ENTREPRENEURSHIP
COMMERCIALISATION AND
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THE UNIVERSITY of ADELAIDE

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

by

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A Thesis Submitted for the Degree of Doctor of Philosophy

Entrepreneurship, Commercialisation and Innovation Centre

The University of Adelaide

29 March 2015

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Preliminaries

Research Vocabulary and Abbreviations

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

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 contains materials 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 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 sued in a submission in my name for any other degree of diploma in any university to other institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint award of this degree.

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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 hardiest 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

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1 Introduction

1.1 Introduction

Chapter 1 provides an overview of the thesis. It first states the background of the research, followed by research questions, objectives and research methodologies. It, then, introduces the context of the research, the Australian wine industry, and briefly introduces the research motivation, contributions as well as the research limitation and ethical consideration. It ends with the structure of the thesis arrangement and summary of the chapter.

The research foci are on the interaction effects of shared relational resources of industrial clusters on the relationships between entrepreneurial orientation, perception of entrepreneurial opportunity and market performance at firm level. Networks of firms are regarded as an important source of firm competitiveness and a prerequisite to the advantages of being located in industrial clusters (Lake 2004, Hongyin 2008). Thus, from a network point of view, this research focusses on four characteristics of shared relational resources within industrial clusters: government support, institutional support, trusting cooperation within clusters and external openness. Measures of entrepreneurial opportunities and entrepreneurial orientations are gained from a thorough literature review and the context of the research. A conceptual model is developed to illustrate the proposed relationships between the variables of interest.

The Australian wine industry offers an ideal case for the proposed model because of its entrepreneurial development trajectory and cooperative behaviours industry wide. A structured questionnaire and an online survey were used to collect data from managers/owners of wine producing companies. SPSS and AMOS were used for preliminary data analyses and advanced hypotheses testing respectively. The general objective of this thesis is to provide another analytical point of view to understand the dynamic mechanism of the Australian wine industry from the perspectives of industrial cluster, entrepreneurship and the interaction between the two with respect to opportunities and firm market performance. Theoretically, it adds another research perspective to research on industrial cluster and entrepreneurship. Practically, it offers several possible approaches to enhance market performance of wineries in Australia.

1.2 Background

Entrepreneurship is a multidisciplinary phenomenon ranging from sociology and psychology to economics and covering research fields of organisational theory, finance, strategy, technology management and public policy (Holtz-Eakin 2000, Sarkar, Echambadi et al. 2001, Williams and McGuire 2010). It involves the process of opportunity discovery, evaluation, exploration, exploitation and creation and is an important driving force of innovation, economic growth and value creation (Sarason, Dean et al. 2006, Short, Ketchen et al. 2010). Recent decades have also witnessed an increased emphasis on regional clustering development of firms to boost national and/or regional economic growth (Alberti, Sciascia et al. 2011, Beebe, Haque et al. 2013, Duschl, Scholl et al. 2013). Furthermore, corporate entrepreneurship and cluster activities are suggested to have a close relationship (Williams and Lee 2009, Chang, Chen et al. 2012, Presutti, Boari et al. 2013).

The phenomenon of successful entrepreneurial firms located in clusters worldwide contributing to regional and national economic development attests to the fact that clusters and entrepreneurship are closely related phenomenon (Zahra 1993, Delgado, Porter et al. 2010). Over the last two decades, many scholars have explored their relationships from the perspectives of geographical economics, the resource based view, and strategic management (Krugman 1997, Berchicci, King et al. 2011, Martínez, Belso-Martínez et al. 2012). However, the advantages of geographical proximity in stimulating economic development and entrepreneurship have been questioned for its lock-in effect, for overlooking individual firms, and for ignoring homogeneous knowledge sharing (Turner 2010). Thus, the interaction mechanisms of industrial clusters and entrepreneurship require more research effort.

