An Examination of Entrepreneurial Oriented Behaviours in the Australian Wine Industry Regional Clusters

by

Huanmei Li

A Thesis Submitted for the Degree of Doctor of Philosophy

Entrepreneurship, Commercialisation and Innovation Centre
The University of Adelaide
29 March 2015
Table of Contents

Table of Contents .................................................................................................................i
List of Exhibits ....................................................................................................................v
Preliminaries .........................................................................................................................xii
Abstract ...............................................................................................................................xiv
Thesis Declaration ................................................................................................................xvi
Acknowledgement ................................................................................................................xvii
1 Introduction ........................................................................................................................1
   1.1 Introduction ..................................................................................................................1
   1.2 Background ................................................................................................................2
   1.3 Research Questions .....................................................................................................5
   1.4 Research Objectives ...................................................................................................6
   1.5 Methodology ..............................................................................................................7
   1.6 Why the Wine Industry in Australia ..........................................................................7
   1.7 Research Motivation and Contributions ..................................................................9
   1.8 Thesis Limitations .....................................................................................................10
   1.9 Ethical Considerations ..............................................................................................10
   1.10 Structure of the Thesis ............................................................................................11
   1.11 Chapter Summary ...................................................................................................12
2 Literature Review .................................................................................................................13
   2.1 Industrial Clusters .....................................................................................................15
       2.1.1 What is an industrial cluster? ............................................................................17
       2.1.2 The Shared resources in industrial clusters .......................................................19
       2.1.3 Cluster Types and Strategic Resources .............................................................22
       2.1.4 The Shared resources in Cluster in this research ..............................................24
   2.2 Entrepreneurial Opportunity and Entrepreneurship at Firm Level .........................29
       2.2.1 The Locus of Entrepreneurship Research .........................................................29
       2.2.2 Entrepreneurial Opportunity .............................................................................32
       2.2.3 Firm Level Entrepreneurship .............................................................................37
   2.3 Entrepreneurial Firms in Clusters .............................................................................40
   2.4 Chapter Summary .....................................................................................................42
3 Research Hypotheses ...........................................................................................................43
   3.1 Introduction ................................................................................................................43
   3.2 General Model ..........................................................................................................43
   3.3 The shared and strategic resources of cluster .........................................................43
       3.3.1 The positive influences of government and institutional supports ..............44
       3.3.2 The mediating role of trusting cooperation .......................................................46
   3.4 Entrepreneurial Orientation, Entrepreneurial Opportunity and Market Performance ..............................................................................................................47
       3.4.1 Entrepreneurial opportunity and entrepreneurial orientation .......................47
       3.4.2 Entrepreneurial opportunity and market performance .......................................49
       3.4.3 The mediating role of entrepreneurial orientation ..............................................49
   3.5 The Interaction Effects of Cluster Strategic Shared Resources .................................51
       3.5.1 Interaction effect between entrepreneurial opportunity and entrepreneurial orientation ..........................................................52
       3.5.2 Interaction effect between entrepreneurial opportunity and market performance ..........................................................55
       3.5.3 Interaction effect between entrepreneurial orientation and market performance ..........................................................56
   3.6 The Mediation Effects of EO on Cluster Shared Resources and Market Performance ..............................................................................................................58
4 Research Method ...............................................................................................................61
   4.1 Chapter Introduction and Overview ..........................................................................61
List of Exhibits

