated that the persistent decline in sustainable financial performance that was experienced by the above sector during the 2008-2019 period could be explained or correlated to external factors such as GDP, construction activity and GDFI. However, it was shown that the contribution of its internal factors to this phenomenon remained an unexplored territory. Therefore, in this respect, this study is original and significant, because it is the first to examine the market dynamics of the South African construction and materials sector for the period in question.

Secondly, it is the first to penetrate the boardrooms of the South African construction and materials sector to specifically examine the strategic postures that were employed by them to counter the persistent decline in sustainable financial performance that was experienced by this sector during this period.

Thirdly, in the same context, it is the first study to examine the entire sector by including in the sampling frames participants such as profession consultants or service providers and a plethora of other materials and construct firms regardless of size that had to date not been studied together thus increasing external validity or generalisability.

Fourthly, previous studies relating to this sector were for the most part at provincial level. This study is the first to generalise to a national context.

Lastly, this study has demonstrated how a plethora of strategic postures, from various studies, conducted during the period in question (but not spanning the entire period) could be approximated using the EO construct. To the best of the author's knowledge, this study is the first of its kind in this regard.

The current study has several limitations: firstly, the literature review has shown that to gain finer empirical, theoretical, and methodological insights in the EO-sustainable financial performance relationship and subsequently the broader EO-firm performance debate, this study could be enhanced by measuring sustainable financial performance as a multidimensional construct. Future research could include repeating the current study by using sustainable financial performance as a multidimensional construct.

Secondly, the literature review has demonstrated that according to this perspective, the antecedents of the EO are yet to be accounted for. This study did not heed this call either. Future research could involve using, inter alia, theories such as the theory of planned behaviour (TPB)(Ajzen, 2011) and upper-echelons (Hambrick & Mason, 1984) to introduce such antecedents.

The comparisons between the current study and extant literature shows that Gali (2018) accounted for both failed firms and surviving firms. The current study has only accounted for surviving firms in the South African construction and materials sector. This does not provide a complete picture into how different firms experienced the hostile environment that prevailed during the 2008-2019 period, and thus impedes the derivation of deeper insights in this respect. Therefore, future research could include: (a) repeating this study for failed firms in the South African construction and materials sector and thereby generate empirical insights into how the EO-sustainable financial performance relationship would have been shaped by firms in this category; (b) repeating this study by separating firms according to size thereby generate empirical insights into how the EO-sustainable financial performance relationship would have been shaped by firms in the respective categories (D'Souza & Fan, 2022); and (c) repeating this study by separating firms according to industry, thereby generate empirical insights into how the EO-sustainable financial performance relationship would have been shaped in the respective categories.

Hypothesis Summary

This hypothesis investigated whether the EO-sustainable financial performance relationship of the South African construction and materials sector exhibited non-linear behaviour. The results suggest that this relationship was non-linear, and J-shaped. The results suggest that

this relationship was largely driven by the innovativeness sub-dimension of EO more than it was respectively driven by its proactiveness and risk-taking dimensions. Furthermore, the results suggest that the direct effects of environmental hostility and absorptive capacity played a critical role in shaping how the innovativeness sub-dimension predicted sustainable financial performance, and subsequently, how it contributed to the EO-sustainable financial performance relationship. Moreover, the results suggest that the proactiveness and risk-taking sub-dimensions were not significantly impacted by the direct and negative effects of environmental hostility, hence their largely positive contribution to the EO-sustainable financial performance relationship, regardless of their respective levels of intensity.

Comparison to Secondary Study

The results of this study showed that the EO-sustainable financial performance exhibited non-linear behaviour. As such, this hypothesis was also accepted in this respect. The consistency between results from the primary subjective study and the secondary objective study in relation to this relationship, assert that subjective and objective measures are equally usable in EO studies. This is consistent with the pioneering study conducted by (Tang et al., 2008) and subsequent meta-analyses (Rauch et al., 2009; Soares & Perin, 2020) and other recent studies (Morić, 2022; Naskar, 2023).

5.2.2. H2: The EO – sustainable financial performance relationship of the South African construction and materials sector was negatively moderated by its environmental hostility during the 2008-2019 period.

This hypothesis investigated whether the EO–sustainable financial performance relationship of the South African construction and materials sector was negatively moderated by its environmental hostility during the 2008-2019 period. The results do not support this hypothesis. The results suggest that the EO-sustainable financial performance relationship of the South African construction and materials sectors exhibited a U-shaped behaviour at low environmental hostility, and inversed U-shaped behaviour at high environmental hostility, respectively. These respective behaviours suggest that the moderating effects of environmental hostility were more complex than hypothesised.

The results suggest that, in general, sustainable financial performance was favourable at low environmental hostility, as opposed to at high environmental hostility. More specifically, the results reveal that, at low environmental hostility, low EO yielded a decrease in sustainable financial performance, and high EO levels yielded an increase in sustainable financial performance. Similarly, the results suggest that at high environmental hostility, low EO

yielded an increase in sustainable financial performance, and high EO yielded a decrease in sustainable financial performance at high environmental hostility.

The results suggest that, in general, innovativeness-sustainable financial performance was favourable at low environmental hostility, as opposed to at high environmental hostility. More specifically, the results reveal that at low environmental hostility, low innovativeness yielded a decrease in sustainable financial performance and high innovativeness levels yielded an increase in sustainable financial performance. Similarly, the results suggest that at high environmental hostility, low innovativeness yielded an increase in sustainable financial performance and high innovativeness yielded a decrease in sustainable financial performance at high environmental hostility.

The results suggest that, in general, proactiveness-sustainable financial performance was favourable at low environmental hostility, as opposed to at high environmental hostility. More specifically, the results reveal that at low environmental hostility, low proactiveness yielded a decrease in sustainable financial performance, and high proactiveness levels yielded an increase in sustainable financial performance. Similarly, the results suggest that at high environmental hostility, low proactiveness yielded an increase in sustainable financial performance, and high proactiveness yielded a decrease in sustainable financial performance at high environmental hostility.

The results suggest that, in general, risk-taking-sustainable financial performance was favourable at low environmental hostility, as opposed to at high environmental hostility. More specifically, the results reveal that at low environmental hostility, low risk-taking yielded a decrease in sustainable financial performance, and high risk-taking levels yielded an increase in sustainable financial performance. Similarly, the results suggest that at high environmental hostility, low risk-taking yielded an increase in sustainable financial performance, and high risk-taking yielded a decrease in sustainable financial performance at high environmental hostility.

The above main results raise the following questions A to E, which are discussed hereunder.

A. Why was the EO-sustainable financial performance relationship of the sector favourable at low environmental hostility than at high environmental hostility in general?

The EO-As-Experimentation perspective was shown to involve exploration and experimentation, which prove to be sources of variance. Environmental hostility was defined as unpredictable, uncertain industry settings, intense competition, harsh, overwhelming

business climates, and the relative lack of exploitable opportunities (Covin & Slevin, 1989b). This definition suggests that such environments are also characterised by exploration and experimentation and consequently variance. Therefore, the combination of EO (and its sub-dimensions) and environmental hostility is inherently variance laden. Contingency theory posits that optimum firm performance depends on finding a best fit between the resource and capabilities of a firm and the external environment within which it operates. However, the theory also posits that, in variance-laden situations, finding such a best fit becomes a challenge due to the bounded rationality or cognitive capability limitations of TMT i.e. TMTs can neither collect complete information about a situation or environment, nor can they analyse it completely (Camillus, 2016; Lang, 2019).

The dominance of the EO-low environmental hostility interaction over the EO-high environmental hostility interaction, could be explained using the above theoretical foundations. The former interaction yields sustainable financial performance on the overall better than the latter because the cognitive capabilities of TMTs in respect of finding a best fit between EO and environmental hostility are less challenged. The cognitive capabilities of TMTs are less challenged because the EO-low environmental hostility interaction involves less exploration and experimentation, and hence, less variance. This suggests that it is easier for TMTs to collect, analyse, and use entrepreneurial information effectively.

The dominance of the innovativeness-low environmental hostility proactiveness-low environmental hostility and risk-taking-low environmental hostility interactions over the respective innovativeness-high environmental hostility, proactiveness-high environmental hostility, and risk-taking-high environmental hostility interactions could be explained using the same theoretical foundations. The similarities in behaviour between EO and its dimensions with environmental hostility suggests that these sub-dimensions drove the EO-environmental hostility behaviour that was observed.

B. Why did low EO yield a decrease in sustainable financial performance at low environmental hostility?

Low environmental hostility suggests less unexploitable opportunities, less scarcity of resources, and less overwhelming business conditions. Similarly, using the multidimensional conceptualisation of EO, low EO suggests low innovativeness, low proactiveness and low risk-taking, respectively. The low environmental hostility-low EO interaction implies less variance and less challenges on the cognitive capabilities of TMTs. Therefore, the decrease

in sustainable financial performance amidst such favourable business conditions, suggests that firms in the sector did not leverage enough from this advantageous situation.

C. Why did high EO yield an increase in sustainable financial performance at low environmental hostility?

Low environmental hostility suggests favourable business conditions. Similarly, higher EO suggests higher innovativeness, higher proactiveness, and higher risk-taking. As it was shown in the previous hypothesis H1, environmental hostility could induce an increase in firm performance through a type of inherent self-assessment that enhances the cognitive capabilities of TMTs in respect of making optimum strategic decisions. Therefore, the increase in sustainable financial performance at high EO and low environmental hostility could be attributed this self-assessment as follows: amidst the decrease in sustainable financial performance at low EO and low environmental hostility, TMTs self-assessed, and this raised their cognitive capabilities in respect of engaging in more and effective innovative, proactive, and risky entrepreneurial behaviour, which ultimately resulted in a best fit between these activities, and favourable business conditions.

D. Why did low EO yield an increase in sustainable financial performance at high environmental hostility?

High environmental hostility suggests unfavourable business conditions. Similarly, low EO suggests low innovativeness, low proactiveness, and low risk-taking, respectively. The high environmental hostility and low EO interaction implies less variance and less challenges on the cognitive capabilities of TMTs, and hence the establishment of an optimal fit between these entrepreneurial postures and the hostile environment that prevailed, which resulted in the increase in sustainable financial performance that was observed.

E. Why did high EO yield a decrease in sustainable financial performance at high environmental hostility?

High environmental hostility suggests unfavourable business conditions. Similarly, high EO suggests high innovativeness, high proactiveness, and high risk-taking, respectively. The high environmental hostility high EO interaction implies increased variance and more challenges on the cognitive capabilities of TMTs. This impedes the establishment of an optimum fit between these entrepreneurial postures, and the hostile environment that

prevailed which resulted in the decrease in sustainable financial performance that was observed.

The scenarios B to E are summarised in Figure 37.

Figure 37: *Sustainable Financial Performance changes at various EO-Environmental Hostility Interactions.*

High ENV Hostility	Sustainable Financial Performance Increases	Sustainable Financial Performance Decreases
Low ENV Hostility	Sustainable Financial Performance Decreases	Sustainable Financial Performance Increases
	Low EO	**High EO**

Source: Author's own work.

The figure shows environmental hostility on the vertical axis, and entrepreneurial orientation of the horizontal axis. The effect of any interaction between EO and environmental hostility on sustainable financial performance is depicted in the four quadrants.

Contingency theory was used to link environmental hostility to the EO-sustainable financial performance relationship. The main principle of this theory is that sustainable financial performance is achievable if a best or optimum fit between the EO-environmental hostility interaction. The results of this study showed several configurations of this interaction, not all of which yielded sustainable financial performance. This was not an unexpected, since it points to the main limitation of this theory, namely its bounded rationality. In addition, another key limitation of the RBV is that it is not able to suggest how a single VRIN criterion could yield a permanent, sustainable competitive advantage in an ever-changing business environment (Kraaijenbrink et al., 2010). In this respect, these configurations, particularly those with an increase in sustainable financial performance, may be pointing to a possible answer for this limitation, which could be explore in future research. This is expanded upon in subsequent hypotheses.

The current study was placed in the EO-As-Experimentation perspective. In terms of investigating the effects of the external environmental on the EO-firm performance relationship according to this perspective, this study is only comparable to the studies of Gupta and Gupta (2015), and Moric (2022).

Gupta and Gupta (2015) measured long-term external environmental effects as competitive intensity and demand volatility respectively, finding that they negatively influenced the EO-firm performance relationship over time. The authors interpreted the changes in EO-firm performance relationship in terms of the level of intensity or variation of competitive intensity and demand volatility, respectively, but do not explain why these moderators influenced this relationship in the way in which they did. However, insofar as the negative moderating effects of environmental factors on the EO-firm performance relationship are concerned, the findings of the current study are consistent with Gupta and Gupta (2015). However, this is only part of the picture because the current study went beyond and examined other EO-environmental hostility (both in the subjective and objective measures of sustainable financial performance) configurations, which provided in-depth empirical and theoretical insight into these moderating effects. Furthermore, the derivation of such insights was enabled by the operationalisation of EO as a multidimensional construct, an opportunity that was missed by the study of Gupta and Gupta (2015).

Moric (2022), as in the current study, employed EO as a multidimensional construction. The author found no evidence to support the moderation effects environmental factors on the EO-small firm performance relationship they investigated. In this respect, the results of the current study are consistent with those of Moric (2022). Unlike in the current study, the author neglected to provide plausible explanations for their findings, which could have impeded the derivation of finer grained insights in the relationship in question, especially amidst the multidimensional operationalisation of EO. The current study is empirically and theoretically superior to that of Moric (2022).

The literature review chapter revealed that studies on the effects of environmental factors on the EO-firm performance relationship in the EO-As-Experiment perspective remain scarce. Furthermore, it is evident that the EO-firm performance relationship in the context of environmental factors remains a developing stream (Dele-Ijagbulu et al., 2021; Schröder et al., 2021a). Moreover, to the best of the author's knowledge, the African and South African perspective in relation to this hypothesis is still lacking in literature. Therefore, this study makes several original and significant contributions to EO-As-Experimentation, and EO studies in general.

Firstly, amongst extant EO-As-Experimentation studies, the current study is the first to provide at granular level plausible empirical explanations into why external environmental effects herein measured as environmental hostility affected the EO-sustainable financial performance relationship in the manner that was articulated in this discussion.

Secondly, the current study adds an African or South African perspective to the body of knowledge relating to EO-firm performance in the context of environmental effects, and thereby contributes to the external validity of the EO-environmental factors vs. firm performance body of knowledge.

In the literature review of the South African construct and materials sector, it was shown that that the influence of internal resources and capabilities in the context of the hostile environment that prevailed during the 2008-2019 period, remained to be investigated. Therefore, in this respect, this study is both theoretically and empirically original, and significant, because it is the first to examine the relationship between the internal resources and capabilities of the South African construction and materials sector, and its sustainable financial performance in this context. Through studying this relationship, this study created a platform through which, for the first time, insights into the behaviour of TMTs (strategic posture and causality) during this environmentally hostile period could be understood.

The future studies that were proposed in the previous hypothesis H1, could be repeated in the context of environmental factors. This would approximate the reality of the South African construction and materials sector more accurately, and thereby facilitate the derivation of novel insights into this sector and EO-As-Experimentation literature, respectively.

The bounded rationality problem remains an issue in studies that explore contingency effects using the contingency theory. This remains an open area of research.

While the results of the current study in respect of hypothesis H1 have shown how the limitations of the RBV could be addressed, this was only based on second order polynomials. Higher order polynomials would need to be explored to ascertain these findings.

Hypothesis Summary

This hypothesis investigated whether the EO-sustainable financial performance relationship of the South African construction and materials sector was negatively moderated by its environmental hostility. The results do not support this hypothesis. The results reveal that this relationship is more complex and depends on various configurations of the EO-

environmental hostility interaction, which is consistent with the RBV and CT. The results suggests that all the sub-dimensions of EO actively drive these configurations, and their ultimate effect on sustainable financial performance. The results suggest overall a low environmental hostility situation is worse than a high environmental hostility situation at low EO and better than the latter at high EO.

Comparison to Secondary Study

The results of this study yielded the same results for this hypothesis. As such, this hypothesis was also not supported. The consistency between results from the primary subjective study and the secondary objective study in relation to the moderating effects of environmental hostility on the EO-sustainable financial performance relationship, assert that subjective and objective measures are equally usable in EO studies. This is consistent with the pioneering study of (Tang et al., 2008) and subsequent meta-analyses (Rauch et al., 2009; Soares & Perin, 2020) as well as other recent studies (Morić, 2022; Naskar, 2023).

5.2.3. H3: The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its bricolage capability in the hostile environment that prevailed during the 2008-2019 period.

This hypothesis investigated whether the EO-sustainable financial performance of the South African construction and material sector was negatively moderated by its bricolage capability in the context of its environmental hostility. The results suggest instead that the EO – sustainable financial performance relationship of the South African construction and materials sectors exhibited inversed U-shaped behaviour at low environmental hostility-low bricolage capability and inversed U-shaped behaviour at high environmental hostility-high bricolage capability, respectively.

The results show that at low EO, both the high environmental hostility-high bricolage capability and low environmental hostility-low bricolage capability interactions yield an increase in sustainable financial performance. However, the results also show that at high EO, these interactions decrease sustainable financial performance.

The results show that at low EO, the high environmental hostility-high bricolage capability interaction yield a higher sustainable financial performance than the low environmental hostility-low environmental hostility interaction.

Conversely, the results show that at high EO, the high environmental hostility-high bricolage capability interaction yields a lower sustainable financial performance than the low environmental hostility-low bricolage capability interaction.

The results show that. at low innovativeness, both the high environmental hostility-high bricolage capability and low environmental hostility-low bricolage capability interactions yield an increase in sustainable financial performance. However, the results show that at high innovativeness, these interactions decrease sustainable financial performance.

The results show that at low innovativeness, the high environmental hostility-high bricolage capability interaction yields higher sustainable financial performance than the low environmental hostility-low environmental hostility interaction. Conversely, the results show that, at high innovativeness, the high environmental hostility-high bricolage capability interaction yields a slightly lower sustainable financial performance than does the low environmental hostility-low bricolage capability interaction.

The results show that at low proactiveness, both the high environmental hostility-high bricolage capability and low environmental hostility-low bricolage capability interactions yield a decrease in sustainable financial performance. However, the results show that at high proactiveness, these interactions increase sustainable financial performance.

The results show that at low proactiveness, the high environmental hostility-high bricolage capability interaction yields lower sustainable financial performance than the low environmental hostility-low environmental hostility interaction. Similarly, the results show that at high proactiveness the high environmental hostility-high bricolage capability interaction yields a lower sustainable financial performance than the low environmental hostility-low bricolage capability interaction.

The results show that, at low risk-taking, both the high environmental hostility-high bricolage capability and low environmental hostility-low bricolage capability interactions yield an increase in sustainable financial performance. However, the results show that at high risk-taking, these interactions decrease sustainable financial performance.

The results show that at low risk-taking, the high environmental hostility-high bricolage capability interaction yields higher sustainable financial performance than the low

environmental hostility-low environmental hostility interaction. Conversely, the results show that, at high risk-taking the high environmental hostility-high bricolage capability interaction yields a slightly lower sustainable financial performance than the low environmental hostility-low bricolage capability interaction.

The above results raise the following questions A-F, which are discussed hereunder.

A. *Why did the high environmental hostility-high bricolage capability interaction yield an increase in sustainable financial performance at low EO?*

In the discussion of hypothesis H2, the increase in sustainable financial performance at low EO and high environmental hostility was attributed to enhanced TMT cognitive capabilities, which were realised due to the low variance that was introduced by low entrepreneurial activities. The inclusion of high bricolage capability supports the increase sustainable financial performance. In terms of contingency theory and the RBV, it could be inferred that a high bricolage capability orientation, further enhanced the cognitive capabilities of TMTs in the sector, by complementing the high environmental hostility low EO interaction. The respective sub-dimensions of EO are used below to explain complementarity.

The respective interactions of low innovativeness, low proactiveness, and low risk-taking with high environmental hostility, were shown to have driven or contributed to this increase in sustainable financial performance. In this hypothesis H3, low innovativeness-high environmental hostility-high bricolage capability support an increase in sustainable financial performance. In addition, low risk-taking-high environmental hostility-high bricolage capability also support an increase in sustainable financial performance. However, surprisingly, low proactiveness-high environmental hostility-high bricolage capability do not support an increase in sustainable financial performance. It could therefore be inferred that the increase in sustainable financial performance at low EO-high environmental hostility-high bricolage capability was driven to some extent by the low innovativeness-high environmental hostility-high bricolage capability and low risk-taking-high environmental hostility-high bricolage capability interaction; but not by the low proactiveness-high environmental hostility-high bricolage capability interaction.

The mechanism through which this might have happened lies in the definition of these constructs. High environmental hostility means an unfavourable business condition, scarcity of resources and lack of exploitable opportunities. Low innovativeness means low creativity, which could have been caused by a scarcity of resources and unexploitable opportunities.

Bricolage capability means leveraging existing resources and capabilities. In this situation, it could be posited that creativity was enhanced or rejuvenated by the active recombining internal resources and capabilities, which then countered the negative effects of high environmental hostility, and subsequently maintained an increase in sustainable financial performance.

Similarly, low risk-taking means low commitment of existing resources and capabilities to uncertain outcomes. This could be due to the fact they were scarce or constrained. As in the case of low innovativeness, high bricolage capability promoted the creation of new resources and capabilities from existing ones, which were then committed to uncertain outcomes through constructive risk-taking. This countered the negative effects of environmental hostility, and subsequently maintained the increase in sustainable financial performance.

Low proactiveness means low anticipation of market demands, market changes, and customer need i.e., low opportunity seeking. The decrease in sustainable financial performance amidst high bricolage capability and high environmental hostility and contrary to the increase that was realised at low proactiveness-high environmental hostility in hypothesis H2, suggests that high bricolage capability did not strengthen the anticipation of the sector against its the hostile environment. Proactiveness is an opportunity-seeking strategic posture. This suggest that low proactiveness means low opportunity seeking amidst unfavourable business conditions. This renders the recombination of existing resource and capabilities useless if they are not target towards a goal.

B. *Why did the low environmental hostility-low bricolage capability interaction yield an increase in sustainable financial performance at low EO?*

In hypothesis H2, the decrease in sustainable financial performance at low environmental hostility-low EO (low innovativeness, proactiveness and risk-taking as well) was attributed to a lack of leveraging from favourable business conditions by firms in the sector. In this hypothesis H3, the increase in sustainable financial performance due to the low levels of bricolage capability suggests that this construct rejuvenated the entrepreneurial activities of these firms.

In the previous hypothesis H2, low innovativeness-low environmental hostility translated into a decrease in sustainable financial performance. In this hypothesis H3, after the inclusion of low levels of bricolage capability, the interaction translated into an increase in sustainable

financial performance. Furthermore, low proactiveness-low environmental hostility translated into a decrease in sustainable financial performance and in H3 the addition of low bricolage capability did not change the situation. Lastly, low risk-taking-low environmental hostility translated into a decrease in sustainable financial performance and in H3 the addition of low levels of bricolage capability increased sustainable financial performance.

The above comparative analysis suggest that the low levels of bricolage capability complemented the low innovativeness and low risk-taking but did not complement low proactiveness. Therefore, the increase in sustainable financial performance at low EO – low environmental hostility, and low bricolage capability, was driven by risk-taking and innovativeness, rather than by proactiveness.

Low innovativeness refers to low creativity, which could have been caused by a scarcity of resources and unexploitable opportunities. Bricolage capability means leveraging existing resources and capabilities. In this situation, it could be posited that creativity was enhanced or rejuvenated by the recombination internal resources and capabilities, albeit at low levels, which facilitated leveraging from low levels of environmental hostility and hence the increase in sustainable financial performance.

Similarly, low risk-taking means low commitment of existing resources and capabilities to uncertain outcomes. As in the case of low innovativeness, low bricolage capability promoted the creation of new resources and capabilities from existing ones, which were then committed to uncertain outcomes through constructive risk-taking. This facilitated the leveraging from low levels of environmental hostility, and hence there was an increase in sustainable financial performance.

Proactiveness is an opportunity-seeking strategic posture. This suggest that low proactiveness means low opportunity seeking amidst favourable business conditions. This renders the recombination of existing resources and capabilities albeit at low levels futile if they are not targeted towards a goal or a situation, hence the decrease in sustainable financial performance.

C. *Why did the high environmental hostility-high bricolage capability interaction yield higher sustainable financial performance than the low environmental hostility-low bricolage capability interaction at low EO?*

As demonstrated in A and B, both these configurations yielded an increase in sustainable financial performance at low EO. Furthermore, this increase was achieved through similar mechanisms. The only difference between these two configurations was the intensity at which bricolage capability was applied at low and high environmental hostility, respectively. Therefore, the high environmental hostility-high bricolage capability interaction yielded higher sustainable financial performance than did the low environmental hostility-low environmental hostility interaction at low EO, due to the high levels of bricolage capability that were applied.

D. *Why did the high environmental hostility-high bricolage capability interactions yield a decrease in sustainable financial performance at high EO?*

In hypothesis H2, the decrease in sustainable financial performance at high environmental hostility high EO was attributed to sub-optimum decisions that resulted from limited cognitive capabilities of TMTs. The variance inherent in this interaction was mentioned as the main reason for the limitedness in cognitive capabilities of TMT. In the current hypothesis H3, the inclusion of high bricolage capability did not reverse the negative sustainable financial performance that was established in H2.

In the previous hypothesis H2, high innovativeness-high environmental hostility translated into a decrease in sustainable financial performance. In this hypothesis H3, after the inclusion of high levels of bricolage capability, the interaction translated into a decrease in sustainable financial performance. Furthermore, high proactiveness-high environmental hostility translated into a decrease in sustainable financial performance, and in H3, the addition of high bricolage capability is translated into an increase in sustainable financial performance. Lastly, high risk-taking-high environmental hostility translated into a decrease in sustainable financial performance, and in H3, the addition of high levels of bricolage capability did not have any effect on sustainable financial performance.

This scenario suggests that the decrease in sustainable financial performance at high EO due to the high environmental hostility-high bricolage capability interactions was driven by all subdimension of EO. This scenario suggests that high levels of entrepreneurial activity and high bricolage capability are not effective against high environmental hostility. Put differently, since high entrepreneurial activity and high environmental hostility induce high variance, high

bricolage capability is ineffectual against such variance. As shown before, the reason for this is in the bounded rationality or limited cognitive capability of TMTs amidst such variance.

E. ***Why did the low environmental hostility-low bricolage capability interactions yield a decrease crease in sustainable financial performance at high EO?***

In hypothesis H2, the increase in sustainable financial performance at low environmental hostility and high EO was attributed to enhanced TMT cognitive capabilities, which were a result of an environmental hostility induced self-assessment. In the current hypothesis H3, the inclusion of bricolage capability, albeit at low levels, yielded a decrease in sustainable financial performance that was established in H2, which appears to have now negatively affected the cognitive capabilities of TMTs. Since these were enhanced by the environmental hostility induced self-assessment, it could also be posited that the addition of low levels of bricolage capability negated the effects of this self-assessment.

In the previous hypothesis H2, high innovative-low environmental hostility translated into an increase in sustainable financial performance. In this hypothesis H3, after the inclusions of low levels of bricolage capability, this interaction translated into a decrease in sustainable financial performance. Furthermore, high proactiveness-low environmental hostility translated into an increase in sustainable financial performance. In H3, after the inclusion of low levels of bricolage capability, this interaction translated into an increase in sustainable financial performance. Lastly, high risk-taking-low environmental hostility translated into an increase in sustainable financial performance and in H3 the addition of low levels of bricolage capability resulted in a decrease sustainable financial performance.

The negation of the environmental hostility induced self-assessment by low bricolage capability happened at high innovativeness and high risk-taking, but not at high proactiveness. Proactiveness is an opportunity-seeking strategic posture. High proactiveness means high opportunity seeking amidst favourable business conditions. This renders the recombination of existing resources and capabilities, albeit at low levels, which is useful because they are targeted towards a specified goal or a situation. Hence there is an increase in sustainable financial performance. However, in B, at low environmental hostility, low innovativeness, and low bricolage yielded an increase in sustainable financial performance, and low risk-taking and low bricolage yield an increase in sustainable financial performance, respectively. At the same low environmental hostility and low bricolage

capability, high innovativeness and high risk-taking reversed the increase in sustainable financial performance. This could suggest that that bricolage capability is directly proportional to innovativeness and risk-taking, respectively.

This scenario suggests that the decrease in sustainable financial performance at high EO due to the low environmental hostility-low bricolage capability interactions was driven by risk-taking and innovativeness, and not the proactiveness sub-dimension of EO. This scenario suggests that high levels of risk-taking and innovativeness at low bricolage capability were not effective, albeit at low environmental hostility; however, high levels of proactiveness were.

F. ***Why did the high environmental hostility-high bricolage capability interaction yield a lower sustainable financial performance than the low environmental hostility-low bricolage capability interaction at high EO?***

As demonstrated in D and E, both these configurations yielded a decrease in sustainable financial performance at high EO. However, at high EO, the high environmental hostility-high bricolage capability interaction is a source of higher variance than that of the low environmental hostility-low environmental hostility interaction. This variance was suggested to have the potential to negatively affect sustainable financial performance output, and hence, the difference in sustainable financial performance output between the two interactions.

The main scenarios A, B, D and E are summarised in Figure 38

Figure 38 *Sustainable Financial Performance changes at various EO-Environmental Hostility-Bricolage Capability Interactions.*

High ENV Hostility-High Bricolage	Sustainable Financial Performance Increases	Sustainable Financial Performance Decreases
Low ENV Hostility- Low Bricolage	Sustainable Financial Performance Increases	Sustainable Financial Performance Decreases
	Low EO	**High EO**

Note: ENV means Environmental, Source: Author's work.

The figure shows the environmental hostility-bricolage capability interaction on the vertical axis and entrepreneurial orientation of the horizontal axis. The effect of any interaction between EO and the environmental hostility-bricolage capability performance sustainable financial performance is depicted in the four quadrants.

The RBV and contingency theory were used to link the environmental hostility-bricolage capability to the EO – sustainable financial performance relationship. The second principle of the RBV states that for a strategic resource to sustain firm performance must be complemented by other internal resources and capabilities. In this hypothesis, the bricolage capability was used for this purpose. As the results show, this principle was only held true at low EO for both low environmental hostility-bricolage capability, and high environmental hostility-bricolage capability interactions. Since the first principle of the RBV states that a strategic resource can sustain firm performance only if it maintains its VRIN, it could be inferred that at low EO, both interactions are yet another way to show how such a VRIN could be achieved, and thereby add more potential solutions to the resolution of the concerned RBV limitation. Furthermore, the fact that the low environmental hostility-low bricolage capability yielded sustainable financial performance than the high environmental hostility-high bricolage capability interaction at low EO suggests, according to the contingency theory that the latter might be a better fit than the former under low levels of EO.