One of the central questions in entrepreneurship research is about the mechanisms of the entrepreneurial process: the interaction between entrepreneurial behaviours and opportunities (Shane 2000). However, the definition and theoretical formulation of entrepreneurial behaviours prevent us from understanding the phenomenon clearly (Bellu, Davidsson et al. 1990, Covin and Lumpkin 2011, Slevin and Terjesen 2011). Similarly, although entrepreneurial opportunities have been approached from a variety of theoretical perspectives, there are still no clear definitions and no clear theoretical foundation (Hansen, Shrader et al. 2011). This presents a serious obstacle to the theoretical building blocks of entrepreneurship research since it should be more theory based (Davidsson 2005). Despite the indispensable positions of entrepreneurial behaviours and entrepreneurial opportunities in entrepreneurship research, research regarding the interactions between the two is far from mature. One of the main reasons is because of general, conceptual research method without specific research focus. Thus, Gartner, Carter and Hills (2004) suggest that scholars of entrepreneurship should limit their thinking to one point of view in entrepreneurship research. Accordingly, the focus of this research is centred at firm level with specific research questions.

The impact of the external environment and resources available to a firm on its performance has been the subject of extensive theoretical and empirical research in management, business and economic literatures. It is widely recognised that characteristics of environment munificence, hostility, dynamism and complexity can influence firm performance (Rosenbusch, Rauch et al. 2013). Eisenhardt and Schoonhoven (1996) suggest that firms are highly dependent on environment for opportunities and resources to explore and exploit these opportunities. However, there is still no consensus among scholars regarding the impact of environment and external resources on firm performance, and empirical studies continue to show contradictory and inconclusive results (Wiklund, Patzelt et al. 2009).

The complicated resource exchange process between firms and their external environment suggests that the environment may stimulate or interact with firm-specific strategic behaviours to impact on firm performance (Zahra 1993, Falbe, Dandridge et al. 1999, Yiu and Lau 2008, Edelman and Yli-Renko 2010). In this complex process, firms need to identify, evaluate and exploit opportunities observable within the environment and leverage resources available to them to turn these opportunities into products, services and finally to achieve enhanced performance. In this scenario, the entrepreneurial characteristics of the firm or the firm's entrepreneurial orientation (EO) is critical because it reflects characteristics of the decision making processes and management practices of firms (Miller and Friesen 1982, Miller 1983). Firms with characters of EO apply strategies according to the attributes of environments and turn opportunities into above-average performance levels.

Industrial clusters, the local environment of firms, are arguably regarded as supplying important and unique resources contributing to entrepreneurial processes (Karlsen 2005, Zheng 2011). The geographical concentration of competitors, suppliers, customers and supporting entities forms complicated networks inside and outside clusters. The common phenomenon of entrepreneurship flourishing in a region, while simultaneously the entrepreneurial firms holding local close cooperative networks, suggests an intimate relationship between the occurrence of entrepreneurship and clusters (Cooke 2004, Delgado, Porter et al. 2010).

Clusters combine various resources crucial to entrepreneurial processes, promote efficiency and specialisation, act as a dynamic system, facilitate entry and innovation, and most importantly, enhance regional and individual firm competitiveness (Dayasindhu 2002). It is arguably viewed that these dynamic interactions have significant influences on cluster firm competitiveness (Li and Geng 2012, Molina-Morales and Expósito-Langa 2012).

A cornerstone of recent research on industrial clusters has been the identification of cluster resources and their interaction with cluster firm entrepreneurship (Rocha 2004, Williams and Lee 2009, Delgado, Porter et al. 2010). The recognition that firms are embedded in complex networks and that having locally based networks can be considered as a type of resource (resources are available to cluster members and relational based resources allow access by cluster firms to the resources of other organisations), makes this research firm-centric. Cluster networks based on spatial proximity support the formation and exchange of knowledge, promote local trust and accelerate reciprocity and/or common interests of enterprises within the region (Turner 2010). The relations among co-located firms and local institutions, constituting regional specific assets, coordinate entrepreneurial behaviours of firms (Cotic-Svetina, Jaklic et al. 2008, Kajikawa, Mori et al. 2012).

The literature on 'communities of practice' theory suggests knowledge dissemination takes place informally through the social participation of firms within clusters (Dayasindhu 2002, Schilling and Phelps 2007). However, this perspective regarding 'untraded interdependencies' and 'ungovernable and tacit knowledge' in clusters as detrimental factors for firm performance, neglects the capabilities of individual firms and the importance of contractual arrangements that are suggested by corporate governance literature under situations of uncertainty (Lechner and Dowling 2003, Turner 2010). Although research on strategic alliance takes firm capabilities and firm networks into consideration (Eisenhardt and

Schoonhoven 1996, Brouthers, Nakos et al. 2014), the entrepreneurial process of firms are rarely discussed not to mention empirically examined.