Exhibit 2.1: Conceptual Model of the Research ................................................................. 15
Exhibit 2.2: Industry Cluster Strategic Resource Synthesis .................................................. 28
Exhibit 2.3: Composite Conceptual Definition of Opportunity ............................................. 33
Exhibit 3.1: The Interactive Dynamic Process of Relational Based Resources in Cluster ....... 44
Exhibit 3.2: Entrepreneurial Process of Firms in Clusters ..................................................... 47
Exhibit 3.3: The Interactive Effects of Strategic Shared Resources in Clusters .................... 52
Exhibit 3.4: The Effects of Common Shared Resources in Clusters .................................. 58
Exhibit 4.1: Qualitative research method – Questionnaire Modifications .......................... 63
Exhibit 4.2: Wine Clusters (GIs) of the Australian Wine Industry ....................................... 66
Exhibit 4.3: Wine Cluster Shared Resources ...................................................................... 73
Exhibit 4.4: Beverage Wine Production (Million Litres) ...................................................... 79
Exhibit 4.5: Number of Australian wine producers by states .............................................. 79
Exhibit 4.6: Supporting Organisations in the Australian wine industry ............................... 80
Exhibit 4.7: Survey Participants Response Ratio ............................................................... 81
Exhibit 4.8: Survey Participant Distribution by State .......................................................... 81
Exhibit 4.9: Percentage of Australian wineries by State (2) .............................................. 82
Exhibit 5.1: Description of Sampled Wineries .................................................................. 94
Exhibit 5.2: Description of Sampled Wineries ................................................................. 95
Exhibit 5.3: Description of Sampled Wineries (2) ............................................................. 96
Exhibit 5.4: Scale Reliability Test on Cluster Shared Resources ........................................ 99
Exhibit 5.5: Scale Reliability Test on Entrepreneurial Orientation (2) .............................. 101
Exhibit 5.6: Scale Reliability Test on Entrepreneurial Opportunity and Market Performance (2) ................................................................. 102
Exhibit 5.7: Descriptive Statistics ..................................................................................... 103
Exhibit 5.8: Data Normality Test (1) .................................................................................. 106
Exhibit 5.9: Data Normality Test (2) .................................................................................. 107
Exhibit 5.10: Data Normality Test (3), Mardia’s Multivariate Kurtosis .............................. 108
Exhibit 5.11: Mahalanobis distance (only participants with p2 <0.05 shown here) .......... 109
Exhibit 5.12: One Factor Congeneric Model for Autonomy .............................................. 111
Exhibit 5.13: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations ................................................................. 112
Exhibit 5.14: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Autonomy ........................................... 113
Exhibit 5.15: Model Fit Statistics for Autonomy ............................................................... 114
Exhibit 5.16: One Factor Congeneric Model for Risk Taking ............................................ 114
Exhibit 5.17: Paired One Factor Congeneric Model for Autonomy and Risk Taking ....... 115
Exhibit 5.18: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations .............................................. 117
Exhibit 5.19: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model of Risk Taking ........................................ 118
Exhibit 5.20: Model Fit Statistics of Autonomy and Risk Taking ...................................... 119
Exhibit 5.21: Discriminant Validity Test for Autonomy and Risk Taking .......................... 120
Exhibit 5.22: One Factor Congeneric Model for Innovativeness ....................................... 120
Exhibit 5.23: Paired One Factor Congeneric Model for Autonomy and Innovativeness 121
Exhibit 5.24: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations .............................................. 122
Exhibit 5.25: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Innovativeness ........................................ 124
Exhibit 5.26: Model Fit Statistics for Autonomy and Innovativeness .................................. 125
Exhibit 5.27: Discriminant Validity Test for Autonomy and Innovativeness .................... 126
Exhibit 5.28: One Factor Congeneric Model for Proactiveness .......................................... 126
Exhibit 5.29: Paired One Factor Congeneric Model for Autonomy and Proactiveness 127
Exhibit 5.30: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations .............................................. 128
on Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.58: Parameters of the Product Variables

Exhibit 6.55: Model Fit Statistics of the Full Model

Exhibit 6.54 Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.53: Interaction Model (step 2)

Exhibit 6.51: Parameters of the Product Variable

Exhibit 6.49: Model Fit Statistics of the Full Model

Exhibit 6.47: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.46: Interaction Model with Composite Product Variable (step 2)

Exhibit 6.45: Factor Score Weight of Interaction Variable

Exhibit 6.43: Parameters of the Product Variable

Exhibit 6.42: Measurement Model Outputs

Exhibit 6.41: Measurement Model (step 1)

