Do ‘green' architectural decorative products deliver a competitive advantage for Australian Companies?

David Macpherson Fletcher
MBA (UNE)
(Student no: c3069837)

A dissertation submitted in partial fulfilment of the requirements for the award of the Degree of Doctor of Business Administration (DBA)

Faculty of Business and Law,
University of Newcastle – Australia

February 2014
Declaration of original authorship

This dissertation contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my dissertation, when deposited in the University Library**, being made available for loan and photocopying subject to the provisions of the Copyright Act 1968.

**Unless an Embargo has been approved for a determined period.

Signed ..........................................................
Acknowledgements

The process of writing and completing a dissertation cannot be accomplished by one person’s individual effort. My thanks and appreciation must go to those who generously and willingly helped me in professional or private circumstances, and knowingly or unknowingly aided me in one way or another along my journey to this degree.

I would like to thank all the University of Newcastle lecturers by whom I had the good fortune to be taught during the DBA course programs.

In any dissertation, the final stage is the writing and completion of the dissertation. This would not have been possible without the excellent guidance of my supervisor, Dr Sri Sridharan. My deepest thanks go to him for his patience, professionalism, encouragement and inspiration throughout the whole process. Thanks also go to Vicki and Simon Tonkin whose reading and corrections were invaluable.

My final thanks go to my wife Pamela and our children for their support, comfort and sacrifice over the past 3 years. Their continued support and encouragement during the late nights of study, researching and writing will never be forgotten. Without their love and support I could not have started the DBA program and without them I would not have been able to complete it. My love to you all and a big thank you.

Upon reflection the DBA journey has been an interesting and rewarding journey and one that I have truly enjoyed.
Table of Contents

TABLE OF CONTENTS ........................................................................................................................................ IV

LIST OF TABLES ................................................................................................................................................ XI

LIST OF FIGURES ........................................................................................................................................... XV

ABBREVIATION TABLE ................................................................................................................................ XVII

ABSTRACT ....................................................................................................................................................... XVIII

CHAPTER 1  INTRODUCTION .............................................................................................................................. 1

1.1  INTRODUCTION AND BACKGROUND .................................................................................................. 1

  1.1.1  Background to the Research ........................................................................................................... 2

  1.1.2  Scope and Limitations ...................................................................................................................... 4

  1.1.3  Introduction ...................................................................................................................................... 5

  1.1.4  Research Objectives ......................................................................................................................... 6

  1.1.5  Contribution to the Theory ............................................................................................................... 6

  1.1.6  Significance of the Research ........................................................................................................... 7

1.2  GREEN PRODUCTS IN AUSTRALIA ....................................................................................................... 8

1.3  CORPORATE SOCIAL RESPONSIBILITY .............................................................................................. 10

1.4  DO GREEN PRODUCTS DELIVER MEASURABLE BENEFITS? .......................................................... 12

  1.4.1  Property Premiums .......................................................................................................................... 13

  1.4.2  Environmental Pollution .................................................................................................................. 15

  1.4.3  Healthcare ....................................................................................................................................... 17

  1.4.4  Competitive Advantage ................................................................................................................... 19

  1.4.5  Summary of Environmental Benefits from GBCA. .................................................................... 20

1.5  RESEARCH QUESTION AND HYPOTHESES ....................................................................................... 21

1.6  METHODOLOGY ..................................................................................................................................... 22

1.7  RESEARCH QUESTION AND HYPOTHESES ....................................................................................... 23

1.8  PARAMETERS OF THE STUDY ................................................................................................................ 24

1.9  SUMMARY ................................................................................................................................................. 24

CHAPTER 2  LITERATURE REVIEW ................................................................................................................... 25
2.19 SB AND GPI .................................................................88
2.20 ES AND GPI .................................................................89
2.21 GAPS IN THE LITERATURE ...........................................90
2.22 LIMITATIONS ON KEY ASSUMPTIONS .........................91
2.23 CONTRIBUTION TO KNOWLEDGE ................................92
2.24 SUMMARY .....................................................................93