The drop in sustainable financial performance at high EO for both interactions or configurations suggest a loss in VRIN by strategic resources (EO and its sub-dimensions) and optimum fit, respectively. While high variance was cited as a possible reason, it might be pointing to a lasting solution to the "temporary VRIN state problem". Put differently, if the bounded rationality problem is resolved, then a more permanent optimum fit between resources and capabilities and the external environment could be achieved, hence a more permanent VRIN. Therefore, future research in respect of the bounded rationality problem is recommended, particularly at multidimensional EO level. In the discussion on hypotheses H5(a) and H5(b), organisational identity will be presented as a possible solution.

The current study was placed in the EO-As-Experimentation perspective. As demonstrated in the literature review, and to the best of the author's knowledge, existing EO studies in this context only either examined the EO-firm performance relationship in the context of environmental factors or other managerial variables, but never in the context of both types of moderators. More specifically, a literature search of peer-reviewed databases does not point to studies wherein the moderating role of the bricolage capability construct and that of environmental hostility have been simultaneously examined in this perspective. In this regard, this study is therefore both empirically and theoretically original.

The positive influence or moderating effects of other complementary resources and capabilities on the EO-firm performance curvilinear relationship have been demonstrated in the literature review chapter (Bauweraerts & Colot, 2017; Ferreras-Méndez et al., 2022; Gupta & Gupta, 2015; Hunt, 2021; Kindermann et al., 2022; Kohtamäki et al., 2019; Schröder et al., 2021a; Wales et al., 2021; Wales, Patel, et al., 2013; Yoon & Solomon, 2017). In this regard and despite its theoretical, methodological, and empirical superiority, the findings of the current study in relation to the positive moderating effect of bricolage capability on the EO-sustainable financial performance relationship are partially consistent with this literature. The current study shows different configurations, where the effects of bricolage capability could positively or negatively moderate hence the partiality.

Despite the partial consistencies, the current study is more elaborate, because it provides more empirical and theoretical insights into the EO-firm performance relationship.

First, as shown in the literature review, previous studies have only examined moderating effects in the EO-firm performance using the univocal operationalisation of the EO construct. This does not create a platform for harvesting of deeper empirical and theoretical insights into how EO, through its dimensions contribute to the overall results pertaining to the above

moderating effects and the EO-firm performance results. The current study closes this knowledge gap by basing all its analyses on the respective dimensions of EO and their interaction with the bricolage capability construct.

Secondly, as mentioned above, previous studies have only examined either moderating effect (of either managerial variables or environmental factors), but never both, let alone in the context of the respective dimensions of EO. The context within which a study is conducted is important (Khandwalla, 1976; Rosenbusch et al., 2013; Voinea, 2017). As such, examining the moderating effects of managerial variables, and not considering the effects of the environment within which firms operate, could mislead the derivation of meaningful inferences about the setting of the study. The current study closes this knowledge gap by basing all its analyses on the respective dimensions of EO and their interaction with the bricolage capability construct in the context of environmental hostility.

Despite the scope of this study, there exist other EO studies in which the EO-firm performance relationship and the interaction effects between bricolage capability and EO including its dimensions have been examined. In respect of the positive effects of the EO-bricolage capability interaction on the EO-sustainable financial performance relationship, the findings of this study are also consistent with this literature (Lin et al., 2023; Xiaobao et al., 2022). Furthermore, in respect of the negative effects of the proactiveness-bricolage capability interaction on the proactiveness-sustainable financial performance relationship, the findings of the current study are consistent literature (Mohammadi, 2021; Shen, 2018). Lastly, the negative effects of the risk-taking-bricolage capability interaction on the risk-taking-sustainable financial performance relationship in the current study are also consistent with literature (Shen, 2018; Voltan, 2019).

The findings of the current study are also inconsistent with other literary sources (Mitka, 2017; Voltan, 2019). The respective findings of these studies found that the innovativeness-bricolage capability interaction was negative. Furthermore, they also found that the proactiveness-bricolage capability interaction was positive, and that the risk-taking-bricolage capability interaction was likewise positive. The difference between the current study and literature is the context and the research design. The current study involved non-linear effects (quadratic terms) and considered the external environmental setting within which firms operated. The environment within which firms operate influence the strategic decisions of TMTs (Barr, 1998; Garud & Rappa, 1994; Miller & Lin, 2022; Ranucci & Wang, 2022; Voinea, 2017). Therefore, the examination of any strategic phenomenon in firms would be incomplete if it excluded the environment within which firms operated. Furthermore, the

environment within which firms operate does not remain constant (Business Jargons, 2020; Farooq, 2020), which implies that TMT strategic decisions will most probably change with changes in environmental condition. This has two implications on the literature to which the current study is compared: (1) the exclusion of environmental factors suggest that their inferences concerning the interactions of bricolage capability and the respective dimensions of EO are incomplete; and (2) due to the exclusion of non-linear effects, the conceptual models of these studies are an incomplete approximation of the circumstances of the concerned firms, especially if they operated in dynamic or hostile environmental settings. Therefore, compared to the current study, these studies are methodologically, theoretically, and empirically lacking. In this respect, the current study contributes to EO literature, a generalised conceptual model through which the interaction of the bricolage capability constructs with the respective dimensions of EO, and their influence of the firm performance could be understood.

In Chapter 2, literature on the South African construction and material sector showed that the extent to which the strategic postures of TMTs in this sector were complemented by (or employed with) other existing resources and capabilities to navigate the hostile environment they experienced, was unknown. Therefore, through this hypothesis, the current study closes this knowledge gap, and yet again demonstrates its own originality. Through this hypothesis, it is now known that overall, when complemented by a “recombination” of existing resources and capabilities, the strategic postures of TMTs yielded varied sustainable financial performance output. which was largely dependent on a configuration between the external environment and these internal resources and capabilities.

The future studies that were proposed in the previous hypothesis H1 and H2, could be repeated in the context of bricolage capability. This would approximate the reality of the South African construction and materials sector more accurately, and thereby facilitate the derivation of novel insights into this sector and EO-As-Experimentation literature, respectively.

Hypothesis Summary

This hypothesis investigated whether the EO-sustainable financial performance relationship of the South African construction and materials sector was negatively moderated by its environmental hostility-bricolage capability interaction. The results do not support this hypothesis. The results reveal that this relationship is more complex than it may at first be perceived to be and depends on various configurations of the EO-environmental hostility-bricolage capability interaction. The results suggests that the contribution of the sub-

dimensions of the overall EO-Sustainable financial performance relationship in the context of these interaction, vary from one configuration to another which is consistent with the principles of the contingency theory and RBV respectively. However, the results suggest in general, a high environmental hostility-high bricolage capability orientation is better than a low environmental hostility-low bricolage capability orientation at Low EO and that at high EO the opposite is true.

Comparison to Secondary Study

The results of this study yielded similar results for this hypothesis. As such, this hypothesis was also not supported accepted. The consistency between results from the primary subjective study and the secondary objective study in relation to the moderating effects of environmental hostility on the EO-sustainable financial performance relationship, assert that subjective and objective measures are equally usable in EO studies. This is consistent with the pioneering study of (Tang et al., 2008) and subsequent meta-analyses (Rauch et al., 2009; Soares & Perin, 2020) as well as other recent studies (Morić, 2022; Naskar, 2023).

5.2.4. H5 (a): In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its bricolage capability. Additionally, their interaction had a negative impact on its EO-sustainable financial performance relationship.

This hypothesis investigated whether in the context of environmental hostility, the organisational identity of the South African construction and materials sector negatively moderated its bricolage capability as well as whether the environmental hostility-bricolage capability-organisational identity interaction negatively impacted the EO–sustainable financial performance relationship.

The results do not support this hypothesis. The results suggest instead that the EO – sustainable financial performance relationship of the South African construction and materials sectors exhibited an inversed U-shaped behaviour at low environmental hostility-low bricolage capability-low organisational identity and an inversed U-shaped behaviour at high environmental hostility-high, bricolage capability-high, organisational identity interactions, respectively.

The results show that at low EO, the low environmental hostility-low bricolage capability-low organisational identity interactions yielded a decrease in sustainable financial performance.

However, the results show that at high EO, this interaction increased sustainable financial performance.

The results show that at Low EO, the high environmental hostility-high bricolage capability-high organisational identity interaction yielded an increase in sustainable financial performance. However, the results show that at high EO, this interaction decreased sustainable financial performance.

The results show that at low innovativeness, the low environmental hostility-low bricolage capability-low organisational identity interactions yielded a decrease in sustainable financial performance. However, the results show that at high innovativeness, this interaction increased sustainable financial performance.

The results show that at low innovativeness, the high environmental hostility-high bricolage capability-high organisational identity interactions yielded an increase in sustainable financial performance. However, the results show that at high innovativeness, this interaction decreased sustainable financial performance.

The results show that, at low proactiveness, the low environmental hostility-low bricolage capability-low organisational identity interactions yielded increase in sustainable financial performance. However, the results show that at high proactiveness, this interaction decreased sustainable financial performance.

The results show that at low proactiveness, the high environmental hostility-high bricolage capability-high organisational identity interactions yielded a decrease in sustainable financial performance. However, the results also show that at high proactiveness, this interaction increased sustainable financial performance.

The results show that at low risk-taking, the low environmental hostility-low bricolage capability-low organisational identity interactions yielded increase in sustainable financial performance. However, the results show that at high risk-taking, this interaction increased sustainable financial performance.

The results show that, at low risk-taking, the high environmental hostility-high bricolage capability-high organisational identity interactions yielded a decrease in sustainable financial performance. However, the results show that at high risk-taking, this interaction increased sustainable financial performance.

The above results raise the following questions A-D, which are discussed hereunder.

A. Why did the low environmental hostility-low bricolage capability-low organisational identity interaction yield a decrease in sustainable financial performance at low EO?

In the discussion of hypothesis H3, the low environmental hostility-low bricolage capability yielded an increase in sustainable financial performance at low EO. In the current hypothesis, H5(a), the addition of low organisational identity weakened the effects of this interaction, by yielding a decrease in sustainable financial performance.

In the current hypothesis H5(a), the results show that at low innovativeness, the low environmental hostility-low bricolage capability-low organisational identity interaction yielded a decrease in sustainable financial performance. In H3, the low environmental hostility-low bricolage capability at low innovativeness yielded an increase in sustainable financial performance. Therefore, it could be posited that low organisational identity weakened the low environmental hostility-low bricolage capability at low innovativeness. Furthermore, at low proactiveness, the low environmental hostility-low bricolage capability-low organisational identity interactions yielded increase in sustainable financial performance. In H3, at low proactiveness, the low environmental hostility-low bricolage capability yielded a decrease in sustainable financial performance. Therefore, it could be posited that low organisational identity strengthened the low environmental hostility-low bricolage capability at low proactiveness. Lastly, at low risk-taking, the low environmental hostility-low bricolage capability-low organisational identity interactions yielded increase in sustainable financial performance. In H3, at low risk-taking, the low environmental hostility-low bricolage capability yielded an increase in sustainable financial performance. Therefore, it could be posited that low organisational identity strengthened the low environmental hostility-low bricolage capability interaction at low risk-taking.

The above comparative analysis reveals that the decrease in sustainable financial performance that was yielded by the low environmental hostility-low bricolage capability-low organisational identity interaction at low EO, was largely driven the innovativeness sub-dimensions of EO. Plausible explanations for this, and for why risk-taking and proactiveness are excluded from that which is provided hereunder.

In the discussion on hypothesis H3, at low low innovativeness, the environmental hostility-low bricolage capability interaction was shown to have yielded an increase in sustainable financial performance. This was attributed to the output of low bricolage capability that

facilitated the creation of new products, processes and practices from existing resources and capabilities. In the current hypothesis H5(a), the decrease in sustainable financial performance by the same interaction, after the inclusion of low organisational identity, suggests that the latter weakened the prospects of gaining sustainable financial performance through the creation of new products, processes and practices from existing resources and capabilities. This could have stemmed from ineffective definition of organisational identity on the part of TMTs. This means answers to the questions posed by its three lenses, as previously articulated, where “who are we”; “who are we no longer”, and “who are we becoming” lenses could have been ineffective.

In the discussion on hypothesis H3, at low proactiveness (low opportunity-seeking), the environmental hostility-low bricolage capability interaction was shown to have yielded a decrease in sustainable financial performance, because low opportunity seeking was attributed to a lack of a target situation or purpose, and that this rendered the recombination of existing resources and capabilities futile without such a purpose. In the current hypothesis H5(a), the increase in sustainable financial performance by the same interaction, after the inclusion of low organisational identity, suggest that the latter created such a purpose. This makes sense because its three lenses have been shown in the literature, to facilitate and direct managerial strategic decision-making processes (Lang, 2019).

Similarly, in the discussion on hypothesis H3, at low low risk-taking, the environmental hostility-low bricolage capability interaction was shown to have yielded an increase in sustainable financial performance. This was attributed to the output of low bricolage capability that facilitated constructive risk-taking amidst low levels of environmental hostility. In the current hypothesis H5(a), the increase in sustainable financial performance by the same interaction, after the inclusion of low organisational identity, suggests that the latter effectively optimised (focused) the output of low bricolage capability, which further enhanced the constructive risk-taking processes of the sector.

B. Why did the low environmental hostility-low bricolage capability-low organisational identity interaction yield an increase in sustainable financial performance at high EO?

In the discussion of hypothesis H3, the low environmental hostility-low bricolage capability yielded a decrease in sustainable financial performance at high EO. In the current

hypothesis H5(a), the addition of low organisational identity strengthened the effects of this interactions by yielding an increase in sustainable financial performance.

In the current hypothesis H5(a), the results show that at high innovativeness, the low environmental hostility-low bricolage capability-low organisational identity interaction yielded an increase in sustainable financial performance. In H3, the environmental hostility-low bricolage capability at high innovativeness yielded a decrease in sustainable financial performance. Therefore, it could be posited that low organisational identity strengthened the low environmental hostility-low bricolage capability at high innovativeness. Furthermore, at high proactiveness, the low environmental hostility-low bricolage capability-low organisational identity interactions yielded a decrease in sustainable financial performance. In H3, at high proactiveness, the low environmental hostility-low bricolage capability yielded an increase in sustainable financial performance. Therefore, it could be posited that low organisational identity weakened the low environmental hostility-low bricolage capability at high proactiveness. Lastly, at high risk-taking, the low environmental hostility-low bricolage capability-low organisational identity interactions yielded an increase in sustainable financial performance. In H3, at high risk-taking, the low environmental hostility-low bricolage capability yielded a decrease in sustainable financial performance. Therefore, it could be posited that low organisational identity strengthened the low environmental hostility-low bricolage capability interaction at high risk-taking.

The above comparative analysis reveals that the increase in sustainable financial performance that was yielded by the low environmental hostility-low bricolage capability-low organisational identity interaction at high EO, was largely driven the innovativeness and risk-taking sub-dimensions of EO. Plausible explanations for this and for why proactiveness is excluded are provided hereunder.

The increase in sustainable financial performance that was yielded by the low environmental hostility-low bricolage capability interaction, both at high innovativeness and high risk-taking respectively, suggests the low organisational identity strengthened the low bricolage capability, which then negated the decrease in sustainable financial performance that was reported in hypothesis H3. In both cases, a plausible explanation lies in the lenses of organisational identity. It could be posited that these lenses directed managerial decisions or gave purpose in respect of why the recombination of existing resources and capabilities should be embarked on albeit at low levels. This facilitated an effective bricolage process, which in turn complemented high innovativeness and high risk-taking entrepreneurial

activities and resulted in the increase in sustainable financial performance that was observed.

The increase in sustainable financial performance that was yielded by the same interaction at a high degree of proactiveness was attributed to the creation of a targeted purpose by high levels of proactiveness for which the recombination of existing resources and capabilities, albeit at low levels, became useful. The results show that this optimum mix was reversed by the inclusion of low levels of organisational identity. This could have stemmed from ineffective definition of organisational identity on the part of TMTs, amidst the explorative and variance laden high proactiveness. This means that answers to the questions posed by its three lenses: “who are we”, “who are we no longer” and “who are we becoming”, may have been ineffective.

C. Why did the high environmental hostility-high bricolage capability-high organisational identity interaction yield an increase in sustainable financial performance at low EO?

In the discussion of hypothesis H3, the high environmental hostility-high bricolage capability interaction yielded an increase in sustainable financial performance at low EO. In the current hypothesis H5(a), the addition of high organisational identity also yielded an increase in sustainable financial performance, suggesting that the high organisational identity levels upheld the effects of this interaction at low EO.

In the current hypothesis H5(a), the results show that, at low innovativeness, the high environmental hostility-bricolage capability-high organisational identity interaction yielded an increase in sustainable financial performance. In H3, the high environmental hostility-high bricolage capability yielded an increase in sustainable financial performance. This suggests that the high organisational identity upheld the effects of this interaction. Furthermore, at low proactiveness, the high environmental hostility-bricolage capability-high organisational identity interaction yielded a decrease in sustainable financial performance. In H3, the high environmental hostility-high bricolage capability interaction yielded a decrease in sustainable financial performance. This suggests that the high organisational identity upheld the effects of this interaction. Lastly, at low risk-taking, the high environmental hostility-bricolage capability-high organisational identity interaction yielded a decrease in sustainable financial performance. In H3, the high environmental hostility-high bricolage capability interaction

yielded an increase in sustainable financial performance. This suggests that the high organisational identity weakened the effects of this interaction.

The above comparative analysis reveals that the increase in sustainable financial performance that was yielded by the high environmental hostility-high bricolage capability-high organisational identity interaction at low EO, was largely driven by the innovativeness sub-dimensions of EO, and not by the risk-taking and proactiveness sub-dimensions. Plausible explanations for these observations are provided hereunder.

In hypothesis H3, the increase in sustainable financial performance that was yielded at low innovativeness by the high environmental hostility-high bricolage capability interaction was attributed to the enhancement of innovativeness through engaging in high levels of bricolage, which subsequently countered the negative effects of high environmental hostility. In the current hypothesis H5(a), high organisational identity strengthened this activity. High levels of organisational identity mean high levels of enquiry, redefinition, and renewal through the lenses of this construct. It could be posited that this enquiry provided focused purpose for the high bricolage activities, whose output facilitated effective low innovativeness.

In hypothesis H3, the decrease in sustainable financial performance that was yielded at low proactiveness by the high environmental hostility-high bricolage capability was attributed to the lack of opportunity-seeking (that characterises low proactiveness), which renders high bricolage activities, since recombination of existing resources and capabilities must be to address a situation or an opportunity. In the current hypothesis H5(a), it could be posited that high organisational identity upheld the effects of this interaction, due to this lack of situation or opportunity-seeking. To elaborate, high organisational identity could direct managerial decisions and strategies in respect of the bricolage. However, this would be a futile exercise if the output of such directed and focused bricolage was not meant to address a new situation or opportunity.

Similarly, in hypothesis H3, the increase in sustainable financial performance that was yielded at low risk-taking by the high environmental hostility-high bricolage capability interaction was attributed to constructive risk-taking, which was facilitated by the high levels of bricolage. In the current hypothesis H5(a), it could be posited that high organisational identity did not uphold the effects of this interaction, or rather. did not strengthen the high bricolage to continue to facilitate constructive risk-taking. A plausible reason for this is as

follows: if it is assumed that high organisational identity promotes effective bricolage then the output of such bricolage should perpetuate constructive risk-taking as it has done above. However, if this is indeed then case, then the reduction in sustainable financial performance could be attributed to excessive bricolage levels for low risk-taking.

D. Why did the high environmental hostility-high bricolage capability-high organisational identity interaction yield a decrease in sustainable financial performance at high EO?

In the discussion of hypothesis H3, the high environmental hostility-high bricolage capability interaction yielded a decrease in sustainable financial performance at high EO. In the current hypothesis H5(a), the addition of high organisational identity also caused a decrease in sustainable financial performance.

In the current hypothesis H5(a), the results show that, at high innovativeness, the high environmental hostility-high bricolage capability-high organisational identity interaction yielded decrease in sustainable financial performance. In H3, the environmental hostility-high bricolage capability at high innovativeness yielded a decrease in sustainable financial performance. Therefore, it could be posited that high organisational identity upheld the effects of high environmental hostility-high bricolage capability at high innovativeness. Furthermore, at high proactiveness, the high environmental hostility-high bricolage capability-high organisational identity interactions yielded increase in sustainable financial performance. In H3, at high proactiveness, the high environmental hostility-high bricolage capability yielded an increase in sustainable financial performance. Therefore, it could be posited that high organisational identity upheld the effects of high environmental hostility-high bricolage capability at high proactiveness. Lastly, at high risk-taking, the high environmental hostility-high bricolage capability-high organisational identity interactions yielded increase in sustainable financial performance. In H3, at high risk-taking, the high environmental hostility-high bricolage capability yielded a decrease in sustainable financial performance. Therefore, it could be posited that high organisational identity strengthened the high environmental hostility-high bricolage capability interaction at high risk-taking.

The above comparative analysis reveals that the decrease in sustainable financial performance that was yielded by the high environmental hostility-high bricolage capability-high organisational identity interaction at high EO, was largely driven by the innovativeness

sub-dimensions of EO, and not by the risk-taking and proactiveness sub-dimensions. Plausible explanations for these observations are provided hereunder.

In the discussion of hypothesis H3, the high environmental hostility-high bricolage capability at high EO was found to yield a decrease in sustainable financial performance. It was established then that this was contributed to by all dimensions of EO. In the current hypothesis H5(a), the inclusion of high organisational identity reversed this situation for high-risk-taking and high proactiveness but not for high innovativeness. Since it was suggested then that the decrease in sustainable financial performance due to all sub-dimensions of EO was due the bounded rationality problem caused by high levels of explorative entrepreneurial activity, it could be posited that organisational identity was effective against the bounded rationality problem for high risk-taking, high proactiveness, and high innovativeness. The reasons for this are like those provided in the previous discussion.

The main scenarios A to D are summarised in Figure 39.

Figure 39 *Sustainable Financial Performance Changes at Various EO-Environmental Hostility-Bricolage Capability-Organisational identity Interactions.*

High ENV Hostility-High Bricolage- O. Identity	Sustainable Financial Performance Increases	Sustainable Financial Performance Decreases
Low ENV Hostility- Low Bricolage-O. identity	Sustainable Financial Performance Decreases	Sustainable Financial Performance Increases
	Low EO	**High EO**

Note: ENV means Environmental, and O. Identity means organisational identity, Source: Author's work.

The figure shows the environmental hostility-bricolage capability-organisational identity interaction on the vertical axis, and entrepreneurial orientation of the horizontal axis. The effect of any interaction between EO and the environmental hostility-bricolage capability-

organisational identity interaction on sustainable financial performance is depicted in the four quadrants.

The RBV and contingency theory were used to link the environmental hostility-bricolage capability-organisational identity to the EO – sustainable financial performance relationship. The second principle of the RBV states that, for a strategic resource to be sustained, firm performance must be complemented by other internal resources and capabilities. In this hypothesis, the bricolage capability-organisational identity interaction was used for this purpose. As the results show, this principle only held true for low EO-high environmental hostility-high bricolage capability-high organisational identity interactions, and at high EO-low environmental hostility-low bricolage capability-low organisational identity interactions. Since the first principle of the RBV states that a strategic resource can sustain firm performance only if it maintains its VRIN, it could be inferred that at low EO, the high environmental hostility-high bricolage capability-high organisational identity interaction is yet another way to show how such a VRIN could be achieved, and thereby to add more potential solutions to the resolution of the concerned RBV limitation. The same inference could be made about the high EO-low environmental hostility-low bricolage capability-low organisational identity interaction.

The drop in sustainable financial performance at high EO by the high environmental hostility-high bricolage capability-high organisational identity interaction, or configurations suggest a loss in VRIN by strategic resources (EO and its sub-dimensions) and optimum fit, respectively. While high variance was cited as a possible reason, it may be pointing to a lasting solution to the “temporary VRIN state problem”. Put differently, if the bounded rationality problem (caused by high variance) is resolved, then a more permanent optimum fit between resources and capabilities and the external environment could be achieved hence a more permanent VRIN. The current study suggests that the sources of high variance are the high environmental hostility and high EO. If this is the case, then the answer could be in other configurations of bricolage capability and organisational identity. For example, the current study did not examine the boundary conditions of high environmental hostility-low bricolage capability-low organisational identity or high environmental hostility-low bricolage capability-high organisational identity or high environmental-high bricolage capability-low organisational identity interactions at high EO. Therefore, future research in respect of the bounded rationality problem and consequently the “temporary VRIN state problem” could involve exploring these boundary conditions.

The drop in sustainable financial performance at low EO by the low environmental hostility-low bricolage capability-low organisational identity also suggests a loss in VRIN and optimum fit but not attributed to variance or bounded rationality. In this situation, the current study suggests that this loss was due to the laissez-faire orientation of TMTs in the South African construction and materials sector. The referred to orientation is a behaviour, and as the theory of planned (TPB) suggests, behaviour is driven by behavioural intention, which are a function of the attitude toward the behaviour, the subjective norms surrounding the performance of the behaviour, and the perception of the ease with which the behaviour can be performed (Ajzen, 2011). Therefore, as above, understanding these behavioural patterns could also be pointing to a possible solution to the aforementioned "temporary VRIN state problem". Future research could include integrating the TPB, CT, and RBV into one conceptual model in which such a behaviour could be EO, and its dimensions with behaviour intentions as antecedents to EO and its dimensions. In such a conceptual model, CT and RBV could introduce contingency factors in the form of environmental factors, and managerial variables, respectively.

The conceptual model of the current study operationalised bricolage capability and organisational identity in a moderator-moderated interaction. However, a potential solution to the above-mentioned unfavourable sustainable financial performance results could lie in this conceptual model. For example, bricolage capability is about responding to a new situation by restructuring existing resources and capabilities. This being the case, a situation ought to have been identified. Organisational identity regards reflection about the past, future, and present. This is the mechanism through which a new situation could be identified. Therefore, organisational identity could also have been operationalised as an antecedent to bricolage capability. Future research could include using such a conceptual model to explore the above discussed interactions.

The current study was placed in the EO-As-Experimentation perspective. As demonstrated in the literature review, and to the best of the author's knowledge, existing EO studies in this context either examined only the EO-firm performance relationship in the context of environmental factors, or other managerial variables, but never in the context of both types of moderators. More specifically, a literature search of peer-reviewed databases does not point to studies wherein the moderating role of the environmental hostility-bricolage capability-organisational identity interaction has been simultaneously examined from this perspective. Therefore, in this regard, this study is empirically and theoretically original. However, the positive influence or moderating effects of other complementary resources and capabilities on the EO-firm performance curvilinear relationship have been demonstrated in

the literature review chapter (Bauweraerts & Colot, 2017; Ferreras-Méndez et al., 2022; Gupta & Gupta, 2015; Hunt, 2021; Kindermann et al., 2022; Kohtamäki et al., 2019; Schröder et al., 2021a; Wales et al., 2021; Wales, Patel, et al., 2013; Yoon & Solomon, 2017). In this regard, and despite its theoretical, methodological, and empirical superiority, the findings of the current study in relation to the positive moderating effect of the bricolage capability-organisational identity interaction on the EO-sustainable financial performance relationship are partially consistent with this literature. This is because this study has shown how various configurations of internal resources and capabilities behave, and how, depending on an optimum fit between these resources and capabilities, the environment could yield varying results. This is contrary to the simple conceptual models that extant literature investigated, hence the refence to partiality.

The current study is more elaborate in the sense that it provides more empirical and theoretical insights into the EO-firm performance relationship.

First, as shown in the literature review, previous studies have only examined moderating effects in the EO-firm performance using the univocal operationalisation of the EO construct. This does not create a platform for harvesting of deeper empirical and theoretical insights into the way in which EO, through its dimensions, contributes to the overall results pertaining to the above moderating effects and the EO-firm performance results. The current study closes this knowledge gap by basing all its analyses on the respective dimensions of EO and their interaction with the environmental hostility-bricolage capability-organisational identity interaction.

Secondly, as mentioned above, previous studies have only examined moderating effect (of either managerial variables or environmental factors), but never both, let alone in the context of the respective dimensions of EO. The context within which a study is conducted is of utmost importance (Khandwalla, 1976; Rosenbusch et al., 2013; Voinea, 2017). As such, examining the moderating effects of managerial variables and not considering the effects of the environment within which firms operate could provide an inaccurate hermeneutic. The current study closes this methodological knowledge gap by basing all its analyses on the respective dimensions of EO and their interaction with the environmental hostility-bricolage capability-organisational identity interaction. This study is the first to examine the EO-sustainable financial performance relationship in-context.

This study is the first to examine the extent to which the use of “non-strategic” existing resources and capabilities of the South African construction and materials sector might have been affected by its organisational identity.

Hypothesis Summary

This hypothesis investigated whether the EO – sustainable financial performance of the South African construction and materials sector was negatively moderated by its environmental hostility-bricolage capability-organisational identity interaction. The results did not support this hypothesis. However, the result suggest that this relationship is more complex than hypothesized, and that different configurations of this interaction at different levels of EO yield different sustainable financial performance results, which is consistent with the principles of the contingency theory and RBV, respectively. However, the results suggest, in general, a high environmental hostility-high bricolage capability-high organisational identity orientation yields better results than a low environmental hostility-low bricolage capability-low organisational identity orientation at Low EO, where the opposite is true at high EO.

Comparison to Secondary Study

The results of this study yielded largely similar results for this hypothesis. As such, this hypothesis was also not supported. The consistency between results from the primary subjective study and the secondary objective study in relation to the moderating effects of environmental hostility on the EO-sustainable financial performance relationship, assert that subjective and objective measures are equally usable in EO studies. This is consistent with the pioneering study of (Tang et al., 2008), and subsequent meta-analyses (Rauch et al., 2009; Soares & Perin, 2020), and other recent studies (Morić, 2022; Naskar, 2023).

5.2.5. H4: The EO-Sustainable Financial Performance relationship of the South African construction and materials sector was negatively moderated by its absorptive capacity in the hostile environment that prevailed during the 2008-2019 period.

This hypothesis investigated whether the EO-sustainable financial performance of the South African construction and material sector was negatively moderated by its absorptive capacity in the context of its environmental hostility. The results do not support this hypothesis. The results suggest that the EO-sustainable financial performance relationship of the South African construction and materials sectors exhibited a U-shaped behaviour at low

environmental hostility-low absorptive capacity, and an inversed U-shaped behaviour at high environmental hostility-high absorptive capacity, respectively.

The results show that at low EO, the low environmental hostility-low absorptive capacity interaction yielded a decrease in sustainable financial performance. However, the results show that at high EO, this interaction increased sustainable financial performance.

The results show that, at low EO, the high environmental hostility-high absorptive capacity interaction yielded an increase in sustainable financial performance. However, the results also show that at high EO, this interaction decreased sustainable financial performance.

The results show that, at low innovativeness, the low environmental hostility-low absorptive capacity interaction yielded a decrease in sustainable financial performance. However, the results show that at high innovativeness, this interaction increased sustainable financial performance.