Exhibit 6.39: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.37: Unstandardised Parameters

Exhibit 6.36: Parameters of the Product Variables

Exhibit 6.35: Model Fit Statistics of the Full Model

Exhibit 6.34: Moderation Effects

Exhibit 6.33: Model Fit Statistics of the Full Model

Exhibit 6.32: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.31: Unstandardized Estimates

Exhibit 6.30: Parameters of the Product Outputs

Exhibit 6.29: Interaction Effects Model

Exhibit 6.28: Measurement Model (step 1)

Exhibit 6.26: Model Fit Statistics of the Full Model

Exhibit 6.25: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.24: Model Specification of Composite Variables

Exhibit 6.23: Coefficient Alpha for Composite Variables

Exhibit 6.22: Factor Loadings and Error Variances for Composite Variables

Exhibit 6.21: Model Fit Statistics of the Full Model

Exhibit 6.20: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.19: Examining the Mediation Effect on Entrepreneurship

Exhibit 6.18: Model Fit Statistics of the SEM Model

Exhibit 6.17: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.16: The Entrepreneurial Process of Firms in Clusters

Exhibit 6.15: Model Specification of Firms in Clusters

Exhibit 6.14: Model Fit Statistics of the SEM Model

Exhibit 6.13: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.12: Examining the Mediation Effects of Trusting Cooperation

Exhibit 6.11: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Exhibit 6.10: Multiple Correlations

Exhibit 6.9: External Openness Strengthens the Positive Relationship between EO and Maker Performance

Exhibit 6.8: External Openness and Performance

Exhibit 6.7: External Openness Strengthens the Positive Relationship between EO and Performance

Exhibit 6.6: External Openness and Performance

Exhibit 6.5: External Openness and Performance

Exhibit 6.4: External Openness and Performance

Exhibit 6.3: External Openness and Performance

Exhibit 6.2: External Openness and Performance

Exhibit 6.1: External Openness and Performance
Exhibit 6.59: Interaction Model (step 2) ................................................................. 258
Exhibit 6.60: Regression Weights, Standardised Regression Weights, and Squared
Multiple Correlations ................................................................................. 260
Exhibit 6.61: Model Fit Statistics of the Full Model .......................................... 260
Exhibit 6.62: Measurement Model (step 1) ....................................................... 261
Exhibit 6.63: Parameters of the Product Variables ........................................... 262
Exhibit 6.64: Measurement Model Outputs ................................................... 262
Exhibit 6.65: Interaction Model (step 2) ........................................................... 263
Exhibit 6.66: Factor Score Weights of the Product Variable............................... 263
Exhibit 6.67: Interaction Model with Composite Variable (Step 2) ...................... 264
Exhibit 6.68: Regression Weights, Standardised Regression Weights, and Squared
Multiple Correlations ................................................................................. 266
Exhibit 6.69: Model Fit Statistics of the Full Model .......................................... 267
Exhibit 6.70: Mediating Effects of Common Resources Shared in Clusters .......... 268
Exhibit 6.71: Examining the Mediation Effects of EO (M1) ............................... 268
Exhibit 6.72: Regression Weights, Standardised Regression Weights, and Squared
Multiple Correlations ................................................................................. 271
Exhibit 6.73: Examining the Mediation Effects of EO (M2) ............................... 272
Exhibit 6.74: Regression Weights, Standardised Regression Weights, and Squared
Multiple Correlations ................................................................................. 275
Exhibit 6.75: Examining the Mediation Effects of EO (M3) ............................... 276
Exhibit 6.76: Regression Weights, Standardised Regression Weights, and Squared
Multiple Correlations ................................................................................. 277
Exhibit 6.77: Summary of Hypotheses Testing Results ...................................... 281
Exhibit 7.1: The Revised Conceptual Model Drawn from the Research .............. 286
# Preliminaries