CHAPTER 3  CONCEPTUAL FRAMEWORK ...........................................94

3.1 INTRODUCTION ..............................................................94
3.2 CONCEPTUAL FRAMEWORK FOR RESEARCH .........................97
  3.2.1 Competitive Advantage – Assumptions ..............................101
3.3 BACKGROUND OF ORGANISATIONAL THEORY .....................102
  3.3.1 Organisational Theory ................................................102
  3.3.2 Stakeholder Theory ....................................................102
3.4 SUSTAINABILITY ............................................................103
  3.4.1 Stakeholders ..............................................................106
3.5 SUSTAINABLE COMPETITIVE ADVANTAGE .......................107
3.6 OPERATIONALISATION - DEVELOPING MEASURES OF THE CONCEPT ........................................107
3.7 HYPOTHESIS FRAMEWORK ............................................110
3.8 INTRODUCTION OF VARIABLES IN THE FRAMEWORK .........112
  3.8.1 The Conceptual Model and the Relationships between Variables .................112
3.9 LINKING THE CONCEPTUAL FRAMEWORK TO THE RESEARCH QUESTION .........................114
3.10 SUMMARY .....................................................................118

CHAPTER 4  RESEARCH METHODOLOGY .............................................120

4.1 RESEARCH METHODOLOGY ...........................................120
  4.1.1 Research Process .......................................................121
  4.1.2 Positivism .................................................................123
  4.1.3 Research Approaches ................................................127
  4.1.4 Research Methods .....................................................127
4.1.5 Time Plan

4.2 TECHNIQUES AND PROCEDURES FOR DATA COLLECTION METHODS

4.2.1 Research Methods Summary

4.3 RESEARCH DESCRIPTION

4.4 RESEARCH METHODOLOGY AND DESIGN

4.5 QUANTITATIVE RESEARCH

4.5.1 The Value of Quantitative Research

4.5.2 Researcher Bias

4.6 QUALITATIVE RESEARCH

4.6.1 Alternative Data Collection Methods

4.7 SURVEY METHOD

4.7.1 Likert Scale

4.7.2 Unit of Analysis

4.8 THE SUITABILITY OF THIS METHODOLOGY FOR THE DISSERTATION

4.8.1 Quantitative methods

4.8.2 Qualitative Methods

4.9 QUANTITATIVE RESEARCH

4.9.1 Summary

4.10 RESEARCH DESIGN

4.11 BUILDING VALIDITY INTO THE RESEARCH PROJECT

4.11.1 Reliability

4.11.2 Replication

4.11.3 Validity

4.12 DATA SOURCES INTERVIEW DESIGN

4.12.1 Sampling Method and Recruitment

4.12.2 Sourcing and Identification of Population and Target Samples

4.12.3 Population

4.12.4 Sampling Frame

4.12.5 Sample Size
# Data Analysis Methods

## 4.13 DATA ANALYSIS METHODS

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.13.1</td>
<td>Recording and Transcription</td>
<td>157</td>
</tr>
<tr>
<td>4.13.2</td>
<td>Analysis of Quantitative Data</td>
<td>158</td>
</tr>
<tr>
<td>4.13.3</td>
<td>Descriptive Statistics</td>
<td>158</td>
</tr>
</tbody>
</table>

## 4.14 DATA COLLECTION AND ANALYSIS

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.14.1</td>
<td>Descriptive Analysis</td>
<td>159</td>
</tr>
</tbody>
</table>

## 4.15 STATISTICAL ANALYSIS

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.15.1</td>
<td>Causal Modelling</td>
<td>159</td>
</tr>
<tr>
<td>4.15.2</td>
<td>Regression Analysis</td>
<td>160</td>
</tr>
</tbody>
</table>

## 4.16 Ethical Considerations

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ethical Considerations</td>
<td>164</td>
</tr>
</tbody>
</table>

## 4.17 Limitations and Key Assumptions of Research Methodology and Design

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Limitations and Key Assumptions of Research Methodology and Design</td>
<td>166</td>
</tr>
</tbody>
</table>

## 4.18 Summary

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Summary</td>
<td>167</td>
</tr>
</tbody>
</table>