Some previous research has examined the relationship between the shared resources of clusters and firm level entrepreneurship (Feldman and Francis 2003, Karlsen 2005), it is yet to be examined how industrial cluster strategic resources interact with entrepreneurial opportunities and the entrepreneurial orientation of firms. Building on previous research, the thesis focusses on the interrelationships between entrepreneurial behaviours of firms, entrepreneurial opportunities perceived, cluster resources available to firms and firm market performance.

1.3 Research Questions

The core issue of this study is the interaction effects of strategic shared relational resources of industrial clusters with entrepreneurial behaviours of cluster firms and entrepreneurial opportunities. It seeks to investigate how attributes of industrial clusters interacting with entrepreneurial opportunities contributes to entrepreneurial behaviours, as well as business performance.

An industrial cluster is a geographic co-location of horizontal and/or vertical activities (Audretsch and Feldman 1996, Baptista and Swann 1998). Industrial clusters include tangible components, such as infrastructures, main industry entities, supporting organisations and governments, as well as intangible components, such as networks, knowledge transformation, trust and regional reputation (Wu, Geng et al. 2010, Li and Geng 2012). Supportive context, opportunity vision and entrepreneurial posture offer distinctive characteristics to entrepreneurial processes (Covin and Slevin 1991, Zahra 1993). Entrepreneurial opportunities consist of opportunities to make breakthrough improvements: introducing new products/services, entering new geographical markets and applying new raw materials (Schumpeter 1934, Shane 2000).

In this research, intangible strategic resources of clusters, firm level entrepreneurial behaviours and entrepreneurial market opportunities will be the focus. Specifically, the research includes four types of relational based cluster resources, five dimensions of entrepreneurial strategic orientation of firms (EO) and Schumpeterian entrepreneurial opportunities. Of particular interest is how and to what extent these factors influence on firm performance.

The main research question proposed in this thesis is: To what extent do entrepreneurial behaviours and entrepreneurial opportunities affect business performance through the interaction with the relational resources occurring in industrial clusters? A set of relational resources of firms in clusters including institutional support, government support, trusting cooperation and external openness are examined in this research. The main question of the research can be divided into the following sub-questions:

1). To what extent do entrepreneurial behaviours and entrepreneurial opportunities impact market performance?

2). To what extent do different relational resource characteristics of industrial clusters shape and influence entrepreneurial behaviours through the interaction with entrepreneurial opportunities?

3). To what extent do different relational resource characteristics of industrial clusters influence market performance through the interaction with entrepreneurial orientation?

4). To what extent do different relational resource characteristics of industrial clusters influence market performance through the interaction with entrepreneurial opportunities?

1.4 Research Objectives

Based on the research questions outlined above, the research aims to examine the impacts of entrepreneurial behaviour and entrepreneurial opportunities on business performance in the context of industrial clusters. More specifically, the research objectives are defined as follows:

1). To identify the specific aspects of strategic resources of industrial clusters, dimensions of firm level entrepreneurship and types of entrepreneurial opportunities perceived by entrepreneurial firms.

2). To find measurement models of variables of interest in the research including entrepreneurial orientation, entrepreneurial opportunities, government support, institutional support, trusting cooperation, external openness and market performance.

3). To propose a functional model, which contains the effects of entrepreneurial behaviours and entrepreneurial opportunity on business performance and takes into account the interaction effects of shared strategic resources of industrial clusters on these relationships.

4). To examine how the proposed model fits with the context of established, mature and successful entrepreneurial industrial clusters.

5). To make theoretical and practical applications to academics and practitioners drawn from the outcomes of the research.

1.5 Methodology

Drawing upon the resource-based view, entrepreneurship theory and strategic alliance theory, this paper addresses the above research gaps by examining the relationship between shared strategic cluster-based relational resources, entrepreneurial orientation, entrepreneurial opportunity perceived by firms and firm performance in the context of the Australian wine industry. The Australian wine industry was chosen as its clustered firm population provided a purposive sample. The following section describes the industry sector in more detail. The research will use online survey data from wineries in wine regions in Australia. Measurements of cluster-based resources, entrepreneurial opportunity and firm performance from previous empirical studies were adapted into this thesis. All statements in the questionnaire are measured with a seven point Likert scale.