The results show that, at low innovativeness, the high environmental hostility-high absorptive capacity interaction yielded a decrease in sustainable financial performance. In addition, the results show that at high innovativeness, this interaction decreased sustainable financial performance.

The results show that, at low proactiveness, the low environmental hostility-low absorptive capacity interaction yielded a decrease in sustainable financial performance. However, the results show that at high proactiveness, this interaction increased sustainable financial performance.

The results show that at low proactiveness, the high environmental hostility-high absorptive capacity interaction yielded an increase in sustainable financial performance. However, the results show that at high proactiveness, this interaction decreased sustainable financial performance.

The results show that at low risk-taking, the low environmental hostility-low absorptive capacity interaction yielded increase in sustainable financial performance. However, the results show that at high risk-taking, this interaction decreased sustainable financial performance.

The results show that at low risk-taking, the high environmental hostility-high absorptive capacity interaction yielded an increase in sustainable financial performance. However, the

results show that at high risk-taking, this interaction decreased sustainable financial performance.

The above results raise the following questions A-D, which are discussed hereunder.

A. Why did the low environmental hostility-low absorptive capacity interaction yield a decrease in sustainable financial performance at low EO?

In hypothesis H2, the decrease in sustainable financial performance at low environmental hostility and low EO, was attributed to a lack of leveraging from favourable business conditions by firms in the sector. In hypothesis H4, the decrease in sustainable financial performance due to the low levels of absorptive capacity suggests that this construct did not improve this situation. In other words, the low levels of absorptive capacity did not enhance this leveraging. The sub-dimensions of EO are used to provide plausible explanations.

In the same hypothesis H2, low innovativeness-low environmental hostility translated into a decrease in sustainable financial performance. For H4, after the inclusion of low levels of absorptive capacity, this interaction translated into a decrease in sustainable financial performance, and this suggests that absorptive capacity did not change the situation.
Furthermore, low proactiveness-low environmental hostility translated into a decrease in sustainable financial performance, and in H4, the addition of absorptive capacity did not change the situation. Lastly, low risk-taking-low environmental hostility translated into a decrease in sustainable financial performance, and in H4, the addition of low levels of absorptive capacity increased sustainable financial performance.

The above comparative analysis suggests that the decrease in sustainable financial performance that was yielded by the low environmental hostility-low absorptive capacity interaction at low EO, was driven by low innovativeness-low environmental hostility and low proactiveness-low environmental hostility, and not low risk-taking-low environmental hostility.

Innovativeness involves the creation of new products and services. This creation is the result of market stimuli, and is initiated either to anticipate or to respond to such stimuli (Lomberg, Urbig, Stöckmann, Marino, & Dickson, 2017). Regardless of purpose, reliable and current information about the market is a necessary antecedent for any anticipatory or response strategy more especially in hostile business environments (Cousins, 2018). It could be posited from this that low innovativeness and low absorptive capacity amidst low environment hostility, reflects an ineffective, laissez-faire strategic approach to favourable

market stimuli, which results in the decrease in sustainable financial performance. Put differently, low innovativeness means limited offerings of new products to the market. This makes the acquisition and processing of current and relevant information futile because such information is not being used to leverage on these the favourable market conditions.

Proactiveness involves anticipating market changes, market demands and customer needs. This involves identifying, observing, and interpreting factors that induce change, determining possible organisation-specific implications, and triggering appropriate organisational responses (Lomberg et al., 2017; Schwarz, Ram, & Rohrbeck, 2019). This definition suggests that the acquisition and processing of reliable and current information is a necessity of proactiveness. Therefore, like the previous discussion, it could be posited from this that low proactiveness and low absorptive capacity amidst low environment hostility, reflects an ineffective, laissez-faire strategic response to favourable market stimuli, which results in a decrease in sustainable financial performance. Put differently, low proactiveness means limited anticipation of market changes, demand, and customer needs. This makes the acquisition and processing of current and relevant information futile because such information is not being used to respond to market changes and demands, as well as customer needs.

Risk-taking involves committing resources to uncertain outcomes. However, it could be argued that in business, committing resources to uncertain outcomes is not a random process, but rather, it involves a certain level of reliable and current information about the market environment. Therefore, absorptive capacity is an important enabler for the acquisition and processing of such information. Consequently, the low absorptive capacity of the sector enabled the acquisition of current and reliable about the favourable business conditions that prevailed, and this facilitated constructive risk-taking, albeit at low levels, which in turn yielded an increase in sustainable financial performance that was achieved.

Innovativeness and proactiveness are known as “cautious” strategies (Edwards, Try, Ketchen, & Short, 2014). Therefore, the achievement of an increase in sustainable financial performance at low risk-taking and not at low innovativeness and low proactiveness’ could be suggesting that even in favourable business conditions, it might be useful to employ current and relevant information. Future research could involve understanding the mechanisms that might drive such decision-making processes.

B. Why did the low environmental hostility-low absorptive capacity interaction yield an increase in sustainable financial performance at high EO?

In hypothesis H2, the increase in sustainable financial performance at low environmental hostility and high EO was attributed to enhanced TMT cognitive capabilities, which were a result of an environmental hostility induced self-assessment. For H4, the inclusion of absorptive capacity, albeit at low levels, yielded an increase in sustainable financial performance as well. This suggests that low levels of absorptive capacity further enhanced the cognitive capabilities of TMTs in the sector. The sub-dimensions of EO are used to provide plausible explanations.

In the previous hypothesis H2, high innovative-low environmental hostility translated into an increase in sustainable financial performance. For H4, after the inclusion of low levels of absorptive capacity, this interaction translated into an increase in sustainable financial performance. Furthermore, high proactiveness-low environmental hostility translated into an increase in sustainable financial performance. For H4, after the inclusion of low levels of absorptive capacity, this interaction translated into an increase in sustainable financial performance. Lastly, high risk-taking-low environmental hostility translated into an increase in sustainable financial performance and in H4 the addition of low levels of absorptive capacity resulted in a decrease sustainable financial performance.

The above comparative analysis suggests that the increase in sustainable financial performance that was yielded by the low environmental hostility-low absorptive capacity interaction at high EO, was driven by high innovativeness-low environmental hostility and high proactiveness-low environmental hostility and not high risk-taking-low environmental hostility.

The engagement in high innovativeness and high proactiveness and the subsequent increase in sustainable financial performance due to the low environmental hostility-low absorptive capacity interaction reflects a change from the ineffective and laissez-faire strategic response that was referred to in the previous discussion. Therefore, if the increase in sustainable financial performance in this hypothesis H4 is attributed to the further enhancement of TMT cognitive capabilities by low absorptive capacity, then it may be inferred that this change could also be attributed to enhanced TMT cognitive capabilities by low absorptive capacity. In hypotheses H1 and H2, the enhancement of TMT cognitive capabilities was attributed to a self-assessment induced by environmental hostility. However,

reliable and current information constitutes a necessary input and output of any strategic assessment (Dadkhah et al., 2018; Felin & Powell, 2016). Therefore, the cognitive capabilities of TMTs were enhanced by low absorptive capacity through such a self-assessment. Put differently, upon realising that low innovativeness and low proactiveness were detrimental to sustainable financial performance, firms in the sector acquired and processed reliable and current information about their markets, and thereupon self-assessed, where the outcome of this self-assessment triggered their cognitive capabilities in respect of engaging in high innovativeness and high proactiveness. This resulted in an increase in sustainable financial performance. The respective mechanisms are explained hereunder.

High innovativeness means high creativity, and potentially the production of several innovative solutions for a favourable market (low environment hostility). The effectiveness of such creativity is strengthened by the acquisition and processing of current and reliable information about this market. Similarly, high proactiveness means high opportunity-seeking or searching, the effectiveness of such search is strengthened by the acquisition and processing of current and relevant information about the market. In both cases, the inherent variance of high entrepreneurial activity appears to have been neutralised by low levels of absorptive capacity. Future studies could involve analysing such a mechanism.

The decrease in sustainable financial performance at high risk-taking reversed the increase in sustainable financial performance that was achieved at low risk-taking. This suggests that the acquisition of current and reliable information about the favourable business conditions that prevailed, that was enabled by the low absorptive capacity at low risk-taking, was negatively affected by high levels of risk-taking. As demonstrated in previous chapters, high levels of entrepreneurial activity have been associated with variance that could derail managerial strategic vantage points (Camillus, 2016; Yoon & Solomon, 2017). Therefore, it could be posited that high risk-taking introduced variance and due to the limited cognitive capabilities of bounded rationality of TMTs, this variance affected the degree to which low absorptive capacity enabled constructive risk-taking.

C. Why did the high environmental hostility-high absorptive capacity interaction yield an increase in sustainable financial performance at low EO?

In hypothesis H2, the increase in sustainable financial performance at high environmental hostility and low EO was attributed to enhanced TMT cognitive capabilities, which were a

result of an environmental hostility induced self-assessment. For H4, the inclusion of high absorptive capacity yielded an increase in sustainable financial performance as well. This suggests that high levels of absorptive capacity further enhanced the cognitive capabilities of TMTs in the sector. The sub-dimensions of EO are used to provide plausible explanations.

In the previous hypothesis H2, low innovativeness-high environmental hostility translated into an increase in sustainable financial performance. For H4, after the inclusion of high absorptive capacity, this interaction translated into a decrease in sustainable financial performance. Furthermore, low proactiveness-high environmental hostility translated into an increase in sustainable financial performance. In H4, after the inclusion of high absorptive capacity, this interaction translated into an increase in sustainable financial performance. Lastly, low risk-taking-high environmental hostility translated into an increase in sustainable financial performance and in H4 the addition of high absorptive capacity resulted in an increase sustainable financial performance.

The above comparative analysis suggests that the increase in sustainable financial performance that was yielded by the high environmental hostility-high absorptive capacity interaction at low EO, was driven by low proactiveness-high environmental hostility-high absorptive capacity and low risk-taking-high environmental hostility-high absorptive capacity and not the low innovativeness-high environmental hostility-absorptive capacity interaction. This means that, if the inclusion of high absorptive capacity to the low EO-high environmental hostility interaction yielded an increase in sustainable financial performance by enhancing the cognitive capabilities of TMTs, then the same happened for low proactiveness and low risk-taking interactions, and not the low innovativeness interactions.

High environmental hostility spells unfavourable business conditions, whereas low innovativeness amidst such conditions means low value creation, and low differentiation. High absorptive capacity meanwhile means high levels of acquiring and processing current and relevant information. The increase in sustainable financial performance at low proactiveness and low risk-taking suggests that the high levels of information acquisition and processing complemented low proactiveness and low risk-taking respectively, and not low innovativeness. This means that high absorptive capacity added value to the effects of market demand customer need anticipation and constructive risk-taking more than it did those of low levels of value creation. It may be that in a harsh resource-scarce environment, even amidst high levels of current and relevant information, little can be done in respect of value creation from a low base. However, the results suggest looking outward (opportunity-

seeking) and committing what is already at hand (existing resources and capabilities) as a more ergonomic strategy.

D. Why did the high environmental hostility-high absorptive capacity interaction yield a decrease in sustainable financial performance at high EO?

For H2, the decrease in sustainable financial performance at high environmental hostility and high EO that was reported was attributed to challenges on the cognitive capabilities of TMTs, which were caused by the high variance inherent in this interaction. For H4, high absorptive capacity maintained the status quo.

For H2, high innovativeness-high environmental hostility translated into a decrease in sustainable financial performance. For H4, after the inclusion of high absorptive capacity, this interaction translated into a decrease in sustainable financial performance. Furthermore, high proactiveness-high environmental hostility translated into a decrease in sustainable financial performance. For H4, after the inclusion of high absorptive capacity, this interaction translated into a decrease in sustainable financial performance. Lastly, high risk-taking-high environmental hostility translated into a decrease in sustainable financial performance and in H4 the addition of high absorptive capacity resulted into a decrease sustainable financial performance.

The above comparative analysis suggests that a decrease in sustainable financial performance that was yielded by the high environmental hostility-high absorptive capacity interaction at high EO, was driven by high proactiveness-high environmental hostility-high absorptive capacity, high risk-taking-high environmental hostility-high absorptive capacity and the high innovativeness-high environmental hostility-absorptive capacity interactions.

High environmental hostility spells unfavourable business condition, while high innovativeness, high proactiveness, and high risk-taking promise the introduction of variance. The combination of a hostile environment and high entrepreneurial activity portends extra variance, since both of these are explorative in nature. High absorptive capacity means high levels of acquiring and processing current and relevant information. The decrease in sustainable financial performance in this situation suggest that such information was not effectively used in this case to respond to effectively respond to the harsh business conditions. It could be that the variance mentioned challenged the cognitive capabilities of TMTs i.e. bounded rationality in respect of acquiring and processing current

and relevant information for more effective strategic entrepreneurial responses to the unfavourable environment.

The main scenarios A, B, D and E are summarised in Figure 40.

Figure 40 *Sustainable Financial Performance changes at various EO-Environmental Hostility-Absorptive Capacity Interactions.*

High ENV Hostility-High ACAP	Sustainable Financial Performance Increases	Sustainable Financial Performance Decreases
Low ENV Hostility- Low ACAP	Sustainable Financial Performance Decreases	Sustainable Financial Performance Increase
	Low EO	**High EO**

Note: ENV means Environmental, ACAP means Absorptive Capacity
Source: Author's work.

The figure shows the environmental hostility-bricolage capability-organisational identity interaction on the vertical axis and entrepreneurial orientation of the horizontal axis. The effect of any interaction between EO and the environmental hostility-bricolage capability-organisational identity interaction on sustainable financial performance is depicted in the four quadrants.

The current study is placed in the EO-As-Experimentation perspective. As demonstrated in the literature review, and to the best of the author's knowledge, existing EO studies in this context only either examined the EO-firm performance relationship in the context of environmental factors or other managerial variables, but never in the context of both types of moderators. More specifically, a literature search of peer-reviewed databases does not point

to studies wherein the moderating role of the environmental hostility and absorptive capacity constructs has been simultaneously examined using this perspective. Therefore, in this regard, this study is empirically and theoretically original. However, the positive influence or moderating effects of other complementary resources and capabilities on the EO-firm performance curvilinear relationship have been demonstrated in the literature review chapter (Bauweraerts & Colot, 2017; Ferreras-Méndez et al., 2022; Gupta & Gupta, 2015; Hunt, 2021; Kindermann et al., 2022; Schröder et al., 2021a; Wales et al., 2021; Wales, Patel, et al., 2013; Yoon & Solomon, 2017). As mentioned in previous sections, the findings of the current study are partially consistent with this literature the main reason being the unique conceptual model of the current study particularly in relation to the environmental factors which were considered in the current study, and not in previous literature.

The findings of the current study are only directly comparable to and consistent with the study of Kohtamäki et al. (2019). The authors showed that the absorptive capacity negatively moderated the EO-financial performance relationship. However, in respect of interpreting findings, the current study is more elaborate, in the sense that it provides more empirical and theoretical insight into the EO-firm performance relationship, and thereby reveals more insight.

Firstly, like other studies in the EO-As-Experimentation perspective, Kohtamäki et al. (2019) have only examined moderating effects in the EO-firm performance using the univocal operationalisation of the EO construct. This does not create a platform for harvesting of deeper empirical and theoretical insights into how EO, through its dimensions, contributes to the overall results pertaining to the above moderating effects and the EO-firm performance results. The current study closes this knowledge gap by basing all its analyses on the respective dimensions of EO, and their interaction with the environmental hostility-absorptive capacity interaction.

Secondly, as mentioned above, previous studies have only examined either moderating effect alone (of either managerial variables or environmental factors), but never both together, let alone in the context of the respective dimensions of EO. The context within which a study is conducted is, as noted earlier, crucial (Khandwalla, 1976; Rosenbusch et al., 2013; Voinea, 2017). As such, examining the moderating effects of managerial variables and not considering the effects of the environment within which firms operate could mislead the derivation of meaningful inferences about the setting of the study. The current study

closes this knowledge gap by basing all its analyses on the respective dimensions of EO and their interaction with the environmental hostility-absorptive capacity interaction.

The findings of this study also provide insight into how the postulations of D'Souza and Fan (2022) relating to the potential positive effects of ACAP and its variations on the EO-firm performance relationship could be affected by environmental effects. Furthermore, the findings of this study suggest that to derive deeper insight from these postulations, the multidimensional operationalisation of the EO construct may be necessary to consider. However, contrary to the current study, and as previously discussed regarding EO-As-Experimentation studies, the study of D'Souza and Fan (2022) is unique because it provides granular and holistic insight into the EO versus firm performance relationship by (a) distinguishing between emergent and post emergent firms, and (b) by examining the behaviour of the emergent and post emergent mix. To derive granular insight into the EO-sustainable financial performance relationship in the context of the current hypothesis, the current study could be expanded upon using this categorisation of firms.

Despite the chosen scope of the current study, there exist other EO studies in which the moderating effects of the absorptive capacity on the EO-firm performance relationship have been examined (Alzahrani, 2021; Cho & Kim, 2022; Herath, 2020; Seo et al., 2022; Tapjarern & Popaitoon, 2019). The findings of these studies are largely inconsistent with the findings of the current study i.e., they posit that absorptive capacity construct positively moderates the EO (and its dimensions)-firm performance relationship. This inconsistency could be due to: (a) the analytical methods; and (b) the conceptual model used. In respect of their conceptual models, most of the above studies do not involve the effects of the environmental factors in their conceptual models. This could have led to an incomplete representation of the research settings or circumstances of their firms or samples. Furthermore, while most of these studies have used hierarchical regression as an analytical technique, their findings are inconclusive, because they have not explored the extent to which the absorptive capacity construct could have influenced the EO-firm performance relationship beyond linear terms. Moreover, the studies that have used SEM as an analytical tool, relied on the p-value analysis to make inferences. The p-value does not provide any information into the effect of relationship nor have the results of these studies been used to depict such effects graphically. Therefore, the findings of the current study are more informative than those of the above studies and pave the way for future research in which the conceptual models and analytical methods and techniques of these studies could be enhanced.

Literature on the South African construction and material sector in Chapter 2 showed that the extent to which its strategic postures were complemented by (or employed with) the knowledge absorptive capacity of firms in the sector to navigate the hostile environment they experienced, was unknown. Therefore, through this hypothesis, the current study closes this knowledge gap, while again demonstrating its originality. Through this hypothesis, it is now known that overall, the extent to which information was acquired and processed by TMTs during the period of concern, amidst the hostile environmental conditions that prevailed, complemented their strategic postures to varying degrees.

Hypothesis Summary

This hypothesis investigated whether the EO-sustainable financial performance of the South African construction and materials sector was negatively moderated by its environmental hostility-absorptive capacity interaction. The results did not support this hypothesis. The result instead suggest that this relationship is more complex than hypothesized, and that different configurations of this interaction at different levels of EO yield different sustainable financial performance results, which are consistent with the principles of the contingency theory and RBV, respectively. However, the results suggest in general, that a low environmental hostility-low absorptive capacity orientation is worse than a high environmental hostility-high absorptive capacity orientation at Low EO, and that at high EO, the opposite is true.

Comparison to Secondary Study

The results of this study yielded largely similar results for this hypothesis, especially for the high environmental-high absorptive capacity interaction. As such, this hypothesis was also not supported. The consistency between results from the primary subjective study and the secondary objective study in relation to the moderating effects of environmental hostility on the EO – sustainable financial performance relationship, assert that subjective and objective measures are equally usable in EO studies. This is consistent with the pioneering study of (Tang et al., 2008) and subsequent meta-analyses (Rauch et al., 2009; Soares & Perin, 2020b) and other recent studies.

5.2.6. H5(b): In the context of the hostile environment that prevailed during the 2008-2019 period, the organisational identity of the sector had a negative impact on its absorptive capacity. Additionally, their interaction had a negative impact its EO-sustainable financial performance relationship.

This hypothesis investigated whether in the context of environmental hostility, the organisational identity of the South African construction and materials sector negatively moderated its absorptive capacity and whether the environmental hostility-absorptive capacity-organisational identity interaction negatively impacted the EO–sustainable financial performance relationship.

The results do not support this hypothesis. The results suggest that the EO-Sustainable Financial Performance relationship of the South African construction and materials sectors exhibited a negative convex behaviour at low environmental hostility-low absorptive capacity-low organisational identity, and an inversed U-shaped behaviour at high environmental hostility-high absorptive capacity-high organisational identity interactions, respectively.

The results show that, at low EO, the low environmental hostility-low absorptive capacity-low organisational identity interactions yielded a decrease in sustainable financial performance. In addition, the results show that at high EO, this interaction increased sustainable financial performance.

The results show that at Low EO the high environmental hostility-high absorptive capacity-high organisational identity interaction yielded an increase in sustainable financial performance. However, the results show that at high EO, this interaction decreased sustainable financial performance.

The results show that at low innovativeness, the low environmental hostility-low absorptive capacity-low organisational identity interactions yielded a decrease in sustainable financial performance. However, the results show that at high innovativeness, this interaction increased sustainable financial performance.

The results show that at low innovativeness, the high environmental hostility-high absorptive capacity-high organisational identity interactions yielded an increased in sustainable financial performance. However, the results show that at high innovativeness, this interaction decreased sustainable financial performance.

The results show that at low proactiveness, the low environmental hostility-low absorptive capacity-low organisational identity interactions yielded decrease in sustainable financial performance. However, the results show that at high proactiveness, this interaction increased sustainable financial performance.

The results show that at low proactiveness, the high environmental hostility-high absorptive capacity-high organisational identity interactions yielded an increase in sustainable financial performance. However, the results show that at high proactiveness, this interaction decreased sustainable financial performance.

The results show that at low risk-taking, the low environmental hostility-low absorptive capacity low organisational identity interactions yielded increase in sustainable financial performance. However, the results show that at high risk-taking, this interaction decreased sustainable financial performance.

The results show that at low risk-taking, the high environmental hostility-high absorptive capacity-high organisational identity interactions yielded an increase in sustainable financial performance. However, the results show that at high risk-taking, this interaction decreased sustainable financial performance.

The above results raise the following questions A-D, which are discussed hereunder.

A. Why did the low environmental hostility-low absorptive capacity-low organisational identity interactions yield a decrease in sustainable financial performance at low EO?

In H4, the decrease in sustainable financial performance at low environmental hostility-low absorptive capacity and low EO, was attributed to low levels of absorptive capacity that could not enhance the entrepreneurial postures of TMTs to leverage on low environmentally hostile business conditions. In H5(b), the inclusion of low organisational identity did maintain this situation either.

For H4, low innovativeness-low environmental hostility-low absorptive capacity translated into a decrease in sustainable financial performance. For H5(b), the inclusion of low organisational identity to the same interaction yielded a decrease in sustainable financial performance. This suggests that low organisational identity maintained the situation. Furthermore, low proactiveness-low environmental hostility-low absorptive capacity

translated into a decrease in sustainable financial performance and in H5(b), the addition of low organisational identity to the same interaction also maintained the situation. Lastly, low risk-taking-low environmental hostility-low absorptive capacity translated into an increased sustainable financial performance, and in H5(b), this interaction also translated into an increase in sustainable financial performance. This suggests that low levels of organisational identity maintained the effects of this interaction.

The above comparative analysis suggests that the decrease in sustainable financial performance that was yielded by the low environmental hostility-low absorptive capacity-low organisational identity interaction at low EO, was driven by low innovativeness-low environmental hostility-low organisational identity and low proactiveness-low environmental hostility-low organisational identity; rather than low risk-taking-low environmental hostility-low organisational identity.

For H4, the decrease in sustainable financial performance, due to the low innovativeness-low environmental hostility-low absorptive capacity and low proactiveness-low environmental hostility-low absorptive capacity at low EO, was attributed to the lack of leveraging on current and relevant information amidst favourable business conditions in both situations. The further decrease in sustainable financial performance suggests that this situation did not change in both cases. The lack of change after the inclusion of low levels of organisational identity could have stemmed from several reasons: (a) ineffective definition of organisational identity by TMTs. This means answers to the questions posed by its three lenses: “who are we”, “who are we no longer” and “who are we becoming” lenses could have been ineffective to strengthen the acquisition and processing of relevant information; (b) the level of organisational identity was too low to strengthen such an acquisition and processing; (c) deliberate intentions of TMTs not to leverage. The former (a) could have been caused by several reasons, amongst others being process and relationship conflicts, including TMT (Pastra, Koufopoulos, Samac, & Johansson, 2021; Zu, Wang, & Ma, 2022) and other factors that were cited in discussion of hypothesis H5(b).

For H4, the increase in sustainable financial performance due to the low risk-taking-low environmental hostility-low absorptive capacity was attributed to the absorptive capacity of the sector enabling the acquisition of current and reliable about the favourable business conditions that facilitated the constructive low risk-taking that yielded an increase in sustainable financial performance. Using similar reasoning as above, it could be posited that low organisational identity was effective in respect to low absorptive capacity.

B. Why did the low environmental hostility-low absorptive capacity-low organisational identity interactions yield a decrease in sustainable financial performance at high EO?

For H4, the the low environmental hostility-low absorptive capacity-low interaction at high EO yielded an increase in sustainable financial performance. This increase was attributed to the enhancement of cognitive capabilities of TMTs in the sector by low absorptive capacity. In this hypothesis H5(b), the low environmental hostility-low absorptive capacity-low organisational identity interaction yielded a decrease in sustainable financial performance suggesting that it did not strengthen the low environmental hostility-low absorptive capacity-low interaction. This suggests that low organisational identity was detrimental to the enhancement of cognitive capabilities of TMTs at high EO. The sub-dimensions of EO are used to provide plausible explanations.

For H4, the high innovativeness-low environmental hostility-low absorptive capacity yielded an increase in sustainable financial performance. In the current hypothesis, the high innovativeness-low environmental hostility-low absorptive capacity-low organisational identity interaction yield an increase in sustainable financial performance. Furthermore, for H4l high proactiveness-low environmental hostility-low absorptive capacity yielded an increase in sustainable financial performance. In the current hypothesis, high proactiveness-low environmental hostility-low absorptive capacity-low organisational identity yielded an increase in sustainable financial performance. Lastly, for H4, high risk-taking-low environmental hostility-low absorptive capacity yielded a decrease in sustainable financial performance. In the current hypothesis the high risk-taking-low environmental hostility-low absorptive capacity-low organisational identity yielded a decrease in sustainable financial performance.

The above comparative analysis suggests that a decrease in sustainable financial performance that was yielded by the low environmental hostility-low absorptive capacity interaction at high EO, was driven by high risk-taking-low environmental hostility-low absorptive capacity-low organisational identity, and not high proactiveness-low environmental hostility-low absorptive capacity-low organisational identity or high innovativeness-low environmental hostility-low absorptive capacity-low organisational identity.

For H4, high risk-taking-low environmental hostility-low absorptive capacity yielded a decrease in sustainable financial performance. This was attributed to limited cognitive capabilities that were affected by the variance that was introduced by high risk-taking activities. Therefore, the persistence of this decrease in this hypothesis suggests the low organisational identity could not negate enhance the cognitive capabilities of TMTs by overcoming such variance to yield an increase in sustainable financial performance, but rather it maintained the status quo. This might suggest that the combination of low absorptive capacity and low organisational identity is not optimal for high variance situations. This is sensible, because explorative environments are characterised by experimentation, at the centre of which is active information processing which this combination does not promote.

For H4, the increase in sustainable financial performance at high innovativeness and high proactiveness was attributed to enhanced cognitive capabilities of TMTs by low absorptive capacity. In the current hypothesis, the persistence of this increase in sustainable financial performance, both at high innovativeness and high proactiveness, respectively; suggesting that low organisational identity was complementary to low absorptive capacity. However, as with high risk-taking, high innovativeness, and high proactiveness are entrepreneurial postures that possess variance. Therefore, one might ask, why are the results different between the two combinations? A possible answer to this question could be the intensity of the variance. It could be that high risk-taking has higher inherent variance than high innovativeness and high proactiveness. Another potential answer to this question could be that innovativeness and proactiveness are more cautions entrepreneurial postures that risk-taking (Edwards et al., 2014).

C. Why did the high environmental hostility-high absorptive capacity-high organisational identity interaction yield an increase in sustainable financial performance at low EO?

For H4, the high environmental hostility-high absorptive capacity interaction yielded an increase in sustainable financial performance at low EO. This increase was attributed to the enhanced cognitive capabilities of TMTs by high absorptive capacity. In the current hypothesis H5(b), after the inclusion of high organisational identity, the high environmental hostility-high absorptive capacity-organisational identity interaction yielded an increase in sustainable financial performance as well. Therefore, it could be inferred that this increase can also be attributed to enhanced cognitive capabilities of TMTs and that high organisational identity facilitated this.

For H4, the low innovativeness-high environmental hostility-high absorptive capacity interaction yielded a decrease in sustainable financial performance. For H5(a), after the inclusion of high organisational identity, the low innovativeness-high environmental hostility-high absorptive capacity-high organisational identity yielded an increase in sustainable financial performance as well. This suggests that high organisational hostility favoured to an increase in sustainable financial performance. Furthermore, low proactiveness-high environmental hostility-high absorptive capacity yielded an increase in sustainable financial performance. For H5(a), after the inclusion of high organisational identity, the low proactiveness-high environmental hostility-high absorptive capacity-high organisational identity yielded an increase in sustainable financial performance as well. This suggests that high organisational hostility favoured to an increase in sustainable financial performance. Lastly, low risk-taking-high environmental hostility-high absorptive capacity yielded an increase in sustainable financial performance. In H5(a), after the inclusion of high organisational identity, the low risk-taking-high environmental hostility-high absorptive capacity-high organisational identity yielded an increase in sustainable financial performance as well. This suggests that high organisational hostility favoured to an increase in sustainable financial performance.

The above comparative analysis suggests that the Increase in sustainable financial performance that was yielded by the high environmental hostility-high absorptive capacity-high organisational identity interaction at low EO, was driven by all the sub-dimensions of EO. Therefore, it could be inferred that all the above interactions containing the sub-dimensions of EO, acted with high organisational identity and high absorptive capacity to enhance the cognitive capabilities of TMTs in respect of optimal decision-making.

High environmental hostility means unfavourable business conditions. Low innovativeness amidst such conditions means low value creation, and low differentiation. High absorptive capacity means high levels of acquiring and processing current and relevant information. The decrease of the low innovativeness-high environmental hostility-high absorptive capacity interaction in H4 is attributed to the ineffective acquisition and processing of current and relevant information against harsh business conditions. Such ineffectiveness could have stemmed from inter alia inconsistencies in data quality, utility and value have (de Zubielqui, Lindsay, Lindsay, & Jones, 2019; Kyoon Yoo, Vonderembse, & Ragu-Nathan, 2011; Pittenger et al., 2022; van Tulder, Jankowska, & Verbeke, 2019), relationship and process conflict amongst TMTs (Pastra et al., 2021; Zu et al., 2022), or high variance induced

derailed TMT strategic vantage points (Camillus, 2016; Yoon & Solomon, 2017). The increase in sustainable financial performance after the inclusion of high organisational identity has evidently reversed this. High organisational identity means actively answering its characteristics questions: “who are we as a firm”, “who are we no longer” and “who are we becoming”? This self-assessment streamlines the acquisition and processing of information which then results in more current and relevant information. This information acts on the cognitive capabilities of TMTs in respect of optimising their innovation, which then yields an increase in sustainable financial performance.