## Research Vocabulary and Abbreviations

<table>
<thead>
<tr>
<th>Term</th>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial Orientation</td>
<td>EO</td>
<td>Lumpkin and Dess (1996) ’s five dimensional framework for investigating firm level entrepreneurship: autonomy, innovativeness, risk taking, proactiveness and competitive aggressiveness.</td>
</tr>
<tr>
<td>Cluster Shared Resources or Shared Resources in Cluster</td>
<td>CSR</td>
<td>Including Government Support, Institutional Support, External Openness and Trusting Cooperation</td>
</tr>
<tr>
<td>Proactiveness</td>
<td>Pro/PRO</td>
<td>One of the five dimensions of EO.</td>
</tr>
<tr>
<td>Innovativeness</td>
<td>INNO/Inno</td>
<td>One of the five dimensions of EO.</td>
</tr>
<tr>
<td>Risk Taking</td>
<td>RT</td>
<td>One of the five dimensions of EO.</td>
</tr>
<tr>
<td>Competitive Aggressiveness</td>
<td>CA</td>
<td>One of the five dimensions of EO.</td>
</tr>
<tr>
<td>Autonomy</td>
<td>AUT/Aut</td>
<td>One of the five dimensions of EO.</td>
</tr>
<tr>
<td>Market Performance</td>
<td>MP</td>
<td></td>
</tr>
<tr>
<td>Trusting Cooperation</td>
<td>TC</td>
<td>One of the four types of shared resources in clusters.</td>
</tr>
<tr>
<td>Government Support</td>
<td>GS</td>
<td>One of the four types of shared resources in clusters.</td>
</tr>
<tr>
<td>Institutional Support</td>
<td>INS</td>
<td>One of the four types of shared resources in clusters.</td>
</tr>
<tr>
<td>External Openness</td>
<td>ExOp</td>
<td>One of the four types of shared resources in clusters.</td>
</tr>
<tr>
<td>Entrepreneurial Opportunity</td>
<td>EOP</td>
<td>An entrepreneurial opportunity is viewed as perceived ends that could be achieved through entrepreneurial means in certain conditions.</td>
</tr>
</tbody>
</table>
Abstract

Interest in regions has gained a forefront position in the economic development policy agenda. The cluster concept is the most widely adopted tool by governments in the pursuit of regional economic development and is increasingly a focus of academia for its cultivation and nurturing of firm entrepreneurship. However, the research on the entrepreneurial oriented behaviours of firms located in clusters is scarce, especially empirically, due to conceptual, theoretical and methodological limitations. The existing limited entrepreneurship and cluster research, which has mainly focussed on the agglomeration dimension of clusters and new firm creation function of entrepreneurship, often offers conflicting research outcomes.

Drawing upon the resource based view, social network theory and entrepreneurial strategic orientation, this research offers a new and dynamic perspective to investigate the impact of clusters on entrepreneurial behaviours of firms. This research aims to address unanswered questions in the literature. First, what are the resources shared in clusters from a social network perspective and what are the relationships among those shared resources? Second, how does the dynamic entrepreneurial process contribute to the market performance of firms located in clusters? Third, do the shared resources of firms contribute to the entrepreneurial process and if so, how?

To answer these questions, this research identifies types of shared resources in clusters, investigates the entrepreneurial process of firms, and advances a theoretical model and empirical research to explain the dynamic relationships between clusters and entrepreneurial oriented behaviours at the firm level. This research uses a set of relational resources occurring in clusters, including institutional support, government support, trusting cooperation and external openness. The research adopted Entrepreneurial Orientation (EO) as a measurement of entrepreneurial oriented behaviours at the firm level. EO is defined as decision-making practices, managerial philosophies and strategic behaviours that are proactive, innovative, risk taking, competitive aggressive and autonomous in nature. Entrepreneurial opportunities consist of opportunities to make breakthrough improvements, such as introducing new products/services, entering new geographical markets and applying new raw materials.
This research used the cross-sectional data collected from the Australian wine industry to test the hypotheses. Through empirical examinations, this research finds the unique characteristics associated with individual shared resources in clusters as well as their influence paths on the entrepreneurial process. This research ends with implications for academics and policy makers and suggestions for further research.