Using confirmatory factor analysis (CFA), we examine convergent and discriminant validity of each measurement model of interest. Structural equation modelling (SEM) is used to illustrate relationships of variables of interest and AMOS software is used to examine the proposed relationships.

1.6 Why the Wine Industry in Australia

With a little more than 200 years of winemaking history, Australia is now in the seventh place concerning wine production and the fifth place of wine exportation in the world wine market (WineAustralia 2012). According to the Australian and New Zealand Wine Industry Directory (ANZWID) of 2014, there are 2572 wineries in Australia, crushing 1.83 million tonnes and producing 1,231 million litres of beverage wine in 2013. The success of the Australian wine industry is often accounted to innovation, entrepreneurial competitiveness and cooperation existing in the wine industry (Marsh and Shaw 2000). Meanwhile, two development strategies in the wine industry, Strategy 2025 and Direction to 2025, have had profound influences on the development of the Australian wine industry.

Awareness of the demand of a set of strategies to meet the unprecedented change in global wine market conditions, led to two seminal wine industry development strategies being developed in 1998 and 2007 respectively. Strategy 2025 made by the Winemakers' Federation of Australia (WFA) in 1996, emphasising improving the long-term competitiveness, propped up the importance of regional development strategies for the whole industry development for the first time. The key target set in Strategy 2025, which was for the Australian wine industry to achieve annual sales of $4.5 billion by the year 2025, was achieved in 2005 (annual sales reached $5 billion in 2005).

The Australian Wine and Brandy Corporation (AWBC, former name of Wine Australia) and the Winemakers' Federation of Australia (WFA) jointly published 'Directions to 2025' in 2007. Direction to 2025 was a market-driven strategy, and pinpointed four categories of Australian wine in the market place: Brand Champions, Generation Next, Regional Heroes and Landmark Australia. The category of Regional Heroes clearly pointed out the necessity of promoting wine regional development. Both of these strategies emphasised the importance of utilising wine regional resources, cultivating winery market opportunity awareness to achieve market success.

Nowadays, the Australian wine industry is at a crossroad facing uncertainty in industry structure, international markets, and domestic production (Robobank 2009, Dobie 2012). Building market opportunity alertness and effective information flow is viewed as important determinants to the further development of the wine industry (Anderson 2010). Accordingly, many scholars begin to find ways to sustain the development of the Australian wine industry through theories of industrial cluster and entrepreneurship (Aylward 2004, Roberts and Enright 2004). Although this kind of research offers fresh insight into the development of the Australian wine industry, such research is fragmented. Thus, further research is needed to offer practical implications for the development of the Australian wine industry.

It has been claimed that the success of the Australian wine industry is due to its innovative behaviours, cooperation across industry and proactiveness in market competition (Aylward 2004, Alonso 2010, Soosay, Fearne et al. 2012). In recent years, there have been continuous and significant research findings in the wine industry through the perspectives of EO and resource based view conducted separately (Jurinčič and Bojnec 2009, Mancino and Lo Presti 2012, Thomas, Painbéni et al. 2013). However, little research has been done to explain the phenomenon from integrated perspectives of industrial clusters and entrepreneurship in the Australian wine industry context.

In summary, the Australian wine industry offers an ideal case study for research on the interactions of entrepreneurship and industrial cluster. This kind of research can not only address theoretical gaps but also offer profound implications for the further development of the Australian wine industry.

1.7 Research Motivation and Contributions

The huge performance discrepancy of wineries in different wine regions or even in the same wine region indicates cluster capabilities and individual winery capabilities does matter. This research attempts to address this research gap by adopting perspectives of resources based view (RBV), resource dependency theory, strategic alliance theory and entrepreneurship theory.

Furthermore, although entrepreneurial orientation (EO) is theoretically beneficial to firm market performance, the dynamism between EO and firm market performance is not fully understood (Alegre and Chiva 2013). In noting the scarcity of research on “the processes of entrepreneurship at firm level”, Brockhaus (1983) calls a pressing need for research stating precise propositions in testable forms and examining relationships among key constructs. This research meets the research need and contributes to the EO-performance literature by offering a comprehensive picture including one antecedent variable and two interactive variables: entrepreneurial opportunities, intra cluster trusting cooperation and external openness.