## Chapter 5 Findings and Analysis

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Introduction</td>
<td>169</td>
</tr>
<tr>
<td>5.2</td>
<td>Section 1 Descriptive Analysis</td>
<td>172</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Population Background</td>
<td>173</td>
</tr>
<tr>
<td>5.2.2</td>
<td>Response Rate</td>
<td>174</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Valid Response Rate</td>
<td>176</td>
</tr>
<tr>
<td>5.2.4</td>
<td>Geographical Findings</td>
<td>180</td>
</tr>
<tr>
<td>5.2.5</td>
<td>Types of Businesses</td>
<td>182</td>
</tr>
<tr>
<td>5.2.6</td>
<td>Respondent Profiles</td>
<td>187</td>
</tr>
<tr>
<td>5.2.7</td>
<td>Company Responses to CSR and Environmental Policy</td>
<td>190</td>
</tr>
<tr>
<td>5.2.8</td>
<td>Summary Reports on Business Activity and Product Type</td>
<td>194</td>
</tr>
<tr>
<td>5.3</td>
<td>Section Two Statistical Analysis</td>
<td>196</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Reliability Test</td>
<td>197</td>
</tr>
<tr>
<td>5.3.2</td>
<td>Green Strategy Actions</td>
<td>198</td>
</tr>
<tr>
<td>5.3.3</td>
<td>Competitive Advantage</td>
<td>201</td>
</tr>
<tr>
<td>5.3.4</td>
<td>Corporate Social Responsibility</td>
<td>204</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>5.3.5</td>
<td>Financial Improvement</td>
<td>206</td>
</tr>
<tr>
<td>5.3.6</td>
<td>Price Premium</td>
<td>209</td>
</tr>
<tr>
<td>5.4</td>
<td>PATH ANALYSIS</td>
<td>210</td>
</tr>
<tr>
<td>5.4.1</td>
<td>Correlation Matrix Analysis</td>
<td>213</td>
</tr>
<tr>
<td>5.4.2</td>
<td>Test for Hypothesis 1: Green Strategies and Competitive Advantage</td>
<td>213</td>
</tr>
<tr>
<td>5.4.3</td>
<td>Test for Hypothesis 2: Green Strategies and Corporate Social Responsibility</td>
<td>215</td>
</tr>
<tr>
<td>5.4.4</td>
<td>Test for Hypothesis 3: Green Strategies and Financial Improvement</td>
<td>216</td>
</tr>
<tr>
<td>5.4.5</td>
<td>Test for Hypothesis 4: Green Strategies and Price Premiums</td>
<td>218</td>
</tr>
<tr>
<td>5.5</td>
<td>PATH ANALYSIS</td>
<td>219</td>
</tr>
<tr>
<td>5.5.1</td>
<td>Regression Analysis Financial Improvement</td>
<td>219</td>
</tr>
<tr>
<td>5.5.2</td>
<td>Regression Analysis Price Premium</td>
<td>220</td>
</tr>
<tr>
<td>5.5.3</td>
<td>Summary of Hypotheses Investigation Using Constructs.</td>
<td>222</td>
</tr>
<tr>
<td>5.5.4</td>
<td>Final Path Analysis</td>
<td>222</td>
</tr>
<tr>
<td>5.6</td>
<td>SUMMARY OF INVESTIGATIONS OF HYPOTHESES</td>
<td>224</td>
</tr>
<tr>
<td>5.7</td>
<td>SUMMARY</td>
<td>225</td>
</tr>
<tr>
<td>5.8</td>
<td>SUMMARY OF INVESTIGATIONS OF HYPOTHESES</td>
<td>224</td>
</tr>
<tr>
<td>6.1</td>
<td>OVERVIEW</td>
<td>228</td>
</tr>
<tr>
<td>6.2</td>
<td>GPI IN AUSTRALIA</td>
<td>229</td>
</tr>
<tr>
<td>6.3</td>
<td>RESEARCH FINDINGS</td>
<td>230</td>
</tr>
<tr>
<td>6.4</td>
<td>PRINCIPAL FINDING</td>
<td>231</td>
</tr>
<tr>
<td>6.5</td>
<td>THEORETICAL AND PRACTICAL IMPLICATIONS</td>
<td>234</td>
</tr>
<tr>
<td>6.6</td>
<td>LIMITATIONS OF THE STUDY</td>
<td>235</td>
</tr>
<tr>
<td>6.7</td>
<td>CONCLUSION</td>
<td>236</td>
</tr>
<tr>
<td></td>
<td>BIBLIOGRAPHY</td>
<td>238</td>
</tr>
</tbody>
</table>
List of Tables