Low proactiveness means low opportunity-seeking, low anticipation of market changes, market demands and customer needs. In harsh business conditions, this can be detrimental to firm survival, due to a lack of active response to market stimuli. For H4, the inclusion of high absorptive capacity enabled the low proactiveness-high environmental hostility interaction to yield an increase in sustainable financial performance. This means that high absorptive capacity facilitated the navigation of a harsh business condition, thereby strengthening low proactiveness so as to yield an increase in sustainable financial performance. The mechanism through which this happens was articulated in previous discussions. The increase in sustainable financial performance after the inclusion of high organisational identity suggests that this construct strengthened high absorptive capacity to persist in strengthening low proactiveness against the harsh business environment. As similar mechanism to that in the discussion on low innovativeness could be attributed to this increase.

Low risk-taking means low commitment of resources and capabilities to uncertain outcomes. high absorptive capacity was found to also strengthen low risk-taking against harsh business conditions. As in the previous two cases, the main mechanism relates to the acquisition and processing of current and relevant information which is key against unpredictable and uncertain business conditions. As in the previous two cases, high organisational identity, through the same mechanisms further enhanced such acquisition and processing.

The above discussion does not explain the underlying mechanism relating to how high organisational identity dealt with potential issues of data quality and value, TMT relationship and process conflicts and high variance. Therefore, to expand understanding, future research could include: (a) investigating how high organisational identity solve data quality and value issues; (b) how high organisational identity overcame relationship and process

conflict issues if they existed; and (c) how it overcame the variance that negatively affected the vantage points of TMTs?

D. Why did the high environmental hostility-high absorptive capacity-high organisational identity interaction yield a decrease in sustainable financial performance at high EO?

For H4, the high environmental hostility-high absorptive capacity at high EO yielded a decrease in sustainable financial performance. This decrease was attributed to challenges on the cognitive capabilities of TMTs, which were caused by the high variance inherent in the high environmental hostility-high absorptive capacity at high EO. For H5(b), after the inclusion of high organisational identity, the high environmental hostility-high absorptive capacity-high organisational identity yielded a decrease in sustainable financial performance suggesting that the bounded rationality problem was not overcome.

For H4, the high innovativeness-high environmental hostility-high absorptive capacity interaction yielded a decrease in sustainable financial performance. In the current hypothesis H5(b), after the inclusion of high organisational identity, the innovativeness-high environmental hostility-high absorptive capacity-high organisational identity interaction yielded a decrease in sustainable financial performance. Furthermore, high proactiveness-high environmental hostility-high absorptive capacity interaction yielded a decrease in sustainable financial performance. For H5(b), after the inclusion of high organisational identity, the proactiveness-high environmental hostility-high absorptive capacity-high organisational identity interaction yielded a decrease in sustainable financial performance. Lastly, for H4, the high risk-taking-high environmental hostility-high absorptive capacity yielded a decrease in sustainable financial performance. For H5(b), after the inclusion of high organisational identity, the high risk-taking-high environmental hostility-high absorptive capacity-high organisational identity interaction yielded a decrease in sustainable financial performance.

The above comparative analysis suggests that the decrease in sustainable financial performance that was yielded by the high environmental hostility-high absorptive capacity-high organisational identity interaction at high EO, was driven by all three subdimensions of EO. Furthermore, the results suggest that, in all cases, high levels of organisational identity were not effective enough to strengthen high absorptive capacity, and the respective sub-dimensions of EO against high environmental hostility.

High environmental hostility means unfavourable business conditions, where high innovativeness, high proactiveness, and high risk-taking means the introduction of high variance. The combination of a hostile environment and high entrepreneurial activity means extra variance since both are explorative in nature. High absorptive capacity means high levels of acquiring and processing current and relevant information. High organisational identity means high levels of self-assessment. In all cases, the reason for the decrease in sustainable financial performance could be attributed to sub-optimal decision-making processes (in respect of effectively employing entrepreneurial strategic postures to achieve sustainable financial performance) by TMTs. These sub-optimum decisions could have stemmed from unenhanced cognitive capabilities of TMTs by the high absorptive capacity, and high organisational identity. The high variance due to the high EO and high environmental hostility could have challenged the cognitive capabilities of TMTs (bounded rationality) in this respect.

The main scenarios A to D are summarised in Figure 41.

Figure 41 *Sustainable Financial Performance changes at various EO-Environmental Hostility-Absorptive Capacity-Organisational Identity Interactions.*

High ENV Hostility-High ACAP – O. Identity	Sustainable Financial Performance Increases	Sustainable Financial Performance Decreases
Low ENV Hostility- Low ACAP-O. identity	Sustainable Financial Performance decreases	Sustainable Financial Performance Decreases
	Low EO	**High EO**

Source: Author's work.

The figure above shows the environmental hostility-absorptive capacity-organisational identity interaction on the vertical axis and entrepreneurial orientation of the horizontal axis. The effect of any interaction between EO and the environmental hostility-absorptive capacity-organisational identity interaction on sustainable financial performance is depicted in the four quadrants.

The RBV and contingency theory were used to link the environmental hostility-absorptive capacity-organisational identity to the EO-sustainable financial performance relationship. The second principle of the RBV states that for a strategic resource to sustain firm performance, it must be complemented by other internal resources and capabilities. According to this hypothesis, the absorptive capacity-organisational identity interaction was used for this purpose. As the results show, this principle was only held true at low EO-high environmental hostility-high absorptive capacity-high organisational identity interactions. Since the first principle of the RBV states that a strategic resource can sustain firm performance only if it maintains its VRIN, it could be inferred that at low EO the high environmental hostility-high absorptive capacity-high organisational identity interaction is yet another way to show how such a VRIN could be achieved and thereby add more potential solutions to the resolution of the concerned RBV limitation.

The drops in sustainable financial performance at high EO by the high environmental hostility-high absorptive capacity-high organisational identity and at low EO by the low environmental hostility-low absorptive capacity-low organisational identity interactions or configurations could be explained using the same logic as that which was used in hypothesis H5(a), namely, loss of VRIN due variance in the former, and due to TMT behaviour in the latter. However, the further drop in sustainable financial performance at high EO by the low environmental hostility-low absorptive capacity-capability-low organisational identity warrants further discussion, since it is contrary to the trends that have been observed, especially in hypothesis H4. In the discussion of the latter, it was established that a VRIN could be maintained if at high EO a low environmental hostility-low absorptive capacity orientation is maintained, and low absorptive capacity was credited for enhancing the cognitive capabilities of TMTs, which led to an increase in sustainable financial performance i.e., low absorptive capacity enabled VRIN.

The further drop after the inclusion of low organisational identity at high EO suggests that at high EO, the low environmental hostility-low absorptive capacity-low organisational identity configuration is neither optimal, nor is it an abler of VRIN. Why is this the case? This points to a limitation in this study in respect of the combinations between moderator variables that were employed. This study only investigated configurations in which moderator variables have either high or low at low and high values of EO and its dimensions. Therefore, to understand the anomaly that was highlighted above future research could involve configuration of the form low environmental hostility-low absorptive capacity with high organisational identity to compare with low organisational identity interactions, and thus

provide possible answers to the above question. This could be generalised to all other configurations.

The conceptual model of the current study operationalised absorptive capacity and organisational identity in a moderator-moderated interaction. However, a potential solution to the above-mentioned unfavourable sustainable financial performance results could lie in this conceptual model. For example, current and relevant information provides a pre-requisite for any strategic assessment. Therefore, absorptive capacity could be operationalised as an antecedent to EO. Furthermore, organisational identity involves reflection on the past, future and present, where necessarily such reflection uses current and relevant information. Therefore, absorptive capacity could be operationalised as an antecedent to organisational identity, in other words, as a mediator between absorptive capacity and EO in the EO-sustainable financial performance relationship. The resulting conceptual model could be explored in future research at various boundary conditions.

The current study was placed in the EO-As-Experimentation perspective. As demonstrated in the literature review. and to the best of the author's knowledge, existing EO studies in this context only either examined the EO-firm performance relationship in the context of environmental factors or other managerial variables but never in the context of both types of moderators. More specifically, a literature search of peer-reviewed databases does not point out studies wherein the moderating role of the environmental hostility-absorptive capacity-organisational identity interaction has been simultaneously examined in this perspective. Therefore, in this regard, this study is empirically and theoretically original. However, the positive influence or moderating effects of other complementary resources and capabilities on the EO-firm performance curvilinear relationship have been demonstrated in the literature review chapter (Bauweraerts & Colot, 2017; Ferreras-Méndez et al., 2022; Gupta & Gupta, 2015; Hunt, 2021; Kindermann et al., 2022; Kohtamäki et al., 2019; Schröder et al., 2021a; Wales et al., 2021; Wales, Patel, et al., 2013; Yoon & Solomon, 2017). In this regard and despite its theoretical, methodological, and empirical superiority, the findings of the current study in relation to the positive moderating effect of the absorptive capacity-organisational identity interaction on the EO-sustainable financial performance relationship, albeit herein in the context of environmental factors, are consistent with this literature, where relevant.

The current study is more elaborate in the sense that it provides more empirical and theoretical insights into the EO-firm performance relationship.

Firstly, as shown in the literature review, previous studies have only examined moderating effects in the EO-firm performance using the univocal operationalisation of the EO construct. This does not create a platform for harvesting of deeper empirical and theoretical insights into how EO, through its dimensions, contributes to the overall results pertaining to the above moderating effects and the EO-firm performance results. The current study closes this knowledge gap by basing all its analyses on the respective dimensions of EO and their interaction with the environmental hostility-absorptive capacity-organisational identity interaction.

Secondly, as mentioned above, previous studies have only examined either moderating effect (of either managerial variables or environmental factors), but never both, let alone in the context of the respective dimensions of EO. The context within which a study is conducted is important (Khandwalla, 1976; Rosenbusch et al., 2013; Voinea, 2017). As such, examining the moderating effects of managerial variables and not considering the effects of the environment within which firms operate could mislead the hermeneutics of any given study. The current study closes this knowledge gap by basing all its analyses on the respective dimensions of EO and their interaction with the environmental hostility-absorptive capability-organisational identity interaction. This study is the first to examine the EO-sustainable financial performance relationship in the context.

Through this hypothesis, this study is the first to examine the extent to which the knowledge absorptive capacity of this sector was influenced by the propensity of TMTs in this sector to reflect on the organisational identity of their respective firms.

Hypothesis Summary

This hypothesis investigates whether the EO-sustainable financial performance of the South African construction and materials sector was negatively moderated by its environmental hostility-absorptive capacity-organisational identity interaction. The results did not support this hypothesis. Consistent with the RBV and CT, the result of this hypothesis suggests that this relationship is more complex than hypothesised and optimum sustainable financial performance depends on an optimum combination of EO, environmental hostility and organisational hostility. The results showed that sub-dimension of EO played an important role on how such combinations are achieved. However, the results suggest in general, a low environmental hostility-low absorptive capacity-low organisational identity orientation is only better than a high environmental hostility-high absorptive capacity-high organisational identity orientation at low EO.

Comparison to Secondary Study

The results of this study yielded largely similar results for this hypothesis. As such, this hypothesis was also not supported. The consistency between results from the primary subjective study and the secondary objective study in relation to the moderating effects of environmental hostility on the EO – sustainable financial performance relationship, assert that subjective and objective measures are equally usable in EO studies. This is consistent with the pioneering study of Tang et al. (2008) and subsequent meta-analyses (Rauch et al., 2009; Soares & Perin, 2020b) and other recent studies(Morić, 2022; Naskar, 2023).

5.3. CONCLUDING SUMMARY

The relationship between the EO and sustainable financial performance of the South African construction and materials sector during the 2008-2019 period exhibited non-linear, J-shaped behaviour.

The effects of environmental hostility on the EO-sustainable financial performance of this sector were non-linear. Different configurations of the EO-environmental hostility interaction yielded different outcomes. The EO-sustainable financial performance relationship of this sector exhibited U-shaped behaviour at low environmental hostility levels while this behaviour was inversed U-shaped at high environmental hostility levels.

The effects of the environmental hostility-bricolage capability interaction were non-linear. Different configurations of the bricolage capability-environmental hostility interaction yielded different outcomes at different levels of EO. The low environmental hostility-low bricolage capability interaction strengthened low EO levels, which resulted in an increase in sustainable financial performance but weakened high EO levels, which resulted in a decrease in sustainable financial performance. In addition, the high environmental hostility-high bricolage capability interaction strengthened low EO levels which resulted in an increase in sustainable financial performance, but weakened high EO levels, which resulted in a decrease in sustainable financial performance.

The effects of the bricolage capability-environmental hostility-organisational identity interaction was non-linear. As such, different configurations of this interaction yielded different outcomes at different levels of EO. The low environmental hostility-low bricolage capability-low organisational identity interaction weakened low EO levels, which resulted in a decrease in sustainable financial performance. However, this interaction strengthened high

EO levels, which resulted in an increase in sustainable financial performance. In addition, the high environmental hostility-high bricolage capability-high organisational identity interaction strengthened low EO levels, which resulted in an increase in sustainable financial performance but weakened high EO levels, which resulted in a decrease in sustainable financial performance.

The effects of the absorptive capacity-environmental hostility interaction were nonlinear. As such different configurations of this interaction yielded different outcomes at different levels of EO. The low environmental hostility-low absorptive capacity interaction weakened low EO levels which resulted in a decrease in sustainable financial performance but strengthened high EO levels which resulted in an increase in sustainable financial performance. In addition, the high environmental hostility-high absorptive capacity interaction strengthened low EO levels which resulted in an increase in sustainable financial performance but weakened high EO levels, which resulted in a decrease in sustainable financial performance.

The effects of the absorptive capacity-environmental hostility-organisational identity interactions were non-linear. As such, different configurations of this interaction yielded different outcomes at different levels of EO. The low environmental hostility-low absorptive capacity-low organisational identity interaction weakened low and high EO levels, which resulted in a decrease in sustainable financial performance. In addition, the high environmental hostility-high absorptive capacity-high organisational identity interactions strengthened low EO levels, which resulted in an increase in sustainable financial performance but weakened high EO levels, which resulted in a decrease in sustainable financial performance.

The large consistency between the results of the primary (subjective) and secondary (objective) studies affirms what some scholars have for decades posited regarding their equal importance and robustness in EO studies.

CHAPTER 6: CONCLUSION

6.1. INTRODUCTION

This chapter is arranged into four main sections: summary of findings, limitations and recommendations for future research, contributions, and concluding summary.

6.2. SUMMARY OF MAIN FINDINGS

This research investigated the relationship between the internal organisational resources and capabilities of the South African construction and materials sector and its sustainable financial performance during the 2008-2019 period. Leveraging the EO-As-Experimentation literature, the RBV and contingency theory, this quantitative, descriptive research used a two-study approach to investigate the EO-sustainable financial performance relationship, and its moderating effects. The primary study collected survey data from 126 randomly selected firms in this sector. The secondary study collected secondary sustainable financial performance data from a purposively selected significant group of publicly listed firms. In both cases, data underwent analysis of variance and hierarchical regression. Post hoc analyses using the Tukey honest significance difference (HSD) test, slope analysis, and effect sizes were also used to complement these techniques.

The results of the primary study indicate that the EO-sustainable financial performance relationship of this sector exhibited nonlinear, J-shaped behaviour. Furthermore, consistent with the EO-As-Experimentation perspective, the RBV and contingency theory, the results for the moderating effects do not support the hypotheses but rather indicate that all the moderating effects on this relationship were nonlinear suggesting that different configurations of these interactions, yielded different sustainable financial performance outcomes for different levels of EO. The results of the secondary study affirm those of the primary study.

6.3. LIMITATIONS OF THE STUDY AND RECOMMENDATIONS FOR FUTURE RESEARCH

In this section methodological and theoretical limitations are presented.

Gali (2018) has distinguished between failed and surviving firms, while D'Souza and Fan (2022) distinguishes between emergent and post-emergent firms. These categorisations set these studies apart because they enable a better understanding of how the respective firm types contribute to the overall EO versus performance relationship of the respective industries under scrutiny. Knowledge about the different types of firms could provide much deeper insight into the strategic postures of TMTs and their subsequent impact on their sustainable financial performance. Therefore, using the same conceptual model as in the current study, future research into failed firms could be initiated. This classification could be extended to emergent and post-emergent firms as well. Moreover, since the South African construction and materials sector is composed of several industries, such future research could also categorise at this level. The outcomes of such research could be compared to that of the current study, which could provide a much deeper understanding into the situation of the South African construction and materials sector from 2008-2019.

The current study did not draw a distinction between firms in terms of age and size and this implies that the current study assumed that all firms had the same heterogenous set of resources and capabilities, where the outcomes of the study was equally applicable to all firms. However, depending on their resource and capability, firms may have been impacted differently. Separating firms by size and/or age could also have provided meaningful insights into the results obtained. Future research could be initiated to address this. Therefore, the above recommended future research could even go to these levels.

Studies suggest that the multidimensional operationalisation of the performance construct is methodologically important in EO studies due to the inconsistent results associated with entrepreneurial activity or processes (Lumpkin & Dess, 1996; Rauch et al., 2009; Siepel & Dejardin, 2020). The current study operationalised sustainable financial performance as composite construct, which may have disadvantaged the interpretation of outcomes of this study. Therefore, in this respect, for the current study to provide finer insight into the contradiction in results that has been highlighted, future research may have to involve examining the EO-sustainable financial performance relationship using the multidimensional operationalisation of the performance construct.

The development of an organisational identity scale has been linked to the ontological and epistemological suppositions of TMTs about the nature of organisations and organising. This view was not changed by this study. In fact, this study simply developed an organisational identity scale to suit its needs. Although the items in the organisational identity scale that was developed in this study were derived deductively from findings of comprehensive studies, the scale items could be increased using reverse-coding as an example. Furthermore, the questions contained therein could be generalised to accommodate any strategic resource or capability.

The EO and its dimensions are by no means a complete approximation of strategic postures of TMTs. Future research could include exploring other entrepreneurship multidimensional constructs.

This study involved quadratic terms of EO and its dimensions. Therefore, the inferences relating to the relationship between EO (and its dimensions) and sustainable financial performance are limited to this order. Future research could include examining the conceptual model of this study regarding higher orders of EO such as cubic etc.

Strategic choice is determined by TMTs (Hambrick & Mason, 1984). Therefore, it is important to consider the antecedents of strategic posture. This study neglected to account for the antecedents of EO, innovativeness, proactiveness, and risk-taking. The conceptual model of the current study could be extended by introducing the behavioral intentions of TMTs as antecedents to these dimensions through the theory of planned behaviour.

The conceptual model that was employed in this study is by no means representative of all performance improving strategies in firms. In particular, the bricolage capability, absorptive capacity and organisational identity are not exhaustive of all managerial strategies that could be used as complementary resources and capabilities to sustain financial performance. Therefore, other strategies such as (but not limited to) networking capability, market orientation, information, and communication and technology could be used in future research.

The direction of relationships in the conceptual model of the current study could be revisited as well. For example, organisational identity, through its three lenses, facilitates reflections about the past, present, and future. Such a reflection could be an antecedent of strategic choice, in this instance of EO and its dimension.

Similarly, the dimensions of risk-taking entail identifying and/or creating opportunities and addressing identified opportunities (Zhaoyang & Jiang, 2020). Risk-taking was defined as committing resources to uncertain outcomes. Taken together, these dimensions and the definition of risk-taking suggest that the commitment of resources should be preceded by the identification of an opportunity and that the very act of committing resource is an opportunity creating activity (Lomberg et al., 2017). As per its definition, the bricolage capability involves "recombining" existing resources and capabilities to respond to new situations and opportunities. Therefore, this "recombination" depends on the existence of a situation or an opportunity. This implies that if risk-taking is used to create opportunities, then risk-taking would be an antecedent to bricolage capability and bricolage capability a mediator between risk-taking and sustainable financial performance. However, if risk-taking addresses an opportunity, then the bricolage capability would be an antecedent to risk-taking in the risk-taking-sustainable financial performance relationship.

In addition, proactiveness is an opportunity-seeking strategic posture. This suggest that proactiveness could be operationalised as an antecedent of bricolage capability and bricolage capability is a mediator between proactiveness and sustainable financial performance.

6.4. CONTRIBUTIONS AND SIGNIFICANCE TO LITERATURE

6.4.1. Methodological Contributions

EO-As-Experimentation studies have yielded a response rate of between 18.64% and 62.8% which translates to an average response rate of 40.74% (Gali, 2018; Revilla et al., 2016; Tang et al., 2008; Yoon & Solomon, 2017). A recent meta-analysis showed that the average response rate for online surveys was 44.1% (Wu, Zhao, & Fils-Aime, 2022). The current study achieved a 53,1% response rate. This meta-analysis suggested that that sending surveys to a clearly defined and refined population positively, pre-contacting potential participants and using phone calls to remind participants about the online survey could yield a higher response rate. The current study is the first in EO-As-Experimentation and construction and materials sector literature to demonstrate that LinkedIn applications could be used to accurately, cost and time effectively identify relevant participants particularly professionals as was the case in this study. Furthermore, this study is the first to demonstrate that in addition to phone calls the WhatsApp Messenger, application could

create a sense of closeness with prospective participants, which creates a sense of loyalty to the research, and consequently increase the response rate.

As demonstrated in previous chapters, there is lack of an accepted measure of organisational identity in management research. As such, it was suggested that researchers operationalise this construct to fit their ontological and epistemological suppositions about the nature of organisations and organising (Agyabeng-Mensah et al., 2021; Foreman & Whetten, 2016; Whetten et al., 2014). This study contributes a new organisational identity scale to the body of knowledge. Although this scale was customised to fit the ontological and epistemological suppositions of the current study, it could easily be adapted to other studies, because: (a) the three lenses of OI are universal; and (b) bricolage capability and absorptive capacity could be replaced or complemented by any other managerial variables.

Sustainable financial performance is important for the survival of firms. Therefore, it is important for TMTs to have an appreciation of those factors that could threaten the survival of their firms, and thereby devise appropriate counter measures or strategies in this regard. In the literature review of the South African construction and materials sector, it was demonstrated that the persistent decline in sustainable financial performance that was experienced by the above sector between 2008-2019 could be explained or correlated to external factors, such as GDP, construction activity, and GDFI. However, it was shown that the contribution of its internal factors to this phenomenon remained an unexplored territory. Therefore, in this respect, this study is the first to examine and provide insights into the market dynamics of the South African construction and materials sector for the period in question.

Secondly, it is the first to penetrate the boardrooms of the South African construction and materials sector to specifically examine the strategic postures that were employed by them to counter the persistent decline in sustainable financial performance that was experienced by this sector during this entire period in question.

Thirdly, in the same context it is the first study to examine the entire sector by including in the sampling frames participants such as professional consultants or service providers and a plethora of other materials and construction firms regardless of size that had to date not been studied together, thereby increasing external validity or generalisability.

Fourthly, previous studies relating to this sector were found to be largely provincial. This study is the first to generalise to a national context.

Lastly, this study is the first in the South African construction and materials sector literature to demonstrate how a plethora of strategic postures, from various studies, conducted during the period in question (but not spanning the entire period) could be approximated using the EO construct, absorptive capacity, bricolage capability and organisational identity, respectively.

The knowledge that has been derived from this study provides TMTs in respective firms with a better insight into how the sustainable financial performance of their respective firms was driven by that of the entire sector, as well as how and to what extent their own strategic postures contributed to their sustainable financial performance. This could inform their future strategic planning. Furthermore, approximating a plethora of strategic postures and managerial variables with the EO and its dimensions as well as with bricolage capability, absorptive capacity and organisational identity provides scholars in applied research with a valuable situational modelling technique. Scholars in this field can use the conceptual model of this study to approximate any situation about their industry and this could assist them to derive meaning strategic insights about the way in which their strategies are affected by their environments.

6.4.2. Empirical and Theoretical Contributions

6.4.2.1. To the EO-As-Experimentation Literature

This study makes several original and significant contributions to the EO-As-Experimentation Literature:

The literature review has shown that there exists a shortage of conceptual models to explain the contradictory results associated with the EO-firm performance relationship (D'Souza & Fan, 2022; Lee & Kreiser, 2018; Schröder et al., 2021a). Furthermore, an analysis of EO-As-Experimentation literature revealed that all the conceptual models that exist in literature did not capture the reality of firms, since they either employed managerial variables without the effects of the environment within which firms operated, or vice versa; but never together. As such, the conceptual model of the current study is original and significant, as elaborated on below.

Firstly, it approximates or captures the reality of firms by incorporating the environment (hostile environment) within which they operated as well as other managerial variables such

as the bricolage capability, absorptive capacity, and organisational identity into the EO-sustainable financial performance relationship, thus providing a holistic view of organisational dynamics for strategic planning purposes.

Secondly, contrary to extant conceptual models in the EO-As-Experimentation studies that to date have only involved two-way moderating effects, and thus oversimplifying organisational dynamics, the conceptual model of this study captures the complexity of organisational dynamics through a five-way interaction model, the first of its kind in EO-As-Experimentation and construction and materials studies, respectively. This provides scholars with alternative ways to create new theoretical linkages between construct and paves the way for more the development of more complex conceptual models that could explain the inconsistencies in the EO-firm performance relationship referred above.

Thirdly, the originality and uniqueness of the conceptual model of this study has made it the first in EO-As-Experimentation studies to demonstrate how the variance inherent environmental hostility could be leveraged using managerial variables such as bricolage capability, absorptive capacity, organisational identity, as well as their respective interactions, to sustain firm performance.

Kraaijenbrink et al. (2010) showed that the RBV have the following limitations: (a) this theory does not suggest how an appropriate complementary organisation could be developed such that competitive advantage is sustained(Connor, 2002). Furthermore (b) it is not able to suggest how a single VRIN/O criterion could yield a permanent sustainable competitive advantage in an ever-changing business environment, and lastly: (c) it is not possible to suggest how the impact of this VRIN on firm performance could be empirically measured because of the heterogeneity of resources i.e., it is difficult to compile a heterogeneous construct (Lockett et al., 2009).

This study provides potential solutions to these limitations by contributing an exploitative complementary organisation (conceptual model) composed of bricolage capability-absorptive-capacity-organisational identity interaction to the body of knowledge. In response to (a) and (b), the moderating effects that were investigated in this study, contribute insights into how such an organisation could be used to respond to the demands of constantly mutating external environments by focusing on the cognitive capabilities of TMTs.

Furthermore, throughout this thesis, it was demonstrated how this exploitative complementary organisation or managerial orientation could be used to counterbalance this variance. Moreover, through the organisational identity construct, it demonstrated how it

could also be used to evaluate and control and potentially terminate underperforming or otherwise questionable strategic initiatives.

Through the introduction of such a complementary exploitative organisation, this study contributes empirical and theoretical insights to the ongoing EO ambidexterity debate (Covin & Wales, 2019; Ferreras-Méndez et al., 2022; Lee & Kreiser, 2018; Wales et al., 2021).

Lastly, the EO construct is a heterogeneous construct. Therefore, due to the demonstrated consistency between the dimensions of EO and the VRIN criteria of the RBV, it could be posited that in this study, the EO construct facilitates the measurement of the impact of VRIN on firm performance over time.

To the best of the author's knowledge, and based on peer reviewed literature, it is the first to investigate the curvilinearity of the EO-sustainable financial performance relationship from a South African as well as African perspective. This increases the external validity of the constructs used as well as that of the EO-firm performance relationship.

An analysis of literature has shown that there is a shortage of studies in which EO has been employed as a multidimensional construct. This impedes the collection of deeper strategic insights and could hamper effective strategic planning. In fact, this analysis suggests that this study is the third and the only African one to use EO as a multidimensional construct. The use of EO in this study adds to the validation of EO as a universal internal strategic resource and capability.

An analysis of literature suggests that there is shortage of studies in the EO-As-Experimentation perspective that examined the moderating effects of environmental hostility in the EO-firm performance relationship, let alone sustainable financial performance relationship. In fact, to the best of the author's knowledge and based on such analysis, this study is only the third EO-As-Experimentation study to do so, but only the second to operationalise EO as multidimensional construct. The environment within which firms operate cannot be ignored during strategic planning. Therefore, investigating the interaction between explorative strategic postures such as EO (and its dimensions) and environmental hostility provide much deeper strategic insights to TMTs and this facilitates more meaning strategic planning interventions.

The bricolage capability has been associated with new businesses. While it has been used in studies relating to established firms as well, its influence on both types of firms is inconsistent. Therefore, using it on existing firms of varied sizes, market share, financial

status, age, and geographical footprint in this study, contributes a South African perspective to the above dichotomy. This could be important for the validation of this construct as a universal construct.

An analysis of literature suggests that this study is the first to investigate the moderating effects of the bricolage capability on the EO-sustainable financial performance relationship and particularly in the context of environmental hostility. Furthermore, it is the first to do so using both the univocal and multidimensional operationalisation of the EO construct. Moreover, it is the first to do so from the South African and African perspective.

An analysis of literature suggests that this study is the first to investigate the moderating effects of the absorptive capacity on the EO-sustainable financial performance relationship and particularly in the context of environmental hostility. Furthermore, it is the first to do so using both the univocal and multidimensional operationalisation of the EO construct. Moreover, it is the first to do so from the South African and African perspective.

An analysis of EO-As-Experimentation literature and other EO studies suggests that the influence of cultural constructs on the EO-firm performance relationship remain understudied (Lee & Kreiser, 2018; Schröder et al., 2021a). Furthermore, this analysis suggests that the role of TMT cognitive capabilities/processes in the EO-firm performance relationship, is far from being understood. This study is the first to introduce the organisational identity construct into EO-As-Experimentation literature and demonstrated how this construct could close these knowledge gaps. This construct compels TMTs to reflect upon their current state, past state, and future state, which could be used to inform or guide strategic intent.

An analysis of literature suggests that this study is the first to investigate the moderating effects of the organisational identity on bricolage capability and in the context of environmental hostility as well as the influence of their interactions on the EO-sustainable financial performance relationship. Furthermore, it is the first to do so using both the univocal and multidimensional operationalisation of the EO construct. Moreover, it is the first to do so from the South African and African perspective.

An analysis of literature suggests that this study is the first to investigate the moderating effects of the organisational identity on absorptive capacity and in the context of environmental hostility as well as the influence of their interactions oon theEO-sustainable financial performance relationship. Furthermore, it is the first to do so using both the univocal and multidimensional operationalisation of the EO construct. Moreover, it is the first to do so from the South African and African perspective.

In summary, this pioneering study, opens rich research avenues in respect of the EO-firm performance and its contingency effects that could be explored and enhanced further by scholars.