This research provides an alternative explanation on firm performance differences intra-industry and intra-region by focusing on EO. The thesis makes a clear contribution to the literature by defining and examining the nature and influence of relational resources in industrial clusters on entrepreneurial orientation, entrepreneurial opportunities and market performance.

Theoretically:

• This research contributes to the theoretical buildings of resources based view and firm entrepreneurship by conceptually defined and empirically measured four types of resources, entrepreneurial orientation, and entrepreneurial opportunity.

• This research advances our understanding of industrial cluster, entrepreneurial orientation, entrepreneurial opportunity and market performance by conceptually illustrated and empirically examined the relationships among these variables.

Practically:

• The results drawn from this research provide research evidences for government policy making aiming at promoting, nurturing and upgrading entrepreneurship and industrial clusters.

• The results drawn from this research provides suggestions for firms located in clusters in utilising external cluster resources and internal entrepreneurial capability to achieve higher market performance.

1.8 Thesis Limitations

As with other academic research, we acknowledge the limitations of this thesis, whose consideration is necessary in employing the findings of the research and may offer opportunities for further research. The limitations of the research include research context, using cross sectional data, and potential of reverse causality, data collection methods, and measurement of variables. Although there are limitations in the research, these limitations do not influence the effectiveness of the outcomes of the research. Details of limitations and future research direction are discussed in Chapter 7 of the thesis.

1.9 Ethical Considerations

The research received the approval from the Human Research Ethic Committee (HREC) of the University of Adelaide after the ethic clearance application processes. The complaint sheet was attached together with the survey invitation letter to advise participant wineries that they can raise concern, make complaints or use their certain rights as participants of the survey. The project name, project coordinators' name and contact details, were also included in the complaint sheet. All the primary data collected from the participating wineries were treated with strict confidence and only the research team can access the data.

1.10 Structure of the Thesis

The thesis is organised into seven chapters, a reference list and an appendix of the survey questionnaire.

Chapter 1 introduces this thesis with emphases on research background, research questions, research objectives and methodologies.

Chapter 2 provides a review of literature on industrial clusters, entrepreneurial behaviours of firms and entrepreneurial opportunities.

Chapter 3 overviews the Australian wine industry and introduces its entrepreneurship and the cluster development status. Drawn from literatures of entrepreneurship and industrial cluster, a conceptual model is provided. Hypotheses relating to the relationships between industrial clusters, entrepreneurial behaviours, entrepreneurial opportunities and market performance are proposed based on the conceptual model.

Chapter 4 provides the basis for understanding the research methods used in this thesis. It describes the research design and questionnaire design, how data was collected and how variables of interest were measured and validated. The chapter ends with descriptions of the profiles of wineries that participated in the survey and what the data analysis procedure will be in forthcoming chapters.

Chapter 5 illustrates the primary and advanced analysis of the thesis data including validity and normality of data and the Confirmatory Factor Analysis (CFA) of measurement models.

Chapter 6 examines the proposed hypotheses in the conceptual model of the thesis and describes the results of the analysis. The hypotheses are the hierarchical relationships among cluster strategic relational resource characteristics, the influences of entrepreneurial orientation and entrepreneurial opportunity on the market performance of firms, and the moderating effects of cluster relational resources.

Chapter 7 discusses limitations of the thesis and directions for future research based on the thesis methodologies and designs. Theoretical and practical implications drawn from the research are proposed as well.

1.11 Chapter Summary

The thesis is organised into seven chapters, a reference section and an appendix. Chapter 1 is designed to provide readers a general overview of the research undertaken. It firstly introduces research background, which is followed by questions, objectives and methods. It then discussed the reasons for choosing the Australian wine industry as the context for this research. Next, research motivations, contributions, limitations and ethical consideration are generally introduced and discussed. Finally, this chapter introduces the structure of the thesis. Chapter 1 provides a general framework of the contents that will be covered in the following six chapters. The research undertaken will be unfolded in a detailed and sequential way to clearly describe and examine the relationships of the variables of interest in the research.

2 Literature Review

The evidences of industrial clusters in promoting industry and regional development through entrepreneurship worldwide suggest that industrial clusters, entrepreneurship, and business performance are closely related phenomenon. Their triple interactions are often referred to as parts of an institutional regional innovation system (IRIS) or an entrepreneurial regional innovation system (ERIS) (Cooke 2001, Cooke 2007, Ylinenpää 2009). However, the outcomes of research reasoning why firms located in industry clusters can enjoy higher growth than geographically isolated firms are still ambiguous and inconsistent.