Table 1-1 Green Star Registered Projects GBCA. .................................................................9
Table 1-2 Summary of Benefits for Green Star buildings GBCA 2012. .................................19
Table 2-1 Summary of Literature Collected Grouped by Category and Decade. ....................40
Table 2-2 Summary of Literature Collected by Category Shown as Percentage of Total. .......40
Table 2-3 Number of Publications in 10 Year Groupings. ..........................................................51
Table 2-4 Summary of Journal Topics Grouped by Decade......................................................53
Table 4-1 Comparison of Research Philosophies. Sanders et al. (2009) .................................123
Table 4-2 Survey Types. Bryman 2007 ....................................................................................130
Table 4-3 Comparison of Survey Methods ..........................................................................131
Table 4-4 Assumption of the Main Research Paradigm .........................................................135
Table 4-5 Web Sites of Population. March 2013 .....................................................................153
Table 4-6 Australian Web Sites of Target Population. ............................................................155
Table 4-7 Research Project Plan - Author. ............................................................................165
Table 4-8 Sample Parameters for Research ...........................................................................166
Table 5-1 Population and Sample Drawn from Websites 2012. ...............................................173
Table 5-2 Mailing Summary and Costs. ................................................................................174
Table 5-3 Rates of Survey Returns Aug 2013. ......................................................................175
Table 5-4 Calculated Response Rate. .....................................................................................176
Table 5-5 Summary by Business Activity. .............................................................................177
Table 5-6 Summary by Business Legal Form. .......................................................................179
Table 5-7 Summary of Respondent Companies’ HO locations ..............................................180
Table 5-8 Summary of Business Type by Region. .................................................................181
Table 5-9 ABS Categories - ABS 2013 ..............................................................182
Table 5-10 Summary of Respondents by ABS Category and Business Segment ................................182
Table 5-11 Summary of Responses using ABN Grouping Standard .........................................184
Table 5-12 Summary by Company Annual Revenues ..............................................................184
Table 5-13 Summary by Annual Revenues and ABN Business Group ........................................186
Table 5-14 Ranking of Respondents by ABS Group and Annual Revenues .................................186
Table 5-15 Summary by Respondents’ Position in the Company ................................................187
Table 5-16 Respondents by ABS Group and Position in the Company .......................................188
Table 5-17 Summary Respondents’ Position and Years of Employment in the Company ..............189
Table 5-18 Average Years of Employment by Respondents’ Position .......................................190
Table 5-19 Summary of Companies With and Without CSR Policy ...........................................191
Table 5-20 Summary of Companies With and Without an Environmental Policy .......................191
Table 5-21 Comparison of Companies for CSR and Environmental Policies ..............................191
Table 5-22 Summary of CSR Policy and ABS Group ..............................................................192
Table 5-23 Summary of Environmental Policy and ABS Group ...............................................192
Table 5-24 ABS Group by CSR and Environmental Policy ......................................................193
Table 5-25 ABS Group by CSR and Environmental Policy ......................................................193
Table 5-26 Summary by Product Range for Business Activity ..................................................194
Table 5-27 Product Type by HO Location ..................................................................................194
Table 5-28 Summary of Interstate Operations ..........................................................................195
Table 5-29 Table of Scales for Hypotheses Testing ...................................................................198
Table 5-30 Summary for Green Strategy Actions .....................................................................199
Table 5-31 Green Strategy Actions .........................................................................................199
Table 5-32 Reliability Test for Green Strategy Actions ..............................................................199
Table 5-33 Descriptive Statistics for Green Strategy Actions ....................................................200
Table 5-59 ANOVA for Green Strategies and Corporate Social Responsibility........................................216
Table 5-60 Coefficients for Green Strategies and Corporate Social Responsibility..............................216
Table 5-61 Summary for Green Strategies and Financial Improvement.................................................217
Table 5-62 ANOVA for Green Strategies and Financial Improvement..................................................217
Table 5-63 Coefficients for Green Strategy and Financial Improvement..............................................217
Table 5-64 Summary for Green Strategy and Price Premium...............................................................218
Table 5-65 ANOVA for Green Strategy and Price Premium.................................................................218
Table 5-66 Coefficients for Green Strategy and Price Premium............................................................219
Table 5-67 Summary for Green Strategy, Competitive Advantage, CSR, Financial Improvement............219
Table 5-68 Coefficients for Green Strategy, Comp Advant, CSR and Financial Improvement................220
Table 5-69 Summary for Green Strategy, Competitive Advantage, CSR, Price Premium......................221
Table 5-70 Coefficients for Green Strategy, Competitive Advantage, CSR and Price Premium..............221
Table 5-71 Summary of Hypotheses Testing.........................................................................................225