6.4.2.2. To the South African Construction and Materials Sector

In addition to the methodological literature gaps that were highlighted in 6.4.1., several conceptual and empirical gaps were identified in the South African construction and materials literature. In this literature it was demonstrated that until the current study: (a) the extent to which the strategic postures of TMTs in this sector contributed to its persistent decline in sustainable financial performance during the 2008-2019 was not known; (b) the extent to which the hostile environment within which this sector operated during this sector affected these strategic postures was not known; (c) the extent to which these strategic postures were complemented by (or employed with) other existing resources and capabilities to navigate this hostile environment was not known; and (d) the extent to which the cognitive capabilities of TMTs complemented these other resources and capabilities was not known.

Through the results of the current study, it is now known that the relationship between the strategic postures of TMTs in the sector and its sustainable financial performance was non-linear and exhibited J-shaped behaviour. However, in the context of the hostile environment that prevailed during the period in question, the strategic postures of this sector did not always yield a decline in sustainable financial performance as it was expected, but rather, different configurations of these strategic postures and the environmental yielded varying largely nonlinear results. The results of the current study indicate that in the same environmental context, the extent to which other existing resources and capabilities were employed with these strategic postures, yielded varying results, and this variation was caused by the levels of intensity at which these were used together. Lastly, the results of the current provided insights into the cognitive processes of TMTs during the period in question and how these contributed to overall sustainable financial performance of this sector amidst the hostile environment that prevailed.

6.4.2.3. Implications for Management

This study provides several decision-making strategies for firms that may experience hostile environments. The results of this study highlight that EO is indeed a strategic posture that can yield sustainable financial performance. However, the results of this study highlight that the sustainability of such performance depends on the intensity of the environment, the

intensity of EO applied as well as the intensity at which firms leverage on their other internal resources and capabilities. This suggest that firms should: (a) pay particular attention to changes in their external environments i.e. to invest in environmental scanning activities, develop evaluation and control mechanisms that guide; (b) how they apply EO; and (c) how they leverage from their other internal resources and capabilities; and (d) when to terminate questionable entrepreneurial activities. In view of this, it is recommended that:

(a) In highly hostile environments, firms should actively reflect on their past, present and future states, actively leverage from the restructuring of their existing resources and capabilities and apply low levels of EO. The results suggest that low levels of EO could be applied as low levels of innovativeness, because they yield better results than low levels of risk-taking and low proactiveness. However, the result also suggests that in such environments, engaging in high levels of information acquisition and processing i.e. producing current and relevant information, in addition to low innovativeness, low risk-taking and low proactiveness, could perpetuate the achievement of sustainable financial performance.

(b) Similarly, in less hostile environments, firms should moderately reflect on their past, present and future states, moderately leverage from the restructuring of their existing resources and capabilities and apply high levels of EO. The results suggest that high EO could be applied as high innovativeness and high risk-taking, because these yield better results than high proactiveness. However, the result also suggests that in such environments, engaging in high levels of information acquisition and processing does not necessarily perpetuate an increase in sustainable financial performance.

6.5. CONCLUDING SUMMARY

This study sought to investigate the relationship between the internal resources and capabilities of the South African construction and material sector and its sustainable financial performance during the 2008-2019 period. This chapter concluded the study by highlighting the key results in relation to the research questions and hypotheses. Notably, the EO-sustainable financial performance relationship of this sector was found to exhibit a J-shaped and all moderating effects were also found to be complex and nonlinear on this relationship. Based on these results, actionable recommendations both in respect of future research and practice were made.

REFERENCE LIST

Abdi, H., & Williams, L. J. (2010). Tukey's honestly significant difference (HSD) test. *Encyclopedia of Research Design, 3*(1), 1-5.

Afrisam (Producer). (2018, April 22). Corporate Overview. Retrieved from http://wikirate.s3.amazonaws.com/files/3412142/14239384.pdf

Agyabeng-Mensah, Y., Tang, L., Afum, E., Baah, C., & Dacosta, E. (2021). Organisational identity and circular economy: Are inter and intra organisational learning, lean management and zero waste practices worth pursuing? *Sustainable Production and Consumption, 28*, 648-662. doi:https://doi.org/10.1016/J.SPC.2021.06.018

Aigbavboa, C. O. (2014). Challenges Facing Black Owned Small and Medium Construction Companies: A Case Study of Nelspruit Mbombela Municipality, South Africa. *Journal of Economics and Behavioral Studies, 6*(10), 771-778.

Aiken, L., West, S., & Reno, R. (1991). *Multiple regression: Testing and Interpreting Interactions*. Thousand Oaks, CA: Sage

Ajzen, I. (2011). *The theory of planned behaviour: reactions and reflections*: Taylor & Francis.

Alade, K. T. (2022). *Developing a leadership framework for improving construction business organisation performance in South Africa.* (Doctoral Dissertation), University of Cape Town., Cape Town.

Alarcón, D., Sánchez, J. A., & De Olavide, U. (2015). *Assessing convergent and discriminant validity in the ADHD-R IV rating scale: User-written commands for Average Variance Extracted (AVE), Composite Reliability (CR), and Heterotrait-Monotrait ratio of correlations (HTMT)*. Paper presented at the Spanish STATA meeting (Vol. 39, pp. 1-39).

Albert, S., & Whetten, D. A. (1985). Organizational identity. *Research in Organizational Behavior, 7*, 263-295.

Alexander, K., Mayr, S., Mitter, C., Duller, C., & Birgit, F.-D. (2020). Firm age dynamics and causes of corporate bankruptcy: Age dependent explanations for business failure. *Review of Managerial Science, 14*(3), 633-661.

Aljanabi, A. R. A. (2018). The mediating role of absorptive capacity on the relationship between entrepreneurial orientation and technological innovation capabilities. *International Journal of Entrepreneurial Behavior & Research, 24*(4), 818-841.

Alzahrani, S. (2021). Role of entrepreneurial orientation in firm performance through project success; Moderating role of absorptive capacity in SMEs of KSA. *International Journal of Advanced and Applied Sciences 8*, 14-22. doi:https://10.21833/ijaas.2021.07.003

Anderson, B. S., Kreiser, P. M., Kuratko, D. F., Hornsby, J. S., & Eshima, Y. (2015). Reconceptualizing entrepreneurial orientation. *Strategic Management Journal, 36*(10), 1579-1596.

Andriessen, D. (2004). *Making sense of intellectual capital: Designing a method for the valuation of intangibles*: Routledge.

Argyris, C., & Schön, D. (1978). Reading organizational learning: A theory of action approach. *Addison Wesley*.

Arya, B., & Lin, Z. (2007). Understanding collaboration outcomes from an extended resource-based view perspective: The roles of organizational characteristics, partner attributes, and network structures. *Journal of Management, 33*(5), 697-723.

Ato Sarsah, S., Tian, H., Dogbe, C. S. K., Bamfo, B. A., & Pomegbe, W. W. K. (2020). Effect of entrepreneurial orientation on radical innovation performance among manufacturing SMEs: the mediating role of absorptive capacity. *Journal of Strategy and Management, 13*(4), 551-570.

Attah-Boakye, R., Costanzo, L. A., Guney, Y., & Rodgers, W. (2021). The effects of top management team strategic cognition on corporate financial health and value: an interactive multi-dimensional approach. *The European Journal of Finance, 29*(13), 1461-1414-1492.

Ayala, A. H., & González-Campo, C. H. (2015). Measurement of knowledge absorptive capacity: An estimated indicator for the manufacturing and service sector in Colombia. *Journal of Globalization, Competitiveness & Governability/Revista de Globalización, Competitividad y Gobernabilidad/Revista de Globalização, Competitividade e Governabilidade, 9*(2), 16-42.

Bain, J. (1968). *Industrial Organization* NY: John Wiley and Sons Inc.

Baker, T., & Nelson, R. E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative science quarterly, 50*(3), 329-366.

Barney, & Clark. (2007). *Resource-Based Theory: Creating and Sustaining Competitive Advantage*. Oxford: Oup

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

Barney, J. B. (2001a). Is the resource-based "view" a useful perspective for strategic management research? Yes. *Academy of management review, 26*(1), 41-56.

Barney, J. B. (2001b). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of management, 27*(6), 643-650.

Barr, P. S. (1998). Adapting to unfamiliar environmental events: A look at the evolution of interpretation and its role in strategic change. *Organization Science, 9*(6), 644-669.

Bauweraerts, J., & Colot, O. (2017). Exploring nonlinear effects of family involvement in the board on entrepreneurial orientation. *Journal of Business Research, 100*(70), 185-192.

Bell, E., & Bryman, A. (2007). The ethics of management research: An exploratory content analysis. *British Journal of Management, 18*(1), 63-77.

Ben-Asher, S. (2022). The virtuoso art of bricolage research. *Frontiers in Psychology, 13*, 1068703.

Bengesi, K., & Le Roux, I. (2014). Strategic entrepreneurial response of small and medium enterprises in developing economies. *International Journal of Business and Management, 9*(2), 153-165.

Berry, A., von Blottnitz, M., Cassim, R., Kesper, A., Rajaratnam, B., & van Seventer, D. E. (2002). The economics of SMMES in South Africa. *Trade and Industrial Policy Strategies, 1*(1), 1-110.

Bhandari, A., & Wagner, T. (2006). Self-reported utilization of health care services: improving measurement and accuracy. *Medical Care Research and Review, 63*(2), 217-235.

Bhardwaj, R., Bindra, S., Singh, T., & Sahay, A. (2023). Toward a typology of entrepreneurial bricolage and its capabilities. *Journal of Entrepreneurship in Emerging Economies, ahead-of-print*(ahead-of-print). doi:https://10.1108/JEEE-07-2022-0205

Bollen, K., & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin, 110*(2), 305.

Burrell, G., & Morgan, G. (2017). *Sociological paradigms and organisational analysis: Elements of the sociology of corporate life*: Routledge.

Business Jargons. (2020). Business Environment. Retrieved from https://businessjargons.com/business-environment.html

Calic, G., & Shevchenko, A. (2020). How signal intensity of behavioral orientations affects crowdfunding performance: The role of entrepreneurial orientation in crowdfunding business ventures. *Journal of Business Research, 115*(C), 204-220.

Camillus, J. C. (2016). *Wicked strategies: How companies conquer complexity and confound competitors*: University of Toronto Press.

Cândido, C. J., & Santos, S. P. (2019). Implementation obstacles and strategy implementation failure. *Baltic Journal of Management, 14*(1), 39-57.

Capon, N., Farley, J. U., & Hoenig, S. (1990). Determinants of financial performance: A meta-analysis. *Management science, 36*(10), 1143-1159.

Carpenter, M. A., & Golden, B. R. (1997). Perceived managerial discretion: A study of cause and effect. *Strategic Management Journal, 18*(3), 187-206.

Caves, R. E. (1980). *Industrial organization, corporate strategy and structure*. US: Springer.

CESA. (2022). Consulting Engineers South Africa Retrieved from

https://www.cesa.co.za/

Chinyamurindi, W. T. (2017). The role of information management in project management success: Narratives from entrepreneurs operating within the South African construction industry. *South African Journal of Information Management, 19*(1), 1-9.

Chinyoka, S. (2017). Bricolage: A state of entrepreneurial excellence. *Asian Business Research, 2*(3), 46.

Cho, H. E., & Kim, E. (2022). Entrepreneurial Orientation and Export Performance: The Moderating Effect of Absorptive Capacity. *국제경영연구(International Business Research), 33*(4), 57-77.

Choi, S. B., Lee, W. R., & Kang, S.-W. (2020). Entrepreneurial orientation, resource orchestration capability, environmental dynamics and firm performance: A test of three-way interaction. *Sustainability, 12*(13), 5415.

CIDB. (2016). *The Building and Construction Materials Sector, Challenges and Opportunities*. Retrieved from http://www.cidb.org.za/publications/Documents/The%20Building%20and%20Construction%20Materials%20Sector,%20Challenges%20and%20Opportunities.pdf

Coetzer, M. F., Bussin, M. H., & Geldenhuys, M. (2017). Servant leadership and work-related well-being in a construction company. *SA Journal of Industrial Psychology, 43*(1), 1-10.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35*(1), 128-152. doi:https://doi.org/10.2307/2393553

Collins, B., Fleming, L., Hine, B.-A., Stevenson, J., Veach, K., Anderson, S., . . . Webster, J. (2010). Nursing resource implications of the unoccupied bed. *The Australian Journal of Advanced Nursing, 27*(4), 13-17.

Coltman, T., Devinney, T. M., Midgley, D. F., & Venaik, S. (2008). Formative versus reflective measurement models: Two applications of formative measurement. *Journal of Business Research, 61*(12), 1250-1262.

Connor, T. (2002). The resource-based view of strategy and its value to practising managers. *Strategic Change, 11*(6), 307-316.

Cordonnier, A., & Luminet, O. (2021). Consistency and social identification: A test-retest study of flashbulb memories collected on the day of the 2016 Brussels bombings. *Memory, 29*(3), 305-318.

Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation, 10*(1), 7.

Cousins, B. (2018). Design thinking: Organizational learning in VUCA environments. *Academy of Strategic Management Journal, 17*(2), 1-18.

Covin, J. G., & Slevin, D. P. (1989a). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal 10*(1), 75-87.

Covin, J. G., & Slevin, D. P. (1989b). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal, 10*(1), 75-87.

Covin, J. G., & Slevin, D. P. (1991). A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship Theory and Practice, 16*(1), 7-26.

Covin, J. G., & Wales, W. J. (2019). Crafting high-impact entrepreneurial orientation research: Some suggested guidelines. *Entrepreneurship Theory and Practice, 43*(1), 3-18.

Cunha, M. P. E. (2007). Entrepreneurship as decision-making: Rational, Intuitive and Improvisational Approaches. *Journal of Enterprising Culture (JEC), 15*(01), 1-20.

D'Souza, D. E., & Fan, G. (2022). A capability-anchored articulation of the EO-organizational performance relationship in emergent and post-emergent organizations. *Journal of Business Research, 146*, 107-117. doi:https://doi.org/10.1016/j.jbusres.2022.03.069

Dadkhah, S., Bayat, R., Fazli, S., Tork, E. K., & Ebrahimi, A. (2018). Corporate foresight: Developing a process model. *European Journal of Futures Research, 6*(1), 18.

Dälken, F. (2014). *Are porter's five competitive forces still applicable? a critical examination concerning the relevance for today's business.* Paper presented at the 3rd IBA Bachelor Thesis Conference.

Day, M. V., & Ross, M. (2014). Predicting confidence in flashbulb memories. *Memory, 22*(3), 232-242.

De Bernardi, C., & Pedrini, M. (2020). Transforming water into wine: Environmental bricolage for entrepreneurs. *Journal of Cleaner Production, 266*, 121815.

De Sousa, S. (2019). *Understanding organisational identity as a factor influencing organisational design.* (Masters Thesis), University of Pretoria,

de Zubielqui, G. C., Lindsay, N., Lindsay, W., & Jones, J. (2019). Knowledge quality, innovation and firm performance: A study of knowledge transfer in SMEs. *Small Business Economics, 53*(1), 145-164.

Dele-Ijagbulu, O. J., Moos, M., & Eresia-Eke, C. (2021). Modelling the relationships between the business environment, entrepreneurial orientation and employment growth amongst small, medium and micro-enterprises in South Africa. *SA Journal of Business Management, 52*(1), NA-NA.

Diamantopoulos, A., Riefler, P., & Roth, K. P. (2008). Advancing formative measurement models. *Journal of Business Research, 61*(12), 1203-1218.

Digan, S. P. (2019). *Balancing exploration, exploitation, and efficiency: a framework of entrepreneurial learning.* (Doctoral Thesis), University of Louisville,

Dithebe, K., Aigbavboa, C., Oke, A., & Muyambu, M. A. (2018). *Factors Influencing the Performance of the South African Construction Industry: A Case of Limpopo Province.* Paper presented at the International Conference on Industrial Engineering and Operations Management Pretoria.

Dobbs, R., & Koller, T. (2005). Measuring long-term performance. *The McKinsey Quarterly, 16*, 17-27.

Donaldson, L. (2001). *The contingency theory of organizations*: Sage.

Dudovskiy, J. (2016). The ultimate guide to writing a dissertation in business studies: A step-by-step assistance. *Pittsburgh, USA*.

Duymedjian, R., & Rüling, C.-C. (2010). Towards a foundation of bricolage in organization and management theory. *Organization Studies, 31*(2), 133-151.

Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review, 23*(4), 660-679.

Edmond, V. P., & Wiklund, J. (2010). The historic roots of entrepreneurial orientation research. In *Historical Foundations of Entrepreneurship Research* (pp. 142-160). Cheltenham, U.K: Edward Elgar Publishing Ltd.

Edwards, J., Try, D., Ketchen, D., & Short, J. (2014). *Mastering strategic management-1st Canadian Edition*.

Emere, C., Aigbavboa, C., & Thwala, W. (2021). Critical Leadership Style Actions for Improving Construction Personnel Performance in South Africa. *Periodica Polytechnica Architecture, 52*(2), 165-172.

Emuze, F., Smallwood, J., & Han, S. (2014). Factors contributing to non-value adding activities in South African construction. *Journal of Engineering, Design and Technology, 12*(2), 223-243.

Engelen, A., Kube, H., Schmidt, S., & Flatten, T. C. (2014). Entrepreneurial orientation in turbulent environments: The moderating role of absorptive capacity. *Research Policy, 43*(8), 1353-1369.

Eroglu, C., & Hofer, C. (2014). The effect of environmental dynamism on returns to inventory leanness. *Journal of Operations Management, 32*(6), 347-356.

Farooq. (2020). What Is Business Environment? Retrieved from https://www.marketingtutor.net/business-environment/

Felin, T., & Powell, T. C. (2016). Designing organizations for dynamic capabilities. *California Management Review, 58*(4), 78-96.

Ferreras-Méndez, J. L., Llopis, O., & Alegre, J. (2022). Speeding up new product development through entrepreneurial orientation in SMEs: The moderating role of ambidexterity. *Industrial Marketing Management, 102*, 240-251.

Foreman, P. O., & Whetten, D. A. (2016). *Taking stock and Looking forward*: Oxford.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50.

Gali, N. K. (2018). *Effect of entrepreneurial orientation on firm performance and failure: A longitudinal analysis.* (Doctoral Thesis), Durham University,

Garud, R., & Rappa, M. A. (1994). A socio-cognitive model of technology evolution: The case of cochlear implants. *Organization Science, 5*(3), 344-362.

Gioia, D. A., & Thomas, J. B. (1996). Identity, image, and issue interpretation: Sensemaking during strategic change in academia. *Administrative Science Quarterly, 41*(3), 370-403. doi:https://doi.org/10.2307/2393936

Glen Stephanie. (2015). Statistical Conclusion Validity. Retrieved from https://www.statisticshowto.com/statistical-conclusion-validity/

Global Cement. (2018). Lafarge South Africa launches joint-venture plant project in Lesotho. Retrieved from https://www.globalcement.com/news/item/8196-lafarge-south-africa-launches-joint-venture-plant-project-in-lesotho

Goaill, M. M., & Al-Hakimi, M., A. (2021). Does absorptive capacity moderate the relationship between entrepreneurial orientation and supply chain resilience? *Cogent Business & Management, 8*(1), 1962487.

Gojny-Zbierowska, M., & Zbierowski, P. (2021). Improvisation as responsible innovation in organizations. *Sustainability, 13*(4), 1597.

Goll, I., Brown Johnson, N., & Rasheed, A. A. (2008). Top management team demographic characteristics, business strategy, and firm performance in the US airline industry: The role of managerial discretion. *Management Decision, 46*(2), 201-222.

Gomera, S., Chinyamurindi, W. T., & Mishi, S. (2018). Relationship between strategic planning and financial performance: The case of small, microand medium-scale businesses in the Buffalo City Metropolitan. *South African Journal of Economic and Management Sciences, 21*(1), 1-9.

Goodman, C. M. (1987). The Delphi technique: A critique. *Journal of Advanced Nursing, 12*(6), 729-734.

Graham, M., Milanowski, A., & Miller, J. (2012). *Measuring and Promoting Inter-Rater Agreement of Teacher and Principal Performance Ratings*. Retrieved from https://files.eric.ed.gov/fulltext/ED532068.pdf

Grande, J., Madsen, E. L., & Borch, O. J. (2011). The relationship between resources, entrepreneurial orientation and performance in farm-based ventures. *Entrepreneurship and Regional Development, 23*(3-4), 89-111.

Grühn, B., Strese, S., Flatten, T. C., Jaeger, N. A., & Brettel, M. (2017). Temporal change patterns of entrepreneurial orientation: A longitudinal investigation of CEO successions. *Entrepreneurship Theory and Practice, 41*(4), 591-619.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research, 2*(163-194), 105.

Guest, D. E. (2011). Human resource management and performance: still searching for some answers. *Human Resource Management Journal, 21*(1), 3-13.

Gupta, A., Chen, X., & Gupta, V. K. (2016). Does Management's Attention to Different Facets of Entrepreneurial Orientation Create Value for the Firm? A Longitudinal Study of Large Retailers. *New England Journal of Entrepreneurship, 19*(2), 5.

Gupta, V. K., & Gupta, A. (2015). Relationship between entrepreneurial orientation and firm performance in large organizations over time. *Journal of International Entrepreneurship, 1*(13), 7-27.

Gustafson, L. T., & Reger, R. K. (1995). *Using Organisation Identity to achieve Stability and Change in High Velocity Environments*. Paper presented at the Academy of Management Proceedings, Briarcliff Manor, NY 10510.

Guwahat, S. (2013). Chapter 2 Determination of appropriate Sample Size. *Bull. Gauhati Univ. Math. Assoc. Int. J. Appl. Math. Stat. Sci, 12*, 28.

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review, 9*(2), 193-206.

Harif, M., Azhar, M. A., Hoe, C., & Ahmad, M. I. (2012). The financial and non-financial performance indicators of paddy farmers' organizations in Kedah. *Available at SSRN 2130415*.

Hashim, N., Taleb, T. S., & Faudzi, M. S. M. (2023). Entrepreneurial bricolage and micro-business performance: A moderated mediation of innovation capability and digital marketing capabilities. *Journal of Strategic Marketing*, 1-16.

Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing, 32*(4), 1008-1015.

Hatch, M. J., & Schultz, M. (2002). The dynamics of organizational identity. *Human Relations, 55*(8), 989-1018.

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence-based Nursing, 18*(3), 66-67.

Helfat, C. E., & Peteraf, M. A. (2009). Understanding dynamic capabilities: Progress along a developmental path. In (Vol. 7, pp. 91-102). London, England: Sage

Helfat, C. E., & Peteraf, M. A. (2015). Managerial cognitive capabilities and the microfoundations of dynamic capabilities. *Strategic Management Journal, 36*(6), 831-850.

Herath, H. (2020). Dimensions of Entrepreneurial Orientation and SME Performance: Moderating Effect of Absorptive Capacity of the Firm. *Kelaniya Journal of Human Resource Management, 15*(1).

Hersey, P., & Blanchard, K. H. (1977). Management of organizational behavior Englewood Cliffs. In: Prentice Hall.

Higashi, S. Y., de Queiroz Caleman, S. M., de Aguiar, L. K., & Manning, L. (2020). What causes organizations to fail? A review of literature to inform future food sector (management) research. *Trends in Food Science & Technology, 101*, 223-233.

Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. *Journal of Management, 21*(5), 967-988.

Hmieleski, K. M., & Corbett, A. C. (2006). Proclivity for improvisation as a predictor of entrepreneurial intentions. *Journal of Small Business Management, 44*(1), 45-63.

Hofmann, C. (2001). Balancing financial and non-financial performance measures. In. Hanover, Germany: University of Hannover

Hooi, H. C., Ahmad, N. H., Amran, A., & Rahman, S. A. (2016). The functional role of entrepreneurial orientation and entrepreneurial bricolage in ensuring sustainable entrepreneurship. *Management research review, 39*(12), 1616-1638.

Hough, J., & Scheepers, R. (2008). Creating corporate entrepreneurship through strategic leadership. *Journal of Global Strategic Management,, 2*(1), 17-25.

Hove, G., & Banjo, A. (2018). Perceptions of small business executives on determinants of performance in the construction industry in Gauteng, South Africa. *Acta Commercii, 18*(1), 1-14.

Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55.

Hult, G. T. M., Ketchen, D. J., Griffith, D. A., Chabowski, B. R., Hamman, M. K., Dykes, B. J., . . . Cavusgil, S. T. (2008). An assessment of the measurement of performance in international business research. *Journal of International Business Studies, 39*, 1064-1080.

Hunt, R. A. (2021). Entrepreneurial orientation and the fate of corporate acquisitions. *Journal of Business Research, 122*, 241-255.

Ibarra-Cisneros, M.-A., & Hernandez-Perlines, F. (2019). Entrepreneurial orientation, absorptive capacity and business performance in SMEs. *Measuring Business Excellence, 24*(4), 417-429.

Isip, M. I. G., Baconguis, R. D., Depositario, D. P. T., Quimbo, M. A. T., & Paunlagui, M. M. (2022). Direct and Indirect Influences of Environmental Hostility on Export Performance. *J. Glob. Bus. Trade, 18*(4), 139-167.

Israel, G. D. (1992). Determining sample size. Retrieved from https://www.psycholosphere.com/Determining%20sample%20size%20by%20Glen%20Israel.pdf

Janićijević, N. (2013). The mutual impact of organizational culture and structure. *Economic Annals, 58*(198), 35-60.

Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2005). Managing potential and realized absorptive capacity: how do organizational antecedents matter? *Academy of Management Journal, 48*(6), 999-1015.

Jayasmita. (n.d). Contingency Approach to Management. Retrieved from https://www.economicsdiscussion.net/management/contingency-approach-to-management/31841

Jogaratnam, G. (2002). Entrepreneurial orientation and environmental hostility: An assessment of small, independent restaurant businesses. *Journal of Hospitality & Tourism Research, 26*(3), 258-277.

Joppe, M. (2000). The Research Process. Retrieved from http://www.ryerson.ca/~mjoppe/rp.htm

JSE. (2021). Johannesburg Stock Exchange (JSE) - Listed Companies. Retrieved from https://www.african-markets.com/en/stock-markets/jse/listed-companies

Khandwalla, P. N. (1976). Some top management styles, their context and performance. *Organization and Administrative Sciences, 7*(4), 21-51.

Khare, S. R., & Vedel, I. (2019). Recall bias and reduction measures: An example in primary health care service utilization. *Family Practice, 36*(5), 672-676.

Killam, L. (2013). *Research terminology simplified: Paradigms, axiology, ontology, epistemology and methodology*: Laura Killam.

Kim, H.-Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics, 38*(1), 52-54.

Kim, L. (1998). Crisis Construction and Organizational Learning: Capability Building in Catching-up at Hyundai Motor. *Organization Science, 9*(4), 506-521.

Kindermann, B., Schmidt, C. V. H., Pulm, J., & Strese, S. (2022). The Double-Edged Sword of Entrepreneurial Orientation: A Configurational Perspective on Failure in Newly Public Firms. *Entrepreneurship Theory and Practice, 47*(5), 1811-1842.

Kock, F., Berbekova, A., & Assaf, A. G. (2021). Understanding and managing the threat of common method bias: Detection, prevention and control. *Tourism Management, 86*, 104330.

Kohtamäki, M., Heimonen, J., & Parida, V. (2019). The nonlinear relationship between entrepreneurial orientation and sales growth: The moderating effects of slack resources and absorptive capacity. *Journal of Business Research, 100*, 100-110.

Kor, Y. Y., & Mesko, A. (2013). Dynamic managerial capabilities: Configuration and orchestration of top executives' capabilities and the firm's dominant logic. *Strategic Management Journal, 34*(2), 233-244.

Korsgaard, M. A., & Roberson, L. (1995). Procedural justice in performance evaluation: The role of instrumental and non-instrumental voice in performance appraisal discussions. *Journal of Management, 21*(4), 657-669.

Kotane, I. (2017). *Objective and Subjective Measures of Business Performance* Paper presented at the International Scientific Conference on Society, Integration, Education.

Kotrlik, J. W., Williams, H. A., & Jabor, M. K. (2011). Reporting and Interpreting Effect Size in Quantitative Agricultural Education Research. *Journal of Agricultural Education, 52*(1), 132-142.

Kraaijenbrink, J., Spender, J.-C., & Groen, A. J. (2010). The resource-based view: A review and assessment of its critiques. *Journal of Management, 36*(1), 349-372.

Kreiser, P. M., Anderson, B. S., Kuratko, D. F., & Marino, L. D. (2019). Entrepreneurial Orientation and Environmental Hostility: A Threat Rigidity Perspective. *Entrepreneurship Theory and Practice, 44*(6), 1174-1198.

Kuhn, T. S. (2012). *The structure of scientific revolutions*: University of Chicago Press.

Kurnia, D., Mulyadi, H., Hendrayati, H., & Denan, Z. (2023). When does entrepreneurial bricolage mediate the effect of entrepreneurial orientation on new product development? The role of environmental dynamism as moderator. *Entrepreneurial Business and Economics Review, 11*(2), 103-119.

Kurniawan, G. A., & Selamat, F. (2023). The Effects of Entrepreneurial Orientation and Sustainability Orientation Towards Sustainable Entrepreneurship of MSMEs in Jakarta with Entrepreneurial Bricolage as Mediation. *International Journal of Application on Economics and Business, 1*(1), 489-499.

Kyoon Yoo, D., Vonderembse, M. A., & Ragu-Nathan, T. (2011). Knowledge quality: Antecedents and consequence in project teams. *Journal of Knowledge Management, 15*(2), 329-343.

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology, 4*, 863.

Lane, P. J., & Lubatkin, M. (1998). Relative absorptive capacity and interorganizational learning. *Strategic Management Journal, 19*(5), 461-477.

Lang, T. (2019). Issues and ideas organizational identity raises for scenario planning. *Saïd Business School WP, 8*.

Lau, A. K., & Lo, W. (2015). Regional innovation system, absorptive capacity and innovation performance: An empirical study. *Technological Forecasting and Social Change, 92*, 99-114.

Lawrence, P. R., & Lorsch, J. W. (1967). Differentiation and integration in complex organizations. *Administrative Science Quarterly, 12*(1), 1-47.

Lebans, M., & Euske, K. (2006). Business Performance Measurement: A conceptual and operational delineation of performance. In: Cambridge University Press.

Lee, Y., & Kreiser, P. M. (2018). Entrepreneurial orientation and ambidexterity: Literature review, challenges, and agenda for future research. In D. F. Kuratko & S. Hoskinson (Eds.), *The Challenges of Corporate Entrepreneurship in the Disruptive Age* (Vol. 28, pp. 37-62): Emerald Publishing Limited.

Lev, B. (2000). *Intangibles: Management, measurement, and reporting*: Brookings institution press.

Levi-Strauss, C. (1962). La Pensée savage.(The Savage Mind). Translated from the French by George Weidenfield and Nicholson Ltd. In: University of Chicago Press.

Lew, C., Meyerowitz, D., & Svensson, G. (2019). Formal and informal scenario-planning in strategic decision-making: an assessment of corporate reasoning. *Journal of Business & Industrial Marketing, 34*(2), 439-450.