Some valuable pioneering work has been done to try to discover the impetus promoting firm development in clusters. The dominant percentage of the work is at the regional level elaborating the external effects brought by agglomeration economies such as transaction cost, labour pool, tacit knowledge and internalisation trade. However, the failed cases of copying successful clusters and problems accompanying increased agglomeration such as homogeneity, mass imitation, closed system etc., cause many to begin to question the economic value of clusters (Baptista and Swann 1998, Gebreeyesus and Mohnen 2013). The examples of failed clusters and arguments around the negative effects of cluster challenge the theoretical development and practical implication of cluster theory.

Fortunately, in recent years, some scholars have attempted to adopt the resource based view (RBV) to explain development mechanisms of firms in cluster (Hervás-Oliver and Albors-Garrigós 2007, Molina-Morales and Martínez-Fernández 2008, Wu, Geng et al. 2010, Fan and Wan 2011, Li and Geng 2012). Their work focusses on the external semi-public resources shared by cluster members (excluded to non-cluster firms). The shared resources of clusters in their research include common reputation, regional identity, supporting institutions, resource exchanges and combinations. These identified cluster shared resources are network based, which is very different from the location based resources identified by previous studies.

Although the application of resources based view (RBV) at cluster level shows good strength in explaining competitiveness of cluster firms, at the same time, it raises other questions. For example, the RBV at regional/cluster level fails to explain the heterogeneity of cluster firm performance and uneven knowledge distribution in clusters (Giuliani 2007). This is because most RBV research at regional/cluster level does not differentiate between external shared resources and internal resources or capabilities of clustered firms (Ray, Barney et al. 2004). Thus, further research is needed to advance of our understanding of the micro mechanism of cluster firms and their external shared resources.

The perspective of resource dependence theory (RDT) (Pfeffer and Salancik 1978) brings fresh thinking to this scenario. RDT recognises the impacts of external factors on firm behaviours and how firms react to minimize external resource dependence (Pfeffer and Salancik 1978, Hillman, Withers et al. 2009). The behaviours of firms such as mergers, joint ventures, arrangement of boards of directors, political action, executive turnover (Pfeffer and Salancik 1978), outsourcing, cooperation and information sharing (Hillman, Withers et al. 2009) are commonly used methods to overcome external resource dependencies. According to the entrepreneurship literature, these firm behaviours are viewed as entrepreneurially oriented behaviours (Lumpkin and Dess 1996, Shane and Venkataraman 2000). These entrepreneurial oriented actions by firms represent the capabilities of firms to leverage external resources into enhanced business performance (Rasmussen and Nielsen 2004, Ferreira, Azevedo et al. 2011).

In summary, a synthesized approach integrating RBV, RDT and EO is needed, and this chapter develops the synthesis of these theories as a contextual backdrop to the research. It is proposed in this research an integrated conceptual model of interactive relationships among firm level entrepreneurial strategic management behaviours, Entrepreneurial Opportunity, shared resources in clusters and firm market performance, as shown in Exhibit 2.1. Four types of relational based shared resources in clusters including two strategic shared resources of Trusting Cooperation and External Openness and Two types of common shared resources of Government Support and Institutional Support were proposed for investigation in the research. Five dimensional EO is proposed to measure the firm level entrepreneurial strategic management behaviours.

Through this insight is offered about the relevance and interdependence between the availability of external resources and the internal capabilities to obtain these resources. This chapter is organised as follows: the next section reviews the concepts of industrial clusters and strategic resources, as well as the connection between industrial clusters and strategic resources. It then reviews the concepts of entrepreneurial orientation and entrepreneurial opportunity in entrepreneurship literature and the interactions between them. Finally, there is a review of the research on entrepreneurial firms in industrial cluster context with the proposed research questions of the thesis.