**************************************************
List of Figures

Figure 1-1 GPI within the CSR Framework. Created by Author .........................................................3
Figure 1-2 Green Star Projects - GBCA 2013 .........................................................................................9
Figure 1-3 The Value of Green Star - GBCA May 2013 .........................................................................20
Figure 2-1 Process Innovation - by Author 2012 ..................................................................................26
Figure 2-2 GPI Within the CSR framework. ..........................................................................................27
Figure 2-3 CSR framework ..................................................................................................................28
Figure 2-4 Components of CSR ..........................................................................................................30
Figure 2-5 Components of Corporate Sustainability. ............................................................................31
Figure 2-6 Pyramid of Research Topics. ................................................................................................38
Figure 2-7 Construct of Keyword Search .............................................................................................39
Figure 2-8 Graph of Number of Authors Published by Year ..................................................................51
Figure 2-9 Summary of ISO 14000 EMS ...............................................................................................58
Figure 2-10 GPI Influences on CSR. Author 2013 .................................................................................79
Figure 3-1 Conceptual Framework - GPI by Plaza Ubeda (2009) and modified by Author. ............99
Figure 3-2 Constructs of Value Creation using GP - Author .................................................................105
Figure 3-3 Areas of Interaction of a Company's Employees. Author 2013 ............................................109
Figure 3-4 Path Diagram - Author ........................................................................................................116
Figure 4-1 Procedure of data collection and analysis. .........................................................................121
Figure 4-2 Research Process adapted from Saunders et al. (1990) ......................................................122
Figure 4-3 Six Steps to Complete a Quantitative Research Project. -Bryman & Bell (2007) ..........148
Figure 4-4 Sampling and Recruitment Process ....................................................................................154
Figure 4-5 Proposed Causal Model for Testing. Author 2013 ...............................................................163
Figure 5-1 Summary of Business Background .................................................................178
Figure 5-2 Graph of Business Legal Form .................................................................179
Figure 5-3 Graph of Companies’ HO Locations .........................................................180
Figure 5-4 Graph of Responses by ABN Business Categories ....................................183
Figure 5-5 Graph of Annual Revenues ....................................................................185
Figure 5-6 Graph of Respondents’ Positions in Companies .......................................187
Figure 5-7 Graph of Respondents’ Length of Employment ........................................189
Figure 5-8 Graphical Summary of Interstate Operations by Region ..........................196
Figure 5-9 Casual Model for Path Analysis ..............................................................212
Figure 5-10 Path Analysis for Financial Improvement ..............................................220
Figure 5-11 Path Analysis for Price Premium ............................................................221
Figure 5-12 Summary of Hypotheses Path Analysis ................................................222
Figure 5-13 Diagrammatic Path Model Findings ......................................................223

************************************
## Abbreviation Table

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>Corporate Sustainability</td>
</tr>
<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>EM</td>
<td>Environmental Management</td>
</tr>
<tr>
<td>EMS</td>
<td>Environmental management system.</td>
</tr>
<tr>
<td>EP</td>
<td>Environmental Performance</td>
</tr>
<tr>
<td>ES</td>
<td>Environmental Sustainability</td>
</tr>
<tr>
<td>GPI</td>
<td>Green Product Innovation</td>
</tr>
<tr>
<td>ISO 14000</td>
<td>International Standards Organisation</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
</tr>
<tr>
<td>ROI</td>
<td>Return On Investment</td>
</tr>
<tr>
<td>SB</td>
<td>Societal Benefits</td>
</tr>
<tr>
<td>TBL</td>
<td>Triple Bottom Line (reporting)</td>
</tr>
</tbody>
</table>
Abstract

Decisions to invest in green initiatives (green products and green innovations) are generally made after considerable discussion and market research by any organisation. Green initiatives cover a wide range of business activities which can result in positive and negative outcomes along the entire supply chain.

Organisations are being encouraged by governments, societies and other stakeholders to conduct their business activities in a manner that minimises risk and damage to the environment, economy and society, while still pursuing improvements in product life cycle performances. Green initiatives are a management tool that can assist in meeting these demands with the rewards of delivering benefits back to the company through creating a competitive advantage and contributing to the firm’s Corporate Social Responsibility profile.

The aim of this study is to explore the reasons why organisations initiate green strategies and the effectiveness of the introduced ‘green’ initiatives in the Australian marketplace.

A positivism philosophy is adopted in this empirical research, which includes using a deductive research approach with a quantitative research instrument to collect and measure responses from 53 Australian green product manufacturers. The collected data is analysed using causal analysis to investigate the hypotheses developed to answer the research question. A quantitative approach is justified as the research is based on similar work conducted in the northern hemisphere.
Environmental investment research has received considerable interest in the northern hemisphere in the domain of corporate ‘green’ initiatives. However, this research focuses on Australian organisations that have implemented ‘green’ initiatives to investigate if their investments are delivering the sought after benefits.

The findings from the research support the research question that green product strategies can both deliver a competitive advantage and contribute to enhancing an organisation’s corporate social responsibility profile. The research findings suggest that green strategy actions will indirectly increase financial improvements in the process of corporate social responsibility. In a similar fashion, green strategy actions will indirectly increase price premiums through having a competitive advantage. The analysis reveals that corporate social responsibility and competitive advantage are important mediators of the relationships between variables.

Implications from the research are discussed and future research opportunities are presented, along with the limitations of the current work.