Li, J. C.-H. (2018). Curvilinear moderation—a more complete examination of moderation effects in behavioral sciences. *Frontiers in Applied Mathematics and Statistics, 4*, 7.

Lin, K.-Y., Weiss, M., & Murad, M. (2023). The Impact of Resource Bricolage on Entrepreneurial Orientation in Start-ups: The Moderating Roles of TMT Heterogeneity and TMT Behavioral Integration. *Creativity, Innovation and Entrepreneurship: The learning science towards higher order abilities, 16648714*.

Lin, Y.-Y. (2004). *Organizational Identity and Its Implication on Organization Development*. Paper presented at the Academy of Human Resource Development International Conference (AHRD) Austin, TX.

Lindelöf, P., & Löfsten, H. (2006). Environmental hostility and firm behavior—An empirical examination of new technology-based firms on science parks. *Journal of Small Business Management, 44*(3), 386-406.

Liphadzi, M., Aigbavboa, C., & Thwala, W. (2015). Relationship between leadership styles and project success in the South Africa construction industry. *Procedia Engineering, 123*, 284-290.

Liu, W., Kwong, C. C., Kim, Y.-A., & Liu, H. (2021). The more the better vs. less is more: Strategic alliances, bricolage and social performance in social enterprises. *Journal of Business Research, 137*, 128-142.

Lockett, A., Thompson, S., & Morgenstern, U. (2009). The development of the resource-based view of the firm: A critical appraisal. *International Journal of Management Reviews, 11*(1), 9-28.

Lomberg, C., Urbig, D., Stöckmann, C., Marino, L. D., & Dickson, P. H. (2017). Entrepreneurial orientation: The dimensions' shared effects in explaining firm performance. *Entrepreneurship Theory and Practice, 41*(6), 973-998.

Long, D., Xiang, L., & Wei, Y. (2023). Entrepreneurial Decision-Making Methods: The Evolution and Research Agenda. *Industrial Engineering and Innovation Management, 6*(5), 21-31.

Lowson, R. H. (2003). The nature of an operations strategy: Combining strategic decisions from the resource-based and market-driven viewpoints. *Management Decision, 41*(6), 538-549.

Lukason, O., & Hoffman, R. C. (2019). Firm failure causes: A population level study. *Problems and Perspectives in Management 13*(1), 45-55.

Lumpkin, G. T., Cogliser, C. C., & Schneider, D. R. (2009). Understanding and measuring autonomy: An entrepreneurial orientation perspective. *Entrepreneurship theory and practice, 33*(1), 47-69.

Lumpkin, G. T., & Dess, G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review, 21*(1), 135-172.

Lumpkin, G. T., & Dess, G. G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of business venturing, 16*(5), 429-451.

Lumpkin, G. T., & Dess, G. G. (2015). Entrepreneurial orientation. *Wiley Encyclopedia of Management*, 1-4.

Ma, T., & Yang, S. (2022). Impact of entrepreneurial orientation on the performance of new ventures in China: the roles of entrepreneurial bricolage and opportunity recognition. *Chinese Management Studies, 16*(4), 924-941.

Mabel, O. A., & Olayemi, O. S. (2020). A comparison of principal component analysis, maximum likelihood and the principal axis in factor analysis. *American Journal of Mathematics and Statistics, 2*(10), 44-54.

MacKenzie, S. B., & Podsakoff, P. M. (2012). Common method bias in marketing: Causes, mechanisms, and procedural remedies. *Journal of Retailing, 88*(4), 542-555.

MacLennan, R. N. (1993). Interrater reliability with SPSS for Windows 5.0. *The American Statistician, 47*(4), 292-296.

Madsen, E. L. (2007). The significance of sustained entrepreneurial orientation on performance of firms–A longitudinal analysis. *Entrepreneurship and Regional Development, 19*(2), 185-204.

Mafundu, R. H., & Mafini, C. (2019). Internal constraints to business performance in black-owned small to medium enterprises in the construction industry. *The Southern African Journal of Entrepreneurship and Small Business Management, 11*(1), 1-10.

Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal, 22*(5), 387-401.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science, 2*(1), 71-87.

Marsh, H. W., Hau, K.-T., Balla, J. R., & Grayson, D. (1998). Is more ever too much? The number of indicators per factor in confirmatory factor analysis. *Multivariate Behavioral Research, 33*(2), 181-220.

Martínez, M. F., Rojas, J. S., Ruiz, L. M. F., Chipana, H. C., & Fernandez, M. G. M. (2023). Bricolage as a Management Tool: Literature Review. *International Journal of Professional Business Review: Int. J. Prof. Bus. Rev., 8*(8), 13.

Martins, I., & Rialp, A. (2011). Entrepreneurial orientation, environmental hostility and SMEs profitability: A contingency approach. *Environmental Hostility and SMEs Profitability: A Contingency Approach (September 2, 2011)*.

Mateus, S., & Sarkar, S. (2024). Bricolage–a systematic review, conceptualization, and research agenda. *Entrepreneurship & Regional Development*, 1-22.

McDougall, P. P., Covin, J. G., Robinson Jr, R. B., & Herron, L. (1994). The effects of industry growth and strategic breadth on new venture performance and strategy content. *Strategic Management Journal, 15*(7), 537-554.

McKelvie, A., McKenny, A., Lumpkin, G., & Short, J. C. (2014). Corporate entrepreneurship in family businesses: Past contributions and future opportunities. In L. Melin, M. Nordqvist, & P. Sharma (Eds.), *SAGE Handbook of Family Business* (pp. 340-363). NY: Sage.

Meissner, P., & Wulf, T. (2013). Cognitive benefits of scenario planning: Its impact on biases and decision quality. *Technological Forecasting and Social Change, 80*(4), 801-814.

Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Sscience, 29*(7), 770-791.

Miller, K. D., & Lin, S.-J. (2022). Strategic issue diagnosis by top management teams: A multiple-agent model. *Strategic Organization, 20*(3), 600-626.

Mintzberg, H. (1979). The structuring of organizations. Engle-wood Cliffs. *J: Prentice-Hall*.

Mitka, I. G. (2017). Bricolage concept in risk culture assessment. *European Journal of Sustainable Development, 6*(1), 335-335.

Mohammadi, S. (2021). The relationship between individual entrepreneurial orientation (IEO) and entrepreneurial bricolage: exploring passion and perseverance. *Asia Pacific Journal of Innovation and Entrepreneurship, 15*(1), 75-86.

Montso, M. E. (2022). *Supply chain coordination and firm performance in the construction industry in Gauteng Province.* (Masters Thesis), Vaal University of Technology,

Morić, M. B. (2022). Exploring direct and non-linear effects of entrepreneurial orientation and its dimensions on firm performance in a small, open, transitional economy. *Strategic Management, 27*(3), 26-38.

Mowery, D. C., & Oxley, J. E. (1995). Inward technology transfer and competitiveness: The role of national innovation systems. *Cambridge Journal of Economics, 19*(1), 67-93.

Mudalige, D. (2023). Influence of Resource Bricolage on Entrepreneurial Orientation in Family Firms in Western Province, Sri Lanka: The Moderating Role of Family Member Characteristics. *Peradeniya Management Review, 4*(1), 50-66.

Mufudza, T. (2018). Dynamic Strategy in a Turbulent Business Environment. In Strategic Management: IntechOpen eBooks. doi:https://doi.org/10.5772/intechopen.81250

Mundi, H. S., & Kaur, P. (2019). Impact of CEO Overconfidence on Firm Performance: An Evidence from S&P BSE 200. *Vision, 23*(3), 234-243.

Mutinda, N. M., & Kilika, J. M. (2019). TMT Cognitive Capability and Organizational Outcomes: A Theoretical Review. *International Business Research, 12*(8), 31-52.

Naskar, S. (2023). The Mediating Role of HPWS in the EO-Firm Performance Relationship. *Journal of Managerial Issues, 35*(2), 195-219.

Navis, C., & Glynn, M. A. (2011). Legitimate distinctiveness and the entrepreneurial identity: Influence on investor judgments of new venture plausibility. *Academy of Management Review, 36*(3), 479-499.

Niemand, T., & Eggers, F. (2023). *One Scale Fits All? Meta-analyzing Psychometric Properties of Measuring Entrepreneurial Orientation*. Paper presented at the Academy of Management Proceedings (Vol. 2023, No. 1, p. 12559), Briarcliff Manor, NY 10510.

Nomatovu, R. (2018). *Bricolage Behaviour in Small Established Firms Operating in Resource Constrained Environments.* (Doctoral Thesis), University of Pretoria,

Ocasio, W. (1997). Towards an attention-based view of the firm. *Strategic Management Journal, 18*(S1), 187-206.

Olarewaju, O. M., & Ibrahim, S. S. (2020). Construction Industry Performance and the Growth of South African Economy: Any Causal Relationship? *, 83*, 22508-22521.

Omopariola, E. D., Windapo, A., Edwards, D. J., & El-Gohary, H. (2021). Level of Financial Performance of Selected Construction Companies in South Africa. *Journal of Risk and Financial Management, 14*(11), 518.

Onwe, C. C., Ogbo, A., & Ameh, A. A. (2020). Entrepreneurial orientation and small firm performance: The moderating role of environmental hostility. *Entrepreneurial Business and Economics Review, 8*(4), 67-84.

Osborne, J. (2010). Improving your data transformations: Applying the Box-Cox transformation. *Practical Assessment, Research, and Evaluation, 15*(1), 12.

Oyekunle Oyewobi, L., Olukemi Windapo, A., & Cattell Keith, S. (2013). Impact of business diversification on South African construction companies' corporate performance. *Journal of Financial Management of Property and Construction, 18*(2), 110-127. doi:https://10.1108/JFMPC-12-2012-0045

Oyewobi, L., Windapo, A., Rotimi, J., & Jimoh, R. (2019). Determining strategic clusters and performance of construction organizations in South Africa. *International Journal of Construction Management, 19*(1), 46-56.

Oyewobi, L. O., Windapo, A. O., & Cattell, K. S. (2014). *Competitiveness of construction organizations in South Africa*. Paper presented at the Construction Research Congress 2014 (pp. 2063-2073).

Paiva, C. E., Barroso, E. M., Carneseca, E. C., de Pádua Souza, C., Dos Santos, F. T., Mendoza López, R. V., & Ribeiro Paiva, S. B. (2014). A critical analysis of test-retest reliability in instrument validation studies of cancer patients under palliative care: a systematic review. *BMC Medical Research Methodology, 14*(1), 1-10.

Panhwar, A. H., Ansari, S., & Shah, A. A. (2017). Post-positivism: An effective paradigm for social and educational research. *International Research Journal of Arts & Humanities (IRJAH), 45*(45).

Pastra, A., Koufopoulos, D. N., Samac, N., & Johansson, T. (2021). Behavioral integration in the boardroom. *Team Performance Management: An International Journal, 27*(3/4), 260-277. doi:https://10.1108/TPM-07-2020-0058

Pittenger, L. M., Glassman, A. M., Mumbower, S., Merritt, D. M., & Bollenback, D. (2022). Bounded Rationality: Managerial Decision-Making and Data. *Journal of Computer Information Systems*, 1-14.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879.

Polit, D. F., Beck, C. T., & Hungler, B. P. (1997). *Study guide to accompany essentials of nursing research: Methods, appraisal, and utilization*: Lippincott Williams & Wilkins.

PPC. (2018). PPC Going Beyond. Retrieved from https://ppc.africa/rw/

Prexl, K.-M., & Gonera, A. (2021). Understanding new corporate innovation strategies: Hybrid high-involvement approaches and the increasing importance of individual absorptive capacity. *International Journal of Entrepreneurship and Innovation Management 25*(4-5), 45-55.

Pu, K., & Liu, W. (2023). Is absorptive capacity the" panacea" for organizational development? A Meta analysis of absorptive capacity and firm performance from the perspective of constructivism. *PLoS One, 18*(2), 1-24. doi:https://10.1371/journal.pone.0282321

Punch, K. F. (2013). *Introduction to social research: Quantitative and qualitative approaches*: Sage.

Putniņš, T. J., & Sauka, A. (2020). Why does entrepreneurial orientation affect company performance? *Strategic Entrepreneurship Journal, 14*(4), 711-735.

PWC. (2016). *Highlighting trends in the South African Construction Industry* Retrieved from Johannesburg: https://www.pwc.co.za/en/assets/pdf/sa-construction-2016.pdf

Raisal, I., Tarofder, A. K., & Ilmudeen, A. (2021). The nexus between entrepreneurial orientation and performance: enabling roles of absorptive capacity. *World Journal of Entrepreneurship, Management and Sustainable Development, 17*(2), 153-166.

Ramachandra, T., Rotimi, J. O. B., & Rameezdeen, R. (2013). Direction of the Causal Relationship between Construction and the National Economy of Sri Lanka. *Journal of Construction in Developing Countries, 18*(2), 49-63.

Rambaruth, A., Adam, J. K., & Krishna, S. B. N. (2021). *Strategic management in construction firms with focus on small and medium enterprises: A case study eThekwini, South Africa*. Paper presented at the Construction Business & Project Management(p. 312).

Ramírez, R., & Selsky, J. W. (2016). Strategic planning in turbulent environments: A social ecology approach to scenarios. *Long Range Planning, 49*(1), 90-102.

Ranucci, R., & Wang, S. (2022). Resilience in Top Management Teams: Responding to crisis by focusing on the future. *Long Range Planning*, 102268. doi:https://10.1016/j.lrp.2022.102268

Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice, 33*(3), 761-787.

Reddy, L., & Kulshrestha, P. (2019). Performing the KMO and bartlett's test for factors estimating the warehouse efficiency, inventory and customer contentment for e-retail supply chain. *Int. J. Res. Eng. Appl. Manag., 5*, 1-13.

Research & Markets. (2020). South Africa's Construction Industry, 2019: Features Profiles of 69 Industry Players. Retrieved from https://www.globenewswire.com/news-release/2020/01/20/1972306/0/en/South-Africa-s-Construction-Industry-2019-Features-Profiles-of-69-Industry-Players.html

Revilla, A. J., Pérez-Luño, A., & Nieto, M. J. (2016). Does family involvement in management reduce the risk of business failure? The moderating role of entrepreneurial orientation. *Family Business Review, 29*(4), 365-379.

Ribeiro, A., Marques, M., Roberto, M. S., & Raposo, A. (2023). Memory footprint: Predictors of flashbulb and event memories of the 2016 Euro Cup final. *Frontiers in Psychology, 14*, 1116747.

Richard, O. C., Wu, P., & Chadwick, K. (2009). The impact of entrepreneurial orientation on firm performance: The role of CEO position tenure and industry tenure. *The International Journal of Human Resource Management, 20*(5), 1078-1095.

Roberts, R. O., Bergstralh, E. J., Schmidt, L., & Jacobsen, S. J. (1996). Comparison of self-reported and medical record health care utilization measures. *Journal of Clinical Epidemiology, 49*(9), 989-995.

Rosenbusch, N., Rauch, A., & Bausch, A. (2013). The mediating role of entrepreneurial orientation in the task environment–performance relationship: A meta-analysis. *Journal of Management, 39*(3), 633-659.

Sahoo, P., Dash, R. K., & Nataraj, G. (Eds.). (2010). *Infrastructure Development and Economic Growth in China*. : The Institute of Developing Economies.

Santos, J. B., & Brito, L. A. L. (2012). Toward a subjective measurement model for firm performance. *BAR-Brazilian Administration Review, 9*, 95-117.

Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review, 26*(2), 243-263.

Sarasvathy, S. D., & Dew, N. (2005). New market creation through transformation. *Journal of Evolutionary Economics, 15*, 533-565.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research methods*. , England: Pearson Education Limited.

Saunders, M., Lewis, P., & Thornhill, A. (2009a). *Research methods for business students*: Pearson education.

Saunders, M., Lewis, P., & Thornhill, A. (2009b). Understanding research philosophies and approaches:Research methods for business students. *4*(106-135).

Sbissa, A., Zonatto, P., Rossetto, C., & Zonatto, V. d. S. (2020). Absorptive capacity as moderator in the relationship between entrepreneurial orientation and performance: a study in the hotel sector. *Estudios y Perspectivas en Turismo, 29*(1), 173-196.

Schein, E. H. (2004). *Organizational Culture and Leadership* (Vol. 2): John Wiley & Sons.

Schröder, K., Tiberius, V., Bouncken, R. B., & Kraus, S. (2021a). Strategic entrepreneurship: Mapping a research field. *International Journal of Entrepreneurial Behaviour & Research, 27*(3), 753-776.

Schröder, K., Tiberius, V., Bouncken, R. B., & Kraus, S. (2021b). Strategic entrepreneurship: mapping a research field. *International Journal of Entrepreneurial Behaviour and Research, 27*(3), 753-776.

Schwarz, J. O., Ram, C., & Rohrbeck, R. (2019). Combining scenario planning and business wargaming to better anticipate future competitive dynamics. *Futures, 105*, 133-142.

Senyard, J., Baker, T., Steffens, P., & Davidsson, P. (2014). Bricolage as a path to innovativeness for resource-constrained new firms. *The Journal of Product Innovation Management, 31*(2), 211-230.

Senyard, J., Davidsson, P., & Steffens, P. (2015). *Bricolage and firm performance: The moderating role of the environment.* Paper presented at the ACERE 2015: Australian Centre for Entrepreneurship Research Exchange Conference 2015.

Seo, R. (2019). Entrepreneurial orientation and innovation performance: Insights from Korean ventures. *European Journal of Innovation Management, 23*(4), 675-695.

Seo, R., Edler, J., & Massini, S. (2022). Can entrepreneurial orientation improve R&D alliance performance? An absorptive capacity perspective. *R&D Management, 52*(1), 50-66.

Serrat, O., & Serrat, O. (2017). A primer on organizational learning. *Knowledge Solutions: Tools, Methods, and Approaches to Drive Organizational Performance*, 359-365.

Sha, S. (2006). *An investigation into problems facing small-to-medium sized enterprises in achieving growth in the Eastern Cape: Enhancing the strategy for developing small'growth potential'firms in the Eastern Cape.* (PHD;Masters), Rhodes University, South Africa,

Shen, T. (2018). *When less is more:Exploring the antecedents of entrepreneurial bricolage and its innovation implication.* (Doctoral Thesis), Rutgers University

Shikweni, S., Schurink, W., & van Wyk, R. (2019). Talent management in the South African construction industry. *SA Journal of Human Resource Management, 17*(1), 1-12.

Sibiya, M., Aigbavboa, C., & Thwala, W. (2015, 10-12 August 2015). *Measures to improve the performance of construction projects in South Africa.* Paper presented at the Proceedings 6th West Africa Built Environment Research (WABER) Conference, Accra, Ghana.

Siegel, A. F. (2016). *Practical business statistics*: Academic Press.

Siepel, J., & Dejardin, M. (2020). How do we measure firm performance? A review of issues facing entrepreneurship researchers. *Handbook of Quantitative Research Methods in Entrepreneurship*, 4-20.

Singh, S., Darwish, T. K., & Potočnik, K. (2016). Measuring organizational performance: A case for subjective measures. *British Journal of Management, 27*(1), 214-224.

Šlogar, H., Morić Milovanović, B., & Hrvatin, S. (2023). Does the Relationship between Entrepreneurial Orientation and Subjective Financial Firm Performance Have an Inverted U-Shape? Evidence from Southeast European SMEs. *Administrative Sciences, 13*(2), 26.

Soares, M. d. C., & Perin, M. G. (2020). Entrepreneurial orientation and firm performance: An updated meta-analysis. *RAUSP Management Journal, 55*(2), 143-159.

Stanciu, A.-C., Constandache, M., & Condrea, E. (2014). Concerns about the sustainable performance of firm in the context of quality management systems implementation. *Procedia-Social and Behavioral Sciences, 131*, 340-344.

Stanley, B., Sieber, J. E., & Melton, G. B. (1987). Empirical studies of ethical issues in research: A research agenda. *American Psychologist, 42*(7), 735.

StatsSA. (2017). *Construction Industry*. Retrieved from http://www.statssa.gov.za/?page_id=1866&PPN=P5002&SCH=4297

Su, Z., Xie, E., & Wang, D. (2015). Entrepreneurial orientation, managerial networking, and new venture performance in China. *Journal of Small Business Management, 53*(1), 228-248.

Sullivan, G. M., & Feinn, R. (2012). Using effect size—or why the P value is not enough. *Journal of Graduate Medical Education, 4*(3), 279-282.

Sun, J. (2005). Assessing goodness of fit in confirmatory factor analysis. *Measurement and Evaluation in Counseling and Development, 37*(4), 240-256.

Sun, W., Hou, X., Liang, L., & Bi, X. (2023). Many roads lead to Rome: How improvisation and absorptive capacity affect entrepreneurial orientation and new venture performance relationship. *Plos one, 18*(3), e0281456.

Surin, E. F., Edward, O. T., Shaaran, S., & Ngah, R. (2023). Understanding entrepreneurial orientation based research: A proposed new theoretical framework. *Information Management and Business Review, 15*(3 (SI)), 23-35.

Taatila, V., & Down, S. (2012). Measuring entrepreneurial orientation of university students. *Education+ training, 54*(8/9), 744-760.

Taherdoost, H. (2016a). Sampling methods in research methodology; how to choose a sampling technique for research. *How to Choose a Sampling Technique for Research (April 10, 2016)*.

Taherdoost, H. (2016b). Validity and reliability of the research instrument; how to test the validation of a questionnaire/survey in a research. *SSRN Electronic Journal 5*(3), 29-36.

Tajeddini, K., & Mueller, S. (2018). Moderating Effect of Environmental Dynamism on the Relationship between a Firm's Entrepreneurial Orientation and Financial Performance. *Entrepreneurship Research Journal, 9*(4).

Tang, J., Tang, Z., Marino, L. D., Zhang, Y., & Li, Q. (2008). Exploring an inverted U–shape relationship between entrepreneurial orientation and performance in Chinese ventures. *Entrepreneurship Theory and Practice, 32*(1), 219-239.

Tanlaka, E. F., Ewashen, C., & King-Shier, K. (2019). Postpositivist critical multiplism: Its value for nursing research. *Nursing open, 6*(3), 740-744.

Taouab, O., & Issor, Z. (2019). Firm performance: Definition and measurement models. *European Scientific Journal, 15*(1). doi:https://10.19044/esj.2019.v15n1p93

Tapjarern, C., & Popaitoon, S. (2019). *Entrepreneurial Orientation, Knowledge Absorptive Capacity and Firm Performance: An Empirical Study from the Medical Device Industry in Thailand.* Mahasarakham University,

Tay, L., & Jebb, A. (2017). Scale development. In *The SAGE encyclopedia of industrial and organizational psychology* (Vol. 3, pp. 1381-1384): Sage.

Thwala, A. (2014). Challenges facing black owned small and medium construction companies: A case study of Nelspruit-Mbombela Municipality. *Journal of Economics and Behavioural Studies, 6*(10), 771-776.

Ting, H.-F., Wang, H.-B., & Wang, D.-S. (2012). The moderating role of environmental dynamism on the influence of innovation strategy and firm performance. *International Journal of Innovation, Management and Technology, 3*(5), 517.

TradingEconomics. (2020). South Africa GDP. Retrieved from https://tradingeconomics.com/south-africa/gdp-growth-annual

TradingEconomics. (2023). South Africa GDP From Construction. Retrieved from https://tradingeconomics.com/south-africa/gdp-from-construction

TradingView. (2020). Construction and Materials Index. Retrieved from https://www.tradingview.com/chart/

Tripsas, M. (2009). Technology, identity, and inertia through the lens of "The Digital Photography Company". *Organization Science, 20*(2), 441-460.

Tsagris, M., & Pandis, N. (2021). Normality test: Is it really necessary? *American Journal of Orthodontics and Dentofacial Orthopedics, 159*(4), 548-549.

Tsilika, T., Kakouris, A., Apostolopoulos, N., & Dermatis, Z. (2020). Entrepreneurial bricolage in the aftermath of a shock. Insights from Greek SMEs. *Journal of Small Business & Entrepreneurship, 32*(6), 635-652.

Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*(1), 1-10.

Tzokas, N., Kim, Y. A., Akbar, H., & Al-Dajani, H. (2015). Absorptive capacity and performance: The role of customer relationship and technological capabilities in high-tech SMEs. *Industrial Marketing Management, 47*, 134-142.

van Tulder, R., Jankowska, B., & Verbeke, A. (2019). Progress in International Business Research in an Increasingly VUCA World. *International Business Research, 14*, 1-20.

Vecchiato, R. (2019). Scenario planning, cognition, and strategic investment decisions in a turbulent environment. *Long Range Planning, 52*(5), 101865.

Venter. (2013). Construction Inc profit margin at low 2.8%, shows Stats SA. Retrieved from https://www.engineeringnews.co.za/article/construction-inc-profit-margin-at-low-28-shows-stats-sa-2013-07-03

Voinea, C. L. (2017). Managerial Cognition, Strategy and Performance of Foreign SMEs in Romania. *International Business Research, 10*(12), 48-67.

Voltan, A. (2019). *On the importance of being scrappy: entrepreneurial orientation and bricolage in social enterprises.* (PhD), St Mary's University

Voss, Z. G., Cable, D. M., & Voss, G. B. (2006). Organizational identity and firm performance: What happens when leaders disagree about "who we are?". *Organization Science, 17*(6), 741-755.

Wales, W. J. (2016). Entrepreneurial orientation: A review and synthesis of promising research directions. *International Small Business Journal, 34*(1), 3-15.

Wales, W. J., Covin, J. G., Schüler, J., & Baum, M. (2023). Entrepreneurial orientation as a theory of new value creation. *The Journal of Technology Transfer, 48*(5), 1752-1772.

Wales, W. J., Gupta, V. K., & Mousa, F.-T. (2013). Empirical research on entrepreneurial orientation: An assessment and suggestions for future research. *International Small Business Journal, 31*(4), 357-383.

Wales, W. J., Kraus, S., Filser, M., Stöckmann, C., & Covin, J. G. (2021). The status quo of research on entrepreneurial orientation: Conversational landmarks and theoretical scaffolding. *Journal of Business Research, 128*, 564-577.

Wales, W. J., Patel, P. C., Parida, V., & Kreiser, P. M. (2013). Nonlinear effects of entrepreneurial orientation on small firm performance: The moderating role of resource orchestration capabilities. *Strategic Entrepreneurship Journal, 7*(2), 93-121.

Walter, A., Auer, M., & Ritter, T. (2006). The impact of network capabilities and entrepreneurial orientation on university spin-off performance. *Journal of Business Venturing, 21*(4), 541-567.

Wang, H.-L. (2014). Theories for competitive advantage. In (pp. 33-43). Wollongong, Australia: In H. Hasan (Eds.), Being Practical with Theory: A Window into Business Research.

Weisberg, S. (2001). *Yeo-Johnson power transformations*. Retrieved from https://www.stat.umn.edu/arc/yjpower.pdf

Whetten, D., Foreman, P., & Dyer, W. G. (2014). Organizational identity and family business. *The SAGE Handbook of Family Business*, 480-497.

Whetten, D. A. (2006). Albert and Whetten revisited: Strengthening the concept of organizational identity. *Journal of Management Inquiry, 15*(3), 219-234.

Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic management journal, 24*(13), 1307-1314.

Wiklund, J., & Shepherd, D. A. (2011). Where to from here? EO-as-experimentation, failure, and distribution of outcomes. *Entrepreneurship Theory and Practice, 35*(5), 925-946.

Windapo, A., Adediran, A., Rotimi, J. O. B., & Umeokafor, N. (2022). Construction project performance: The role of client knowledge and procurement systems. *Journal of Engineering, Design and Technology, 20*(5), 1349-1366.

Winslow, E. K., & Solomon, G. T. (1993). Entrepreneurs: Architects of Innovation, Paradigm Pioneers and Change. *The Journal of Creative Behavior, 27*(2), 75-88.

Wu, S., Luo, Y., Zhang, H., & Cheng, P. (2024). Entrepreneurial bricolage and entrepreneurial performance: The role of business model innovation and market orientation. *Heliyon, 10*(4), e26600-e26600.

Wuensch. (2015). Polynomial Regression with SPSS. Retrieved from Polynomial Regression with SPSS website:

https://core.ecu.edu/wuenschk/spss/Ladybugs_Phototaxis

Xiaobao, P., Rui, G., Jiewei, Z., & Xiaofan, S. (2022). The impact of resource bricolage on entrepreneurial orientation in start-ups: the moderating roles of TMT heterogeneity and TMT behavioral integration. *Frontiers in Psychology, 13*, 900177. doi:https://10.3389/fpsyg.2022.900177

Yamada, K., & Eshima, Y. (2009). *Impact of Entrepreneurial Orientation: Longitudinal Analysis of Small Technology Firms in Japan*. Paper presented at the Academy of Management Proceedings(Vol. 2009, No. 1, pp. 1-6), Briarcliff Manor, NY 10510.

Yamini, R., & Rönkkö, M. (2022). *Modeling Entrepreneurial Orientation: Conceptualization and Measurement Issues.* Paper presented at the Academy of Management Proceedings(Vol. 2022, No. 1, p. 16606). Briarcliff Manor, NY

Yan, S., Hu, B., Liu, G., Ru, X., & Wu, Q. (2020). Top management team boundary-spanning behaviour, bricolage, and business model innovation. *Technology Analysis & Strategic Management, 32*(5), 561-573.

Yigit, S., & Mendes, M. (2018). Which Effect Size Measure is Appropriate for One-Way and Two-Way ANOVA Models?: A Monte Carlo Simulation Study. *REVSTAT-Statistical Journal, 16*(3), 295–313-295–313.

Yoon, J., & Solomon, G. T. (2017). A curvilinear relationship between entrepreneurial orientation and firm performance: The moderating role of employees' psychological safety. *International Entrepreneurship and Management Journal, 13*(4), 1139-1156.

Zahra, S. A., & Garvis, D. M. (2000). International corporate entrepreneurship and firm performance: The moderating effect of international environmental hostility. *Journal of business venturing, 15*(5-6), 469-492.

Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review, 27*(2), 185-203.

Zander, I. (2007). Do you see what I mean? An entrepreneurship perspective on the nature and boundaries of the firm. *Journal of Management Studies, 44*(7), 1141-1164.

Zhang, R., Bhabra, G. S., Chou, H.-I., & Tan, E. K. (2019). CEO Succession Gap and Firm Performance. *Eric KM, CEO Succession Gap and Firm Performance (July 18, 2019)*.

Zhang, X.-e., Teng, X., Le, Y., & Li, Y. (2023). Strategic orientations and responsible innovation in SMEs: The moderating effects of environmental turbulence. *Business Strategy and the Environment, 32*(4), 2522-2539.

Zhaoyang, G., & Jiang, W. (2020). Risk-taking for entrepreneurial new entry: Risk-taking dimensions and contingencies. *International Entrepreneurship and Management Journal, 16*(2), 739-781.

Zu, J., Wang, J., & Ma, J. (2022). Ambidexterity in a Rapidly Changing Environment of China: Top Management Team Decision Making and Sustained Performance. *Sustainability, 14*(7), 3894.

Zulu, L. (2019). Revised shedule 1 of the national definition of small enterprise in South Africa. *Government Gazette No. 399, 42304*, 110-111.

APPENDIX A: SURVEY QUESTIONNAIRES

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

100 1922 2022

Section 1 of 8

ENTREPRENEURIAL ORIENTATION AND FINANCIAL PERFORMANCE IN THE SOUTH AFRICAN CONSTRUCTION AND BUILDING MATERIALS SECTOR

PhD Research Survey Questionnaire: Wits Business School

Dear Respondent,
I thank you in advance for taking the time to complete the survey. The survey will take you approximately 20-30 minutes to complete. It is completely voluntary and please be assured that all your information and responses will remain confidential and anonymous. Please note that you can chose to withdraw from the study at any stage during the research process, free of any obligations. During the past decade (2008-2019 period), the South African construction and building materials sector experienced a persistent financial performance decline. You are requested to read and complete the survey with your own firm's financial performance in mind during this period. All inferences that will be deducted from the survey will be distributed to all interested parties.
Thank you again for your participation.

Kind Regards

David Fikile Kanguwe
PhD student at Wits Business School

Email *

Valid email address

Sustainable Financial Performance

This construct measures your firm's financial performance over the last decade

Relative to your principle competitors, rate your firm's financial performance over the last decade on: *

	1- Very Low	2	3	4	5- Very High
Sales Growth Rate	○	○	○	○	○
Market Share	○	○	○	○	○
Profit Growth Before Tax	○	○	○	○	○
Overall Performance	○	○	○	○	○

Environmental Hostility

This construct measures the extent to which your firm reacted to external hostile business environemts over the last decade

How would you characterize the external environment within which your firm operated during the last decade ? *

	1	2	3	4	5	6	7	
Very safe, little threat to the survival and well-being of my firm	○	○	○	○	○	○	○	Very risky, a false step can mean my firm's undoing

How would you characterize the external environment within which your firm operated during the last decade ? *

	1	2	3	4	5	6	7	
Rich in investment and marketing opportunities	○	○	○	○	○	○	○	Very stressful, exacting, hostile; very hard to keep afloat

How would you characterize the external environment within which your firm operated during the last decade ? *

	1	2	3	4	5	6	7	
An environment that my firm can control and manipulate to its own advantage, such as a dominant firm has in an industry with little competition and few hindrances	○	○	○	○	○	○	○	A dominating environment in which my firm's initiatives count for very little against the tremendous competitive, political, or technological forces.

Organisational Identity

This construct determines the extend to which your firm drew on its organisational identity in hostile business environments over the last decade

Please indicate the extent to which the following statements are applicable to your firm... *

	1-Never	2-Rarely	3-Sometimes	4-Often	5-Always
When we use our existing internal resources and capabilities to enhance strategic renewal, we always reflect on who we are as a firm?	○	○	○	○	○
When we use our existing internal resources and capabilities to enhance strategic renewal, we always reflect on who we are no longer as a firm?	○	○	○	○	○
When we use our existing internal resources and capabilities to enhance strategic renewal, we always reflect on who we want to become as a firm?	○	○	○	○	○
When we acquire, assimilate, transform and exploit knowledge to enhance strategic renewal, we always reflect on who we are as a firm? 4	○	○	○	○	○
When we acquire, assimilate, transform and exploit knowledge to enhance strategic renewal, we always reflect on who we are no longer as a firm?	○	○	○	○	○
When we acquire, assimilate, transform and exploit knowledge to enhance strategic renewal, we always reflect on who we want to become as a firm?	○	○	○	○	○

Entrepreneurial Orientation

This construct measures your firm's prospensity to innovativess, proactiveness and risk-taking in hostile external environments that prevailed over the last decade

Innovativeness - In general, the top managers of my firm favor ... *

	1	2	3	4	5	6	7	
A strong emphasis on the marketing of tried-and-true products or services	○	○	○	○	○	○	○	A strong emphasis on R&D, technological leadership, and innovations

Innovativeness - How many new lines of products or services has your firm marketed in the past decade? *

	1	2	3	4	5	6	7	
No new lines of products or services	○	○	○	○	○	○	○	Very many new lines of products or services

Innovativeness - How many new lines of products or services has your firm marketed in the past decade? *

	1	2	3	4	5	6	7	
Changes in product or service lines have been mostly of a minor nature	○	○	○	○	○	○	○	Changes in product or service lines have usually been quite dramatic

Proactiveness - In dealing with its competitors, my firm ... *

	1	2	3	4	5	6	7	
Typically responds to actions which competitors initiate	○	○	○	○	○	○	○	Typically initiates actions to which competitors then respond

Proactiveness - In dealing with its competitors, my firm ... *

	1	2	3	4	5	6	7	
Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc.	○	○	○	○	○	○	○	Is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.

Proactiveness - In dealing with its competitors, my firm ... *

	1	2	3	4	5	6	7	
Typically seeks to avoid competitive clashes, preferring a "live-and-let-live" posture	○	○	○	○	○	○	○	Typically adopts a very competitive, "undo-the competitors" posture

Risk Taking -In general, the top managers of my firm have ... *

	1	2	3	4	5	6	7	
A strong proclivity for low-risk projects (with normal and certain rates of return)	○	○	○	○	○	○	○	A strong proclivity for high risk projects (with chances of very high returns)

Risk Taking -In general, the top managers of my firm believe that ... *

	1	2	3	4	5	6	7	
Owing to the nature of the environment, it is best to explore it gradually via cautious, incremental behavior	○	○	○	○	○	○	○	Owing to the nature of the environment, bold, wide ranging acts are necessary to achieve the firm's objectives

Risk Taking -When confronted with decision-making situations involving uncertainty, my firm... *

	1	2	3	4	5	6	7	
Typically adopts a cautious, "wait-and-see" posture in order to minimize the probability of making costly decisions	○	○	○	○	○	○	○	Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities

Bricolage Capability

This construct measures your firms capability to leverage on its existing internal capabilities and resources in hostile business environments over the last decade

Does the following represent how you never, rarely, sometimes, often, or always go about doing things for your firm? Firstly, ... READ STATEMENT *

	1-Never	2-Rarely	3-Sometimes	4-Often	5-Always
We are confident of our ability to find workable solutions to new challenges by using our existing resources	○	○	○	○	○
We gladly take on a broader range of challenges than others with our resources would be able to.	○	○	○	○	○
We deal with new challenges by applying a combination of our existing resources and other resources inexpensively available to us	○	○	○	○	○
When dealing with new problems or opportunities we take action by assuming that we will find a workable solution	○	○	○	○	○
By combining our existing resources, we take on a surprising variety of new challenges	○	○	○	○	○
When we face new challenges we put together workable solutions from our existing resources	○	○	○	○	○
We combine resources to accomplish new challenges that the resources weren't originally intended to accomplish	○	○	○	○	○

Absorptive Capacity

This construct measures your firm's knowledge acquition , assimilation ,transformation and exploitation capacity over the last decade

Please rate your firm's knowledge absorptive capability.. *

	1- Strongly Disagree	2- Disagree	3- Somewhat Disagree	4- Neither Agree nor Disagree	5- Somewhat Agree	6- Agree	7- Strongly Agree
Our branches have frequent interactions with corporate headquarters to acquire new knowledge	○	○	○	○	○	○	○
Our firm encourages interactions between its various branches	○	○	○	○	○	○	○
We collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners).	○	○	○	○	○	○	○
Other divisions of our company are hardly visited, (reverse-coded)	○	○	○	○	○	○	○
Employees record and store newly acquired knowledge for future reference.	○	○	○	○	○	○	○
Our firm quickly recognizes the usefulness of new external knowledge to existing knowledge.	○	○	○	○	○	○	○
Employees hardly share practical experiences, (reverse coded)	○	○	○	○	○	○	○
We laboriously grasp the opportunities for our unit from new external knowledge, (reverse-coded)	○	○	○	○	○	○	○
We periodically meet to discuss consequences of market trends and new product development.	○	○	○	○	○	○	○
It is clearly known how activities within our firm should be performed.	○	○	○	○	○	○	○
Client complaints fall on deaf ears in our unit.b (reverse coded)	○	○	○	○	○	○	○
We periodically organizes special meetings with customers or third parties to acquire new knowledge.	○	○	○	○	○	○	○
Our employees regularly approach third parties such as accountants, consultants, or tax consultants.	○	○	○	○	○	○	○
We are slow to recognize shifts in our market (e.g. competition, regulation, demography), (reverse-coded)	○	○	○	○	○	○	○
New opportunities to serve our clients are quickly understood.	○	○	○	○	○	○	○
We quickly analyze and interpret changing market demands.	○	○	○	○	○	○	○
Our firm regularly considers the consequences of changing market demands in terms of new products and services.	○	○	○	○	○	○	○
Our firm has a clear division of roles and responsibilities.	○	○	○	○	○	○	○
We constantly consider how to better exploit knowledge.	○	○	○	○	○	○	○
We have difficulty implementing new products and services, (reverse-coded)	○	○	○	○	○	○	○
Employees have a common language regarding our products and services.	○	○	○	○	○	○	○

Socio-Demographic Characteristics

This construct seeks to link strategic decision-making with a variety of socio-demographic characteristics

The average number of employees my firm employed between 2008 and 2019 in South Africa. *

- 0-10 employees
- 10-20 employees
- 20-30 employees
- 30-40 employees
- Above 40 employees

This is how old our South African based firm is (years). *

- 0-10 years
- 10-20 years
- 20-30 years
- 30-40 years
- Above 40 years

What is your approximate total work experience in the construction and building materials sector?. *

- 0-10 years
- 10-20 years
- 20-30 years
- 30-40 years
- Above 40 years

what is your approximate total work experience? *

- 0-10 years
- 10-20 years
- 20-30 years
- 30-40 years
- Above 40 years

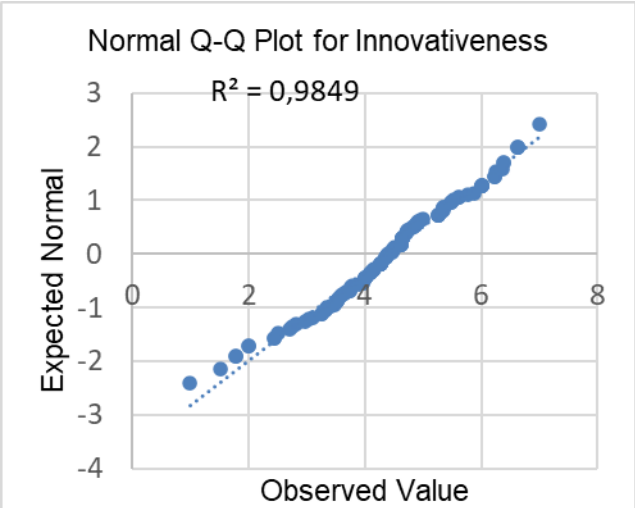
What is the approximate total experience of your top management? *

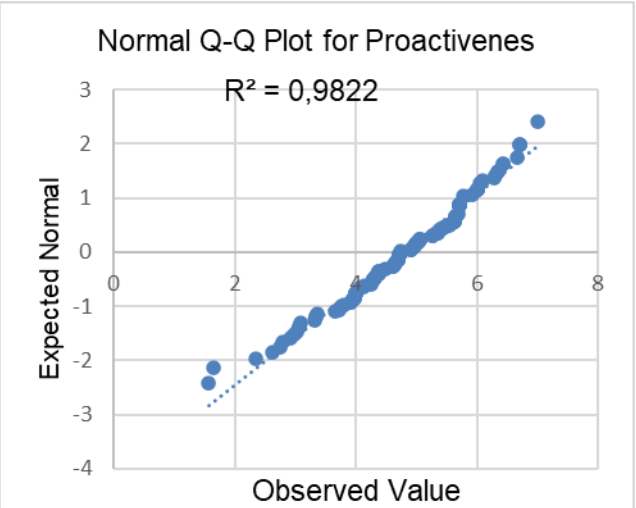
- 0-10 years
- 10-20 years
- 20-30 years
- 30-40 years
- Above 40 years

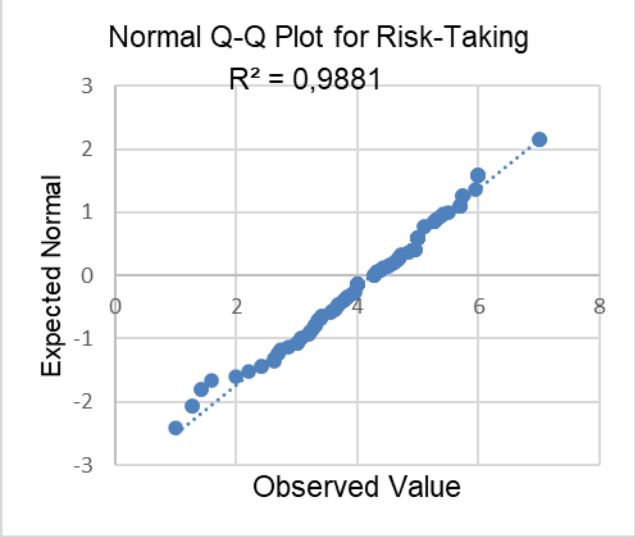
Please select your highest academic qualification *

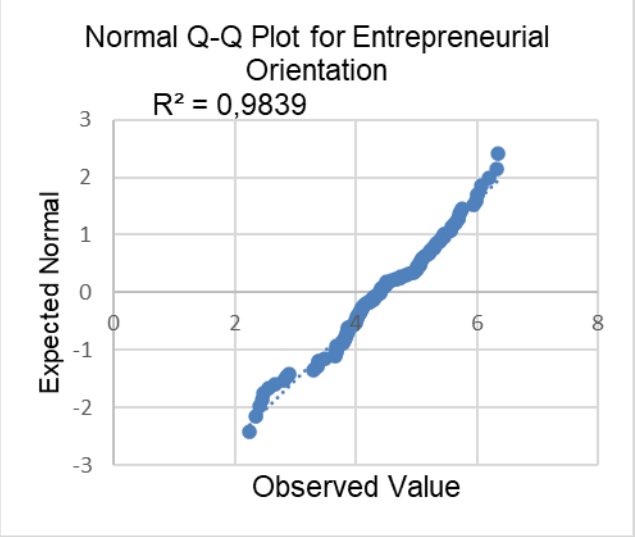
- pre tertiary
- national diploma
- Bachelors degree
- masters
- doctorate

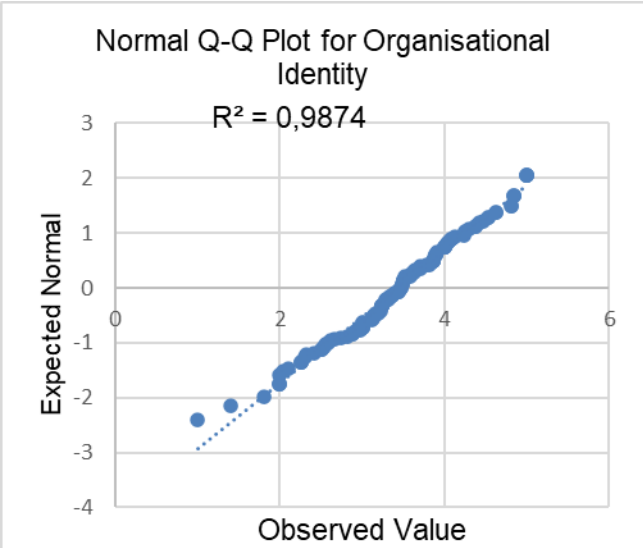
APPENDIX B: NORMALITY Q-Q PLOTS

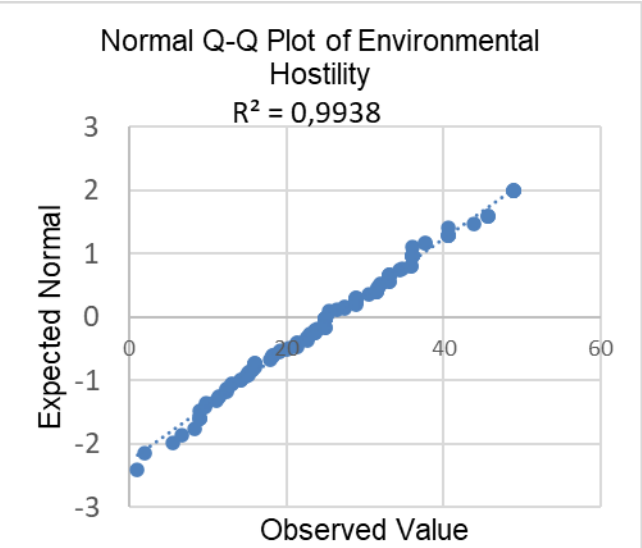


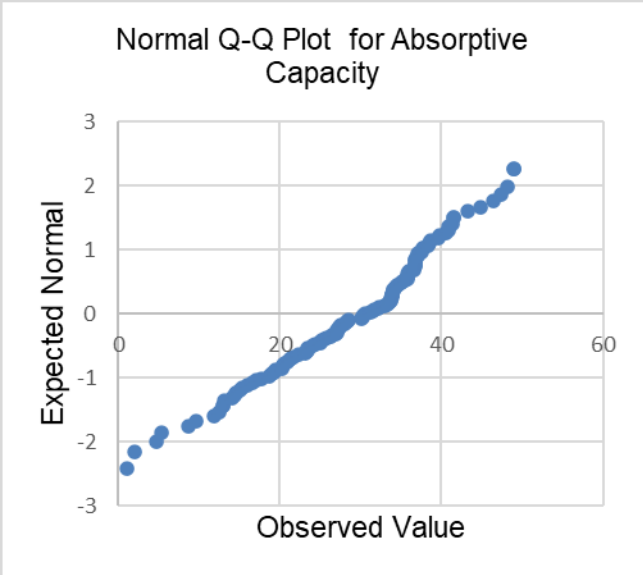


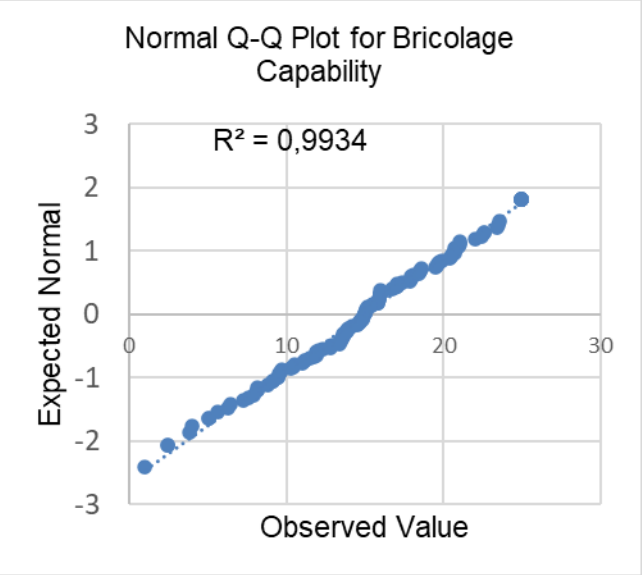


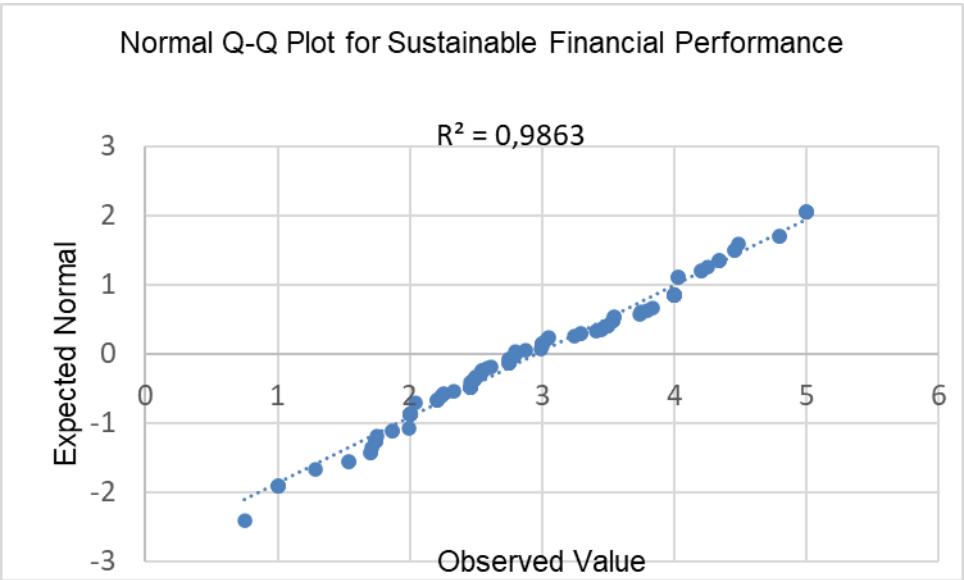



Normal Q-Q Plot for Organisational Identity
R² = 0,9874
Expected Normal
Observed Value


Normal Q-Q Plot of Environmental Hostility
R² = 0,9938
Expected Normal
Observed Value


Normal Q-Q Plot for Absorptive Capacity
Expected Normal
Observed Value


Normal Q-Q Plot for Bricolage Capability
R² = 0,9934
Expected Normal
Observed Value


Normal Q-Q Plot for Sustainable Financial Performance
R² = 0,9863
Expected Normal
Observed Value

APPENDIX C: ETHICAL CLEARANCE CERTIFICATE

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Kanguwe

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H21/08/09**
PROJECT TITLE	Entrepreneurial orientation and financial performance in the South African construction and materials sector: A focus on bricolage capability and absorptive capacity
INVESTIGATOR(S)	Mr DF Kanguwe
SCHOOL/DEPARTMENT	Wits Business School
DATE CONSIDERED	20 August 2021
DECISION OF THE COMMITTEE	Approved Risk Level: Minimal
EXPIRY DATE	16 September 2024

DATE 17 September 2021 **CHAIRPERSON** (Professor J Knight)

cc: Supervisor : Professor B Urban

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to submit an amendment of the protocol to the Committee. **I agree to completion of a regular progress report. For Minimal and Low studies, this is due annually on 31 December. For Medium and High Risk studies, this is due twice annually on 30 June and 31 December.**

Signature 18/ 09 / 2021 Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

APPENDIX D: COMPLEMENTARY RESULTS TO HYPOTHESIS H1, H2, H3 AND H5(A)

Appendix Table 1: *Analysis of Variance results for the Innovativeness-Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.*

Model	Contributes to		Sum of Squares	df	Mean Square	F	p
1		Regression	8,69	6,00	1,45	1,47	.193
		Residual	116,98	119,00	0,98		
		Total	125,67	125,00			
2		Regression	34,20	11,00	3,11	3,88	<.001
		Residual	91,47	114,00	0,80		
		Total	125,67	125,00			
3	**H1**	Regression	38,10	12,00	3,18	4,10	<.001
		Residual	87,57	113,00	0,77		
		Total	125,67	125,00			
4	**H2**	Regression	40,45	14,00	2,89	3,76	<.001
		Residual	85,23	111,00	0,77		
		Total	125,67	125,00			
5	**H3**	Regression	44,39	16,00	2,77	3,72	<.001
		Residual	81,28	109,00	0,75		
		Total	125,67	125,00			
6	**H5(a)**	Regression	47,52	18,00	2,64	3,61	<.001
		Residual	78,15	107,00	0,73		
		Total	125,67	125,00			

Appendix Table 2: *Hierarchical Regression for the Innovativeness –-Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p
Dependent Variable	Sustainable Financial Performance													
Control Variables														
Firm Age	0,12	0,25	0,07	0,47	0,07	0,46	0,07	0,49	0,05	0,60	0,07	0,47	0,10	0,32
Firm Size	-0,14	0,21	0,03	0,80	0,03	0,81	0,04	0,71	0,02	0,89	0,03	0,78	-0,03	0,77
Total Experience in Sector	0,38	0,02	0,29	0,06	0,27	0,07	0,28	0,06	0,28	0,05	0,26	0,07	0,28	0,06
Total Work Experience	-0,17	0,28	-0,09	0,53	-0,04	0,76	-0,05	0,72	-0,04	0,76	0,00	0,99	-0,05	0,70
Total Work Experience in TMT	-0,01	0,95	-0,13	0,17	-0,15	0,12	-0,14	0,15	-0,13	0,17	-0,13	0,15	-0,12	0,21
Qualification	0,03	0,79	-0,05	0,60	-0,03	0,75	-0,03	0,73	0,00	0,96	0,00	0,98	-0,01	0,89
Main/Direct Effects														
Innovativeness (INNO)			-0,12	0,19	-0,17	0,08	-0,21	0,05	-0,20	0,05	-0,27	0,01	-0,14	0,23
Organisational Identity (OI)			0,18	0,13	0,16	0,16	0,19	0,11	0,19	0,11	0,19	0,11	0,05	0,71
Environmental Hostility (ENV)			-0,19	0,03	-0,24	0,01	-0,16	0,13	-0,15	0,16	-0,10	0,34	-0,23	0,02
Bricolage Capability (BC)			0,09	0,39	0,11	0,32	0,07	0,52	0,09	0,41	0,12	0,28	0,19	0,18
Absorptive Capacity (ACAP)			0,27	0,03	0,28	0,02	0,28	0,02	0,28	0,02	0,30	0,01	0,20	0,12
$INNO^2$					-0,19	0,03	-0,24	0,01	-0,28	0,00	-0,30	0,00	-0,25	0,02
Moderating Effects														
ENVxINNO							0,00	0,99	-0,01	0,95	-0,09	0,53		
ENVxINNO2							-0,19	0,10	-0,25	0,12	-0,39	0,03		
BCXINNOxENV									0,24	0,09	0,38	0,03		
$BCXINNO^2XENV$									-0,19	0,14	-0,30	0,07		
BCXINNOxENVXOI											0,45	0,04		
$BCXINNO^2xENVXOI$											-0,36	0,10		
Indirect Effects														
BCxINNO													0,23	0,04
$BCxINNO^2$													-0,30	0,04
BCxOIxINNO													0,30	0,04
$BCxOIxINNO^2$													-0,32	0,04
INNOXOI													0,15	0,30
$INNO^2XOI$													0,13	0,42
R square (R^2)	0,07		0,27		0,30		0,32		0,35		0,38		0,36	
Adjusted R squared (R^2)	0,02		0,20		0,23		0,24		0,26		0,27		0,25	
R squared change	0,07		0,20		0,03		0,02		0,03		0,02		0,06	
F Change	1,47		6,36		5,03		1,53		2,65		2,14		1,52	
Sig F Change	0,19		0,00		0,03		0,22		0,08		0,12		0,18	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. Indirect effects are shown in model 7.

Appendix Table 3: *Analysis of Variance results for the Proactiveness – Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.*

Model	Contributes to		Sum of Squares	df	Mean Square	F	p
1		Regression	8,69	6,00	1,45	1,47	.193
		Residual	116,98	119,00	0,98		
		Total	125,67	125,00			
2		Regression	34,48	11,00	3,13	3,92	<.001
		Residual	91,19	114,00	0,80		
		Total	125,67	125,00			
3	**H1**	Regression	38,22	12,00	3,18	4,12	<.001
		Residual	87,45	113,00	0,77		
		Total	125,67	125,00			
4	**H2**	Regression	39,84	14,00	2,85	3,68	<.001
		Residual	85,83	111,00	0,77		
		Total	125,67	125,00			
5	**H3**	Regression	40,11	16,00	2,51	3,19	<.001
		Residual	85,56	109,00	0,78		
		Total	125,67	125,00			
6	**H5(a)**	Regression	40,20	18,00	2,23	2,80	<.001
		Residual	85,47	107,00	0,80		
		Total	125,67	125,00			

Appendix Table 4: *Hierarchical Regression for the Proactiveness-Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	P
Dependent Variable	Sustainable Financial Performance													
Control Variables														
Firm Age	0,12	0,25	0,06	0,54	0,06	0,52	0,05	0,57	0,06	0,56	0,05	0,58	0,05	0,59
Firm Size	-0,14	0,21	-0,01	0,92	-0,01	0,93	-0,02	0,89	-0,02	0,86	-0,02	0,86	-0,01	0,95
Total Experience in Sector	0,38	0,02	0,25	0,10	0,25	0,11	0,29	0,07	0,30	0,06	0,30	0,06	0,35	0,04
Total Work Experience	-0,17	0,28	-0,08	0,58	-0,07	0,63	-0,09	0,53	-0,09	0,52	-0,09	0,51	-0,15	0,30
Total Work Experience in TMT	-0,01	0,95	-0,10	0,30	-0,10	0,29	-0,09	0,34	-0,09	0,34	-0,09	0,34	-0,11	0,27
Qualification	0,03	0,79	-0,02	0,78	0,00	0,98	0,01	0,95	0,01	0,87	0,02	0,86	-0,05	0,61
Main/Direct Effects														
Proactiveness (PROCT)			0,14	0,15	0,09	0,35	0,02	0,87	0,02	0,88	0,01	0,92	0,07	0,54
Organisational Identity (OI)			0,15	0,19	0,12	0,29	0,12	0,33	0,11	0,35	0,11	0,37	0,17	0,25
Environmental Hostility (ENV)			-0,13	0,15	-0,15	0,10	-0,08	0,48	-0,06	0,61	-0,06	0,64	-0,10	0,30
Bricolage Capability (BC)			0,07	0,51	0,09	0,40	0,08	0,46	0,07	0,56	0,06	0,61	0,07	0,64
Absorptive Capacity (ACAP)			0,18	0,13	0,18	0,13	0,19	0,12	0,19	0,12	0,20	0,12	0,17	0,16
PROCT²					-0,18	0,03	-0,20	0,06	-0,22	0,05	-0,22	0,06	-0,19	0,14
Moderating Effects														
ENVxPROCT							-0,05	0,59	-0,07	0,57	-0,06	0,65		
ENVxPROCT2							-0,17	0,17	-0,22	0,21	-0,23	0,20		
BCXPROCTxENV									-0,03	0,79	-0,06	0,72		
BCXPROCT²XENV									0,06	0,65	0,06	0,75		
BCXPROCTxENVXOI											-0,02	0,87		
BCXPROCT²xENVXOI											0,05	0,76		
Indirect Effects														
BCxPROCT													0,11	0,38
BCxPROCT²													0,04	0,82
BCxOIxPROCT													0,03	0,86
BCxOIxPROCT²													-0,13	0,43
PROCTXOI													0,21	0,13
PROCT²XOI													0,02	0,92
R square (R^2)	0,07		0,27		0,30		0,32		0,32		0,32		0,34	
Adjusted R squared (R^2)	0,02		0,20		0,23		0,23		0,22		0,21		0,23	
R squared change	0,07		0,21		0,03		0,01		0,00		0,00		0,03	
F Change	1,47		6,45		4,83		1,05		0,17		0,05		0,88	
Sig F Change	0,19		0,00		0,03		0,35		0,84		0,95		0,51	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. Indirect effects are shown in model 7.

Appendix Table 5: *Analysis of Variance results for the Risk-Taking-Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.*

Model	Contributes to		Sum of Squares	df	Mean Square	F	p
1		Regression	8,69	6,00	1,45	1,47	.193
		Residual	116,98	119,00	0,98		
		Total	125,67	125,00			
2		Regression	33,06	11,00	3,01	3,70	<.001
		Residual	92,61	114,00	0,81		
		Total	125,67	125,00			
3	**H1**	Regression	36,23	12,00	3,02	3,81	<.001
		Residual	89,45	113,00	0,79		
		Total	125,67	125,00			
4	**H2**	Regression	37,23	14,00	2,66	3,34	<.001
		Residual	88,44	111,00	0,80		
		Total	125,67	125,00			
5	**H3**	Regression	38,75	16,00	2,42	3,04	<.001
		Residual	86,92	109,00	0,80		
		Total	125,67	125,00			
6	**H5(a)**	Regression	38,81	18,00	2,16	2,66	<.001
		Residual	86,86	107,00	0,81		
		Total	125,67	125,00			

Appendix Table 6: *Hierarchical Regression for the Risk-Taking – Sustainable Financial Performance Relationship with Environmental Hostility, Bricolage Capability and Organisational Identity Moderating Effects.*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	P
Dependent Variable	Sustainable Financial Performance													
Control Variables														
Firm Age	0,12	0,25	0,06	0,57	0,06	0,51	0,06	0,53	0,05	0,61	0,05	0,59	0,07	0,50
Firm Size	-0,14	0,21	0,01	0,92	0,02	0,82	0,02	0,84	0,01	0,90	0,01	0,92	0,00	0,98
Total Experience in Sector	0,38	0,02	0,31	0,04	0,32	0,03	0,34	0,03	0,34	0,03	0,34	0,03	0,33	0,04
Total Work Experience	-0,17	0,28	-0,12	0,40	-0,14	0,33	-0,14	0,33	-0,12	0,38	-0,13	0,38	-0,15	0,32
Total Work Experience in TMT	-0,01	0,95	-0,11	0,25	-0,10	0,28	-0,10	0,27	-0,10	0,32	-0,10	0,33	-0,09	0,38
Qualification	0,03	0,79	-0,04	0,64	-0,01	0,95	0,00	0,98	0,02	0,86	0,01	0,88	0,00	0,97
Main/Direct Effects														
Risk-Taking (RISK)			0,05	0,60	0,01	0,94	0,01	0,94	0,03	0,74	0,03	0,75	0,07	0,56
Organisational Identity (OI)			0,15	0,20	0,13	0,27	0,15	0,22	0,14	0,23	0,15	0,22	0,22	0,18
Environmental Hostility (ENV)			-0,18	0,05	-0,21	0,02	-0,18	0,09	-0,18	0,09	-0,17	0,14	-0,19	0,04
Bricolage Capability (BC)			0,06	0,57	0,12	0,29	0,10	0,40	0,10	0,38	0,10	0,41	0,08	0,56
Absorptive Capacity (ACAP)			0,22	0,07	0,21	0,08	0,20	0,10	0,19	0,10	0,20	0,10	0,20	0,09
RISK²					-0,17	0,05	-0,17	0,07	-0,25	0,04	-0,25	0,04	-0,17	0,28
Moderating Effects														
ENVxRISK							0,08	0,38	0,07	0,58	0,07	0,58		
ENVxRISK²							-0,07	0,52	-0,16	0,31	-0,17	0,33		
BCXRISKxENV									0,18	0,24	0,16	0,47		
BCXRISK²XENV									-0,12	0,40	-0,16	0,59		
BCXRISKxENVXOI											0,05	0,88		
BCXRISK²xENVXOI											0,03	0,90		
Indirect Effects														
BCxRISK													-0,11	0,47
BCxRISK²													0,13	0,61
BCxOIxRISK													-0,27	0,17
BCxOIxRISK²													-0,03	0,87
RISKXOI													0,16	0,29
RISK²XOI													0,03	0,92
R square (R^2)	0,07		0,26		0,29		0,30		0,31		0,31		0,31	
Adjusted R squared (R^2)	0,02		0,19		0,21		0,21		0,21		0,19		0,20	
R squared change	0,07		0,19		0,03		0,01		0,01		0,00		0,02	
F Change	1,47		6,00		4,00		0,63		0,95		0,04		0,63	
Sig F Change	0,19		0,00		0,05		0,54		0,39		0,96		0,71	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. Indirect effects are shown in model 7.

APPENDIX E: COMPLEMENTARY RESULTS TO HYPOTHESIS H1, H2, H4 AND H5(B)

Appendix Table 7: *Analysis of Variance results for the Innovativeness-Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.*

Model	Contributes to		Sum of Squares	df	Mean Square	F	p
1		Regression	8,69	6,00	1,45	1,47	.193
		Residual	116,98	119,00	0,98		
		Total	125,67	125,00			
2		Regression	34,20	11,00	3,11	3,88	<.001
		Residual	91,47	114,00	0,80		
		Total	125,67	125,00			
3	**H1**	Regression	38,10	12,00	3,18	4,10	<.001
		Residual	87,57	113,00	0,77		
		Total	125,67	125,00			
4	**H2**	Regression	40,45	14,00	2,89	3,76	<.001
		Residual	85,23	111,00	0,77		
		Total	125,67	125,00			
5	**H4**	Regression	40,84	16,00	2,55	3,28	<.001
		Residual	84,83	109,00	0,78		
		Total	125,67	125,00			
6	**H5(b)**	Regression	41,35	18,00	2,30	2,91	<.001
		Residual	84,32	107,00	0,79		
		Total	125,67	125,00			

Appendix Table 8: *Hierarchical Regression for the Innovativeness – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity, and Organisational Identity Moderating Effects.*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	P
Dependent Variable	Sustainable Financial Performance													
Control Variables														
Firm Age	0,12	0,25	0,07	0,47	0,07	0,46	0,07	0,49	0,07	0,47	0,07	0,49	0,15	0,12
Firm Size	-0,14	0,21	0,03	0,80	0,03	0,81	0,04	0,71	0,04	0,69	0,05	0,64	-0,04	0,73
Total Experience in Sector	0,38	0,02	0,29	0,06	0,27	0,07	0,28	0,06	0,30	0,05	0,30	0,05	0,22	0,14
Total Work Experience	-0,17	0,28	-0,09	0,53	-0,04	0,76	-0,05	0,72	-0,07	0,65	-0,06	0,65	0,02	0,90
Total Work Experience in TMT	-0,01	0,95	-0,13	0,17	-0,15	0,12	-0,14	0,15	-0,15	0,12	-0,14	0,15	-0,10	0,28
Qualification	0,03	0,79	-0,05	0,60	-0,03	0,75	-0,03	0,73	-0,03	0,74	-0,03	0,76	-0,03	0,75
Main/Direct Effects														
Innovativeness (INNO)			-0,12	0,19	-0,17	0,08	-0,21	0,05	-0,21	0,06	-0,22	0,05	-0,17	0,12
Organisational Identity (OI)			0,18	0,13	0,16	0,16	0,19	0,11	0,19	0,11	0,18	0,13	0,06	0,65
Environmental Hostility (ENV)			-0,19	0,03	-0,24	0,01	-0,16	0,13	-0,15	0,16	-0,15	0,16	-0,20	0,04
Bricolage Capability (BC)			0,09	0,39	0,11	0,32	0,07	0,52	0,06	0,60	0,06	0,62	0,02	0,84
Absorptive Capacity (ACAP)			0,27	0,03	0,28	0,02	0,28	0,02	0,31	0,02	0,33	0,01	0,28	0,03
$INNO^2$					-0,19	0,03	-0,24	0,01	-0,27	0,01	-0,29	0,01	-0,26	0,02
Moderating Effects														
ENVxINNO							0,00	0,99	-0,07	0,62	-0,10	0,49		
ENVxINNO2							-0,19	0,10	-0,24	0,13	-0,28	0,10		
ACAPXINNOxENV									-0,01	0,95	0,15	0,57		
$ACAPXINNO^2XENV$									0,10	0,53	-0,07	0,83		
ACAPXINNOxENVXOI											0,24	0,48		
$ACAPXINNO^2xENVXOI$											-0,19	0,45		
Indirect Effects														
ACAPxINNO													-0,26	0,14
$ACAPxINNO^2$													-0,44	0,12
ACAPxOIxINNO													0,58	0,06
$ACAPxOIxINNO^2$													0,01	0,97
INNOXOI													0,26	0,07
$INNO^2XOI$													-0,03	0,88
R square (R^2)	0,07		0,27		0,30		0,32		0,32		0,33		0,36	
Adjusted R squared (R^2)	0,02		0,20		0,23		0,24		0,23		0,22		0,26	
R squared change	0,07		0,20		0,03		0,02		0,00		0,00		0,06	
F Change	1,47		6,36		5,03		1,53		0,25		0,32		1,71	
Sig F Change	0,19		0,00		0,03		0,22		0,78		0,73		0,13	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. Indirect effects are shown in model 7.

Appendix Table 9: *Analysis of Variance results for the Proactiveness – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.*

Model	Contributes to		Sum of Squares	df	Mean Square	F	p
1		Regression	8,69	6,00	1,45	1,47	.193
		Residual	116,98	119,00	0,98		
		Total	125,67	125,00			
2		Regression	34,48	11,00	3,13	3,92	<.001
		Residual	91,19	114,00	0,80		
		Total	125,67	125,00			
3	**H1**	Regression	38,22	12,00	3,18	4,12	<.001
		Residual	87,45	113,00	0,77		
		Total	125,67	125,00			
4	**H2**	Regression	39,84	14,00	2,85	3,68	<.001
		Residual	85,83	111,00	0,77		
		Total	125,67	125,00			
5	**H4**	Regression	41,15	16,00	2,57	3,32	<.001
		Residual	84,52	109,00	0,78		
		Total	125,67	125,00			
6	**H5(b)**	Regression	41,85	18,00	2,32	2,97	<.001
		Residual	83,82	107,00	0,78		
		Total	125,67	125,00			

Appendix Table 10: *Hierarchical Regression for the Proactiveness – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	P
Dependent Variable	Sustainable Financial Performance													
Control Variables														
Firm Age	0,12	0,25	0,06	0,54	0,06	0,52	0,05	0,57	0,05	0,58	0,05	0,59	0,07	0,47
Firm Size	-0,14	0,21	-0,01	0,92	-0,01	0,93	-0,02	0,89	-0,01	0,90	-0,01	0,91	-0,03	0,79
Total Experience in Sector	0,38	0,02	0,25	0,10	0,25	0,11	0,29	0,07	0,31	0,05	0,32	0,05	0,30	0,07
Total Work Experience	-0,17	0,28	-0,08	0,58	-0,07	0,63	-0,09	0,53	-0,10	0,50	-0,10	0,51	-0,09	0,54
Total Work Experience in TMT	-0,01	0,95	-0,10	0,30	-0,10	0,29	-0,09	0,34	-0,09	0,33	-0,08	0,40	-0,13	0,17
Qualification	0,03	0,79	-0,02	0,78	0,00	0,98	0,01	0,95	0,02	0,86	0,02	0,81	-0,01	0,92
Main/Direct Effects														
Proactiveness (PROCT)			0,14	0,15	0,09	0,35	0,02	0,87	-0,01	0,96	0,00	0,97	0,05	0,65
Organisational Identity (OI)			0,15	0,19	0,12	0,29	0,12	0,33	0,11	0,34	0,11	0,37	0,03	0,84
Environmental Hostility (ENV)			-0,13	0,15	-0,15	0,10	-0,08	0,48	-0,08	0,48	-0,10	0,39	-0,14	0,14
Bricolage Capability (BC)			0,07	0,51	0,09	0,40	0,08	0,46	0,07	0,50	0,05	0,68	0,10	0,37
Absorptive Capacity (ACAP)			0,18	0,13	0,18	0,13	0,19	0,12	0,23	0,07	0,23	0,07	0,34	0,03
PROCT²					-0,18	0,03	-0,20	0,06	-0,18	0,10	-0,21	0,07	-0,16	0,12
Moderating Effects														
ENVxPROCT							-0,05	0,59	-0,10	0,38	-0,12	0,34		
ENVxPROCT2							-0,17	0,17	-0,26	0,07	-0,23	0,14		
ACAPXPROCTxENV									0,11	0,31	0,20	0,19		
ACAPXPROCT²XENV									0,06	0,62	0,13	0,48		
ACAPXPROCTxENVXOI											0,00	0,99		
ACAPXPROCT²xENVXOI											-0,17	0,36		
Indirect Effects														
ACAPxPROCT													0,09	0,53
ACAPxPROCT²													-0,52	0,06
ACAPxOIxPROCT													0,28	0,12
ACAPxOIxPROCT²													-0,28	0,12
PROCTXOI													0,28	0,07
PROCT²XOI													0,24	0,39
R square (R^2)	0,07		0,27		0,30		0,32		0,33		0,33		0,37	
Adjusted R squared (R^2)	0,02		0,20		0,23		0,23		0,23		0,22		0,26	
R squared change	0,07		0,21		0,03		0,01		0,01		0,01		0,07	
F Change	1,47		6,45		4,83		1,05		0,84		0,44		1,87	
Sig F Change	0,19		0,00		0,03		0,35		0,43		0,64		0,09	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. Indirect effects are shown in model 7.

Appendix Table 11: *Analysis of Variance results for the Risk-Taking – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.*

Model	Contributes to		Sum of Squares	df	Mean Square	F	p
1		Regression	8,69	6,00	1,45	1,47	.193
		Residual	116,98	119,00	0,98		
		Total	125,67	125,00			
2		Regression	33,06	11,00	3,01	3,70	<.001
		Residual	92,61	114,00	0,81		
		Total	125,67	125,00			
3	**H1**	Regression	36,23	12,00	3,02	3,81	<.001
		Residual	89,45	113,00	0,79		
		Total	125,67	125,00			
4	**H2**	Regression	37,23	14,00	2,66	3,34	<.001
		Residual	88,44	111,00	0,80		
		Total	125,67	125,00			
5	**H4**	Regression	38,90	16,00	2,43	3,05	<.001
		Residual	86,77	109,00	0,80		
		Total	125,67	125,00			
6	**H5(b)**	Regression	39,50	18,00	2,19	2,72	<.001
		Residual	86,18	107,00	0,81		
		Total	125,67	125,00			

Appendix Table 12: *Hierarchical Regression for the Risk-taking – Sustainable Financial Performance Relationship with Environmental Hostility, Absorptive Capacity and Organisational Identity Moderating Effects.*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	P
Dependent Variable	Sustainable Financial Performance													
Control Variables														
Firm Age	0,12	0,25	0,06	0,57	0,06	0,51	0,06	0,53	0,05	0,65	0,05	0,64	0,07	0,50
Firm Size	-0,14	0,21	0,01	0,92	0,02	0,82	0,02	0,84	0,03	0,78	0,03	0,76	0,01	0,92
Total Experience in Sector	0,38	0,02	0,31	0,04	0,32	0,03	0,34	0,03	0,34	0,03	0,34	0,03	0,29	0,09
Total Work Experience	-0,17	0,28	-0,12	0,40	-0,14	0,33	-0,14	0,33	-0,14	0,31	-0,15	0,29	-0,10	0,51
Total Work Experience in TMT	-0,01	0,95	-0,11	0,25	-0,10	0,28	-0,10	0,27	-0,09	0,33	-0,09	0,38	-0,07	0,51
Qualification	0,03	0,79	-0,04	0,64	-0,01	0,95	0,00	0,98	0,01	0,94	0,00	0,97	0,00	0,98
Main/Direct Effects														
Risk-Taking(RISK)			0,05	0,60	0,01	0,94	0,01	0,94	0,02	0,87	0,02	0,81	0,06	0,61
Organisational Identity (OI)			0,15	0,20	0,13	0,27	0,15	0,22	0,14	0,24	0,13	0,28	0,29	0,06
Environmental Hostility (ENV)			-0,18	0,05	-0,21	0,02	-0,18	0,09	-0,17	0,11	-0,18	0,14	-0,20	0,03
Bricolage Capability (BC)			0,06	0,57	0,12	0,29	0,10	0,40	0,11	0,36	0,12	0,30	0,09	0,44
Absorptive Capacity (ACAP)			0,22	0,07	0,21	0,08	0,20	0,10	0,21	0,09	0,22	0,08	0,08	0,61
RISK²					-0,17	0,05	-0,17	0,07	-0,23	0,03	-0,24	0,03	-0,19	0,18
Moderating Effects														
ENVxRISK							0,08	0,38	0,10	0,35	0,10	0,37		
ENVxRISK2							-0,07	0,52	-0,21	0,18	-0,23	0,19		
ACAPXRISKxENV									0,23	0,16	0,23	0,32		
ACAPXRISK²XENV									-0,15	0,31	-0,43	0,24		
ACAPXRISKxENVXOI											0,30	0,41		
ACAPXRISK²xENVXOI											-0,01	0,97		
Indirect Effects														
ACAPxRISK													-0,19	0,26
ACAPxRISK²													0,23	0,41
ACAPxOIxRISK													0,01	0,95
ACAPxOIxRISK²													0,06	0,74
RISKXOI													0,14	0,36
RISK²XOI													-0,33	0,14
R square (R^2)	0,07		0,26		0,29		0,30		0,31		0,31		0,32	
Adjusted R squared (R^2)	0,02		0,19		0,21		0,21		0,21		0,20		0,20	
R squared change	0,07		0,19		0,03		0,01		0,01		0,00		0,03	
F Change	1,47		6,00		4,00		0,63		1,05		0,37		0,71	
Sig F Change	0,19		0,00		0,05		0,54		0,35		0,69		0,65	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. Indirect effects are shown in Model 7.

APPENDIX F: COMPLEMENTARY RESULTS TO HYPOTHESIS H1, H2, H3, H4 AND H5(B) AND H5(A) WITH SECONDARY DATA FOR SUSTAINABLE FINANCIAL PERFORMACE

Appendix Table 13: *Analysis of Variance results for hypotheses H1, H2, H3 and H5(a) with Sustainable Financial Performance measured objectively with secondary data.*

Model	Hypothesis		Sum of Squares	df	Mean Square	F	p	ω^2
1		Regression	7,78	6,00	1,30	2,26	.062	0,16
		Residual	18,95	33,00	0,57			
		Total	26,73	39,00				
2		Regression	14,32	11,00	1,30	2,94	.010	0,35
		Residual	12,41	28,00	0,44			
		Total	26,73	39,00				
3	**H1**	Regression	17,33	12,00	1,44	4,15	.001	0,49
		Residual	9,40	27,00	0,35			
		Total	26,73	39,00				
4	**H2**	Regression	18,87	14,00	1,35	4,29	<.001	0,54
		Residual	7,85	25,00	0,31			
		Total	26,73	39,00				
5	**H3**	Regression	20,17	16,00	1,26	4,42	<.001	0,58
		Residual	6,56	23,00	0,29			
		Total	26,73	39,00				
6	**H5(a)**	Regression	21,05	18,00	1,17	4,33	<.001	0,60
		Residual	5,68	21,00	0,27			
		Total	26,73	39,00				

Appendix Table 14:*Hierarchical Regression for hypothesis H1, H2, H3 and H5(a) with Sustainable Financial Performance measured objectively with secondary data.*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p
Dependent Variable	Sustainable Financial Performance											
Control Variables												
Firm Size	-0,03	0,86	-0,20	0,28	-0,19	0,26	-0,18	0,27	-0,23	0,14	-0,32	0,08
Total Experience in Sector	-0,18	0,49	0,15	0,54	0,00	0,98	-0,07	0,76	-0,01	0,95	0,14	0,56
Total Work Experience	0,35	0,13	0,14	0,53	0,15	0,46	0,11	0,58	0,05	0,79	0,02	0,89
Total Work Experience in TMT	0,23	0,15	0,12	0,47	0,44	0,03*	0,40	0,03	0,42	0,02	0,56	0,01
Qualification	0,32	0,08	0,22	0,22	0,35	0,04*	0,25	0,14	0,22	0,17	0,25	0,12
Firm Age	-0,42	0,01*	-0,18	0,27	-0,10	0,51	-0,03	0,85	-0,04	0,76	-0,03	0,80
Main/Direct Effects												
Entrepreneurial Orientation (EO)			0,02	0,95	0,22	0,35	0,04	0,87	0,33	0,29	0,62	0,08
Organisational Identity (OI)			0,60	0,03*	0,49	0,04*	0,52	0,02	0,54	0,02*	0,84	0,00**
Environmental Hostility (ENV)			0,16	0,37	0,08	0,62	0,02	0,92	-0,05	0,80	0,04	0,84
Bricolage Capability (BC)			-0,21	0,34	-0,38	0,06	-0,37	0,07	-0,45	0,04*	-0,56	0,02
Absorptive Capacity (ACAP)			0,21	0,47	0,15	0,56	0,25	0,32	0,15	0,55	-0,04	0,89
Nonlinear Effects												
EO^2					-0,47	0,01	-0,31	0,10	-0,46	0,03*	-0,52	0,07
Moderating Effects												
ENVxEO							0,54	0,04	0,52	0,16	0,22	0,59
$ENVxEO^2$							-0,34	0,25	0,03	0,94	0,46	0,40
BCXEOxENV									0,06	0,89	-0,64	0,33
$BCXEO^2XENV$									-0,49	0,23	-1,78	0,04
BCXEOxENVXOI											1,24	0,13
$BCXEO^2xENVXOI$											0,66	0,41
R square (R^2)	0,29		0,54		0,65		0,71		0,75		0,79	
Adjusted R squared (R^2)	0,16		0,35		0,49		0,54		0,58		0,61	
R squared change	0,29		0,24		0,11		0,06		0,05		0,03	
F Change	2,26		2,95		8,67		2,45		2,27		1,64	
Sig F Change	0,06		0,03*		0,01*		0,11		0,13		0,22	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. Indirect effects of BCxEO, $BCxEO^2$, EOxOI, EO^2xOI, BCxOIxEO and $BCxOIxEO^2$ were found to be nonsignificant.

Appendix Table 15: *Analysis of Variance results for hypotheses H1, H2, H4 and H5(b) with Sustainable Financial Performance measured objectively with secondary data.*

Model	Hypothesis		Sum of Squares	df	Mean Square	F	p	ω²
1		Regression	7,78	6,00	1,30	2,26	.062	0,16
		Residual	18,95	33,00	0,57			
		Total	26,73	39,00				
2		Regression	14,32	11,00	1,30	2,94	.010	0,35
		Residual	12,41	28,00	0,44			
		Total	26,73	39,00				
3	**H1**	Regression	17,33	12,00	1,44	4,15	.001	0,49
		Residual	9,40	27,00	0,35			
		Total	26,73	39,00				
4	**H2**	Regression	18,87	14,00	1,35	4,29	<,001	0,54
		Residual	7,85	25,00	0,31			
		Total	26,73	39,00				
5	**H4**	Regression	19,94	16,00	1,25	4,22	<,001	0,56
		Residual	6,79	23,00	0,30			
		Total	26,73	39,00				
6	**H5(b)**	Regression	20,30	18,00	1,13	3,68	.003	0,55
		Residual	6,43	21,00	0,31			
		Total	26,73	39,00				

Appendix Table 16:*Hierarchical Regression for hypothesis H1, H2, H4 and H5(b) with Sustainable financial Performance measured objectively with secondary data.*

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p
Dependent Variable	Sustainable Financial Performance											
Control Variables												
Firm Size	-0,03	0,86	-0,20	0,28	-0,19	0,26	-0,18	0,27	-0,18	0,27	-0,25	0,18
Total Experience in Sector	-0,18	0,49	0,15	0,54	0,00	0,98	-0,07	0,76	-0,07	0,76	-0,09	0,70
Total Work Experience	0,35	0,13	0,14	0,53	0,15	0,46	0,11	0,58	0,05	0,79	0,05	0,81
Total Work Exp in TMT	0,23	0,15	0,12	0,47	0,44	0,03	0,40	0,03	0,31	0,11	0,37	0,09
Qualification	0,32	0,08	0,22	0,22	0,35	0,04	0,25	0,14	0,09	0,60	0,06	0,75
Firm Age	-0,42	0,01	-0,18	0,27	-0,10	0,51	-0,03	0,85	0,05	0,73	0,07	0,63
Main/Direct Effects												
Entrepreneurial Orientation (EO)			0,02	0,95	0,22	0,35	0,04	0,87	-0,08	0,82	0,04	0,92
Organisational Identity (OI)			0,60	0,03	0,49	0,04	0,52	0,02	0,53	0,02	0,50	0,04
Environmental Hostility (ENV)			0,16	0,37	0,08	0,62	0,02	0,92	-0,10	0,59	-0,20	0,36
Bricolage Capability (BC)			-0,21	0,34	-0,38	0,06	-0,37	0,07	-0,38	0,08	-0,37	0,10
Absorptive Capacity (ACAP)			0,21	0,47	0,15	0,56	0,25	0,32	0,53	0,08	0,47	0,15
Nonlinear Effects												
EO^2					-0,47	0,01	-0,31	0,10	-0,48	0,05	-0,39	0,13
Moderating Effects												
ENVxEO							0,54	0,04	0,61	0,02	0,52	0,06
$ENVxEO^2$							-0,34	0,25	-0,48	0,64	-0,01	0,99
ACAPXEOXENV									0,57	0,23	0,76	0,15
$ACAPXEO^2XENV$									-0,52	0,40	-0,79	0,37
ACAPXEOxENVXOI											0,42	0,50
$ACAPXEO^2xENVXOI$											-0,58	0,29
R square (R^2)	0,29		0,54		0,65		0,71		0,75		0,76	
Adjusted R squared (R^2)	0,16		0,35		0,49		0,54		0,57		0,55	
R squared change	0,29		0,24		0,11		0,06		0,04		0,01	
F Change	2,26		2,95		8,67		2,45		1,80		0,59	
Sig F Change	0,06		0,03		0,01		0,11		0,19		0,56	

Notes: *** Correlation is significant at the p <,001, ** Correlation is significant at the p <0.01 and * Correlation is significant at the p< 0.05. Models 1 to 6 are compared successively. With the exception of EO^2xOI (p=0,021), ACAPxOIxEO (p=0,013) and $ACAPxOIxEO^2$ (p= 0,001) the indirect effects of ACAPxEO, $ACAPxEO^2$, EOxOI,were found to be insignificant.

APPENDIX G: TUKEY HSD MEAN DIFFERENCES

Appendix Table 17 *Mean Difference for Hypotheses H1, H2, H3 and H5(a)*

Variables/Interactions	Means	SD	Sustainable Financial Performance	EO	OI	ENV	BC	ACAP	EO^2	ENVxEO	$ENVxEO^2$	BCXEOxENV	$BCXEO^2XENV$	BCXEOxENVXOI	$BCXEO^2xENVXOI$
Sustainable Financial Performance	0,00	1,00													
Entrepreneurial Orientation(EO)	0,00	0,95	0,00												
Organisational Identity (OI)	0,00	0,81	0,00	0,00											
Environmental Hostility (ENV)	0,00	10,96	0,00	0,00	0,00										
Bricolage Capability(BC)	0,00	5,47	0,00	0,00	0,00	0,00									
Absorptive Capacity(ACAP)	0,00	1,06	0,00	0,00	0,00	0,00	0,00								
EO^2	0,90	1,21	-0,90	-0,90	-0,90	-0,90	-0,90	-0,90							
ENVxEO	-2,62	11,74	2,62	2,62	2,62	2,62	2,62	2,62	3,52						
$ENVxEO^2$	-2,45	22,05	2,45	2,45	2,45	2,45	2,45	2,45	3,35	-0,17					
BCXEOxENV	-12,47	79,25	12,47	12,47	12,47	12,47	12,47	12,47	13,37	9,85	10,02				
$BCXEO^2XENV$	-29,73	165,90	29,73	29,73	29,73	29,73	29,73	29,73	30,64	27,11	27,29	17,27			
BCXEOxENVXOI	-17,64	103,60	17,64	17,64	17,64	17,64	17,64	17,64	18,54	15,02	15,19	5,17	-12,09		
$BCXEO^2xENVXOI$	-20,56	238,90	20,56	20,56	20,56	20,56	20,56	20,56	21,47	17,94	18,12	8,10	-9,17	2,92	

Note: the values in the matrix shows the mean differences between centered variables that were applied in regression.

Appendix Table 18 *Mean Differences for Hypotheses H4 and H5(b)*

Variables	Means	SD	Sustainable Financial Performance	EO	OI	ENV	BC	ACAP	EO2	ENVxEO	ENVxEO2	ACAPXEOxENV	ACAPXEO2XENV	ACAPXEOxENVXOI	ACAPXEO2xENVXOI
Sustainable Financial Performance	0,00	1,00													
Entrepreneurial Orientation (EO)	0,00	0,95	0,00												
Organisational Identity (OI)	0,00	0,81	0,00	0,00											
Environmental Hostility (ENV)	0,00	10,96	0,00	0,00	0,00										
Bricolage Capability (BC)	0,00	5,47	0,00	0,00	0,00	0,00									
Absorptive Capacity (ACAP)	0,00	1,06	0,00	0,00	0,00	0,00	0,00								
EO2	0,90	1,21	-0,90	-0,90	-0,90	-0,90	-0,90	-0,90							
ENVxEO	-2,62	11,74	2,62	2,62	2,62	2,62	2,62	2,62	3,52						
ENVxEO2	-2,45	22,05	2,45	2,45	2,45	2,45	2,45	2,45	3,35	-0,17					
ACAPXEOXENV	-2,05	17,40	2,05	2,05	2,05	2,05	2,05	2,05	2,95	-0,57	-0,40				
ACAPXEO2XENV	-5,13	38,52	5,13	5,13	5,13	5,13	5,13	5,13	6,04	2,51	2,69	3,09			
ACAPXEOxENVXOI	-3,56	24,23	3,56	3,56	3,56	3,56	3,56	3,56	4,46	0,94	1,11	1,51	-1,57		
ACAPXEO2xENVXOI	-7,29	57,59	7,29	7,29	7,29	7,29	7,29	7,29	8,20	4,67	4,85	5,25	2,16	3,73	

APPENDIX H: CERTIFICATE OF EDITING

GENEVIEVE WOOD EDITING SERVICES PTY LTD

EDITING CERTIFICATE

PO BOX 23081, CLAREMONT CAPE TOWN 7735

Date: 2024/02/09

This serves to confirm that the document entitled:

ENTREPRENEURIAL ORIENTATION AND FINANCIAL PERFORMANCE IN THE SOUTH AFRICAN CONSTRUCTION AND MATERIALS SECTOR: A FOCUS ON BRICOLAGE CAPABILITY AND ABSORPTIVE CAPACITY

by

DAVID FIKILE KANGUWE

has been language edited on behalf of its author.

Genevieve Wood
PhD candidate
Wits University