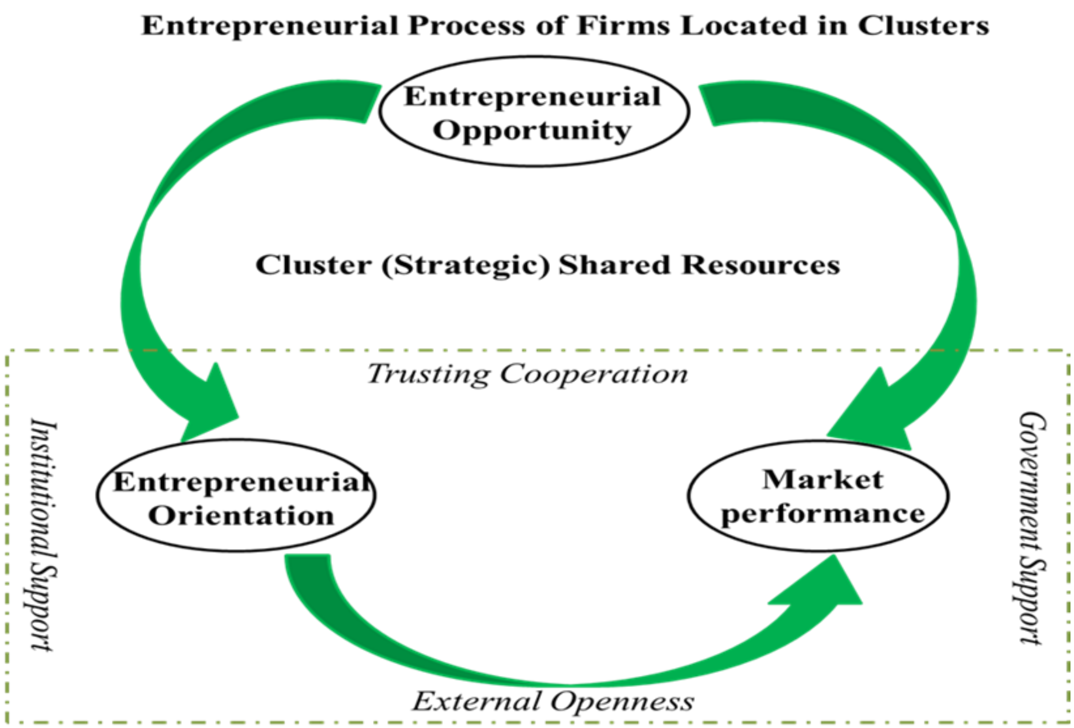

Exhibit 2.1: Conceptual Model of the Research

2.1 Industrial Clusters

Industrial clusters have arguably contributed to the competitiveness of firms within them (Aleksandar, Koh et al. 2007) and to regional economic growth (Cooke 2001). Industrial clusters are viewed as social connectivity (van Dijk and Sverrisson 2003, Christiansen and Jakobsen 2012, Li and Geng 2012), regional innovative systems, market organizations (Maskell and Lorenzen 2004), social market constructions (Bagnasco 1999), contexts of territorial production (Ratti, Bramanti et al.

1997) and socio-economic environments. In each definition, the main effect of cluster is to support vibrant innovative and transactional activities.

Industrial clusters are usually referred to as growth engines for regional economies and clustered firms. This metaphor points out the importance of industrial clusters to employment growth (Bönte 2004, Morgan 2012), economic growth (Brenner and Gildner 2006) and innovation (Park, Amano et al. 2012). Therefore, cluster based policies are often adopted by governments either as a single industry promotion policy (Barbieri, Di Tommaso et al. 2012) or combined with other policies such as small and medium enterprises (SME) policy (Aleksandar, Koh et al. 2007) or entrepreneurship policy (Potter 2009) to promote regional development.

Industrial clusters arguably have three characteristics: spatial concentration of firms, networks of cluster firms, and networks between firms and local supporting institutions (Sternberg and Litzenberger 2004, Romero-Martínez and Montoro-Sánchez 2008). New start-ups often choose to locate in clusters due to affluent skilled labour pools, abundant business opportunities, advanced technologies, innovative environments, localised and specialised suppliers and buyers, and increased legitimacy and decreased "newness" (Porter 1998, Klyver, Hindle et al. 2008).

The key resources affecting cluster firms are arguably generated by agglomeration economies (Porter 1996), economies of scale and scope (Gordon and McCann 2000) from the perspective of economic geography. In contrast, scholars from the perspective of social network consider the key resources of clusters are generated from knowledge spill-over (Jaffe, Trajtenberg et al. 1993, Iammarino and McCann 2006), regional identity (or common reputation) (Molina-Morales and Martínez-Fernández 2008), social capital and cooperation based localised networks (McCann, Arita et al. 2002, Cooke