By addressing an important topic and issue, this research evokes new thinking and perspectives in the research on entrepreneurship, clusters and the relationships between the two. It contributes to the ongoing debate on how entrepreneurial firms leverage regional cluster resources to enhance performance in the entrepreneurship and strategic management literatures. As a result, the research methodologies and outcomes of the research contribute to the theoretical building and the practical implementation of entrepreneurship theory, cluster theory and the intersections between the two.
Thesis Declaration

I declare that this thesis does not contain materials which have 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 materials previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name for any other degree of diploma in any university to another institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint award of this degree.

I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the provisions of the Copyright Act 1986.

I also give permission for the digital version of my thesis to be made available on the web, via the University’s digital research repository, the Library Search and also through web search engines, unless permission has been granted by the University of Adelaide to restrict access for a period of time.

Huanmei Li
29 March 2015
Acknowledgement

Doing research in a country that is so much different from the country that I was grown up is full of curious, interesting and more adventures and hardships. Without the people who has supported me, accompanied me and assisted me in my hard times, the completion of the thesis would be very hard, if possible.

Firstly, I would like to thank my supervisors Dr. Allan O’Connor, Prof. Noel Lindsay, and Prof. Zudi Lu whose constructive advice and comments had guided me through the whole PhD journey. Especially, I want to thank my Principle Supervisor Allan whose patience, knowledge and enthusiasm not only helped me to complete the thesis but also build my interest in staying in the academic life in the future. He is a supervisor, a mentor and a friend to me. Noel has provided strong supports and critical suggestions along the whole research journey. Noel is always willing to make time to talk with me about my research progress no matter how busy he is.

Secondly, it is the wide assistance that I received from the wine industry made the research a possible project. Thanks to the endorsement of Winemakers’ Federation of Australia (WFA) and Grape and Wine Research Development Corporation (GWRDC, now merged with Wine Australia to form Wine Grape Growers Australia) to enhance survey respond rate of the research. Especially, I want to thank Mr. Paul van der Lee of WFA, the first person who show me what the Australian wine industry is and has assisted me enormously all the way through my research journey. I also want to thank many other figures in the wine industry like Mr. Tony Rocca, Associate Prof Johan Bruwer, Dr. John Harvey and Dr. Nicola Chandler and many others who gave me advice or helped me become closer to the wine industry.

Thirdly, I would like to thank my colleagues and supportive staffs in ECIC. Dr. Graciela Corral de Zubielqui, Dr. Barry Elsey and Dr. Jiwat Ram have given me research advice and helped in learning statistical analysis software. Mr. Matthew McKinlay and Ms. Julia Miller encouraged me and accompanied me the hardest time of my staying in Australia. There are many staffs in ECIC like Sarah, Kate, Eloise, zrinka and Karen who had been so helpful to me in dealing with many fussy procedures that I am not good at.
Fourthly, I would like to thank the Chinese Scholarship Council and the University of Adelaide for their joint supply of my scholarship.

Finally, one my personal note I would like to thank my parents, my fiancé Yongsheng and my siblings who were always there in my bad and good times, believed me, encouraged me and supported me to complete this research. I cannot thank them enough. In order not to disturb my study here, my parents insist not to visit me in Australia and have made many preparations to welcome me home after I finish my research. I am very lucky to born in a big and very harmonious family. We love each other and we share each other’s joys and pains. My nephews, Hehe, Chenchen, and my niece, Jinjin turned nine, three and twelve years old this year. I feel pleased and hopeful whenever I hear their voice and see their smiles. They know I am studying hard and doing research abroad. It is great to become their model in life in persistence, confidence and capability in the big family. I hope this thesis can let them feel proud of me.

Huanmei (Mushui) Li
29 March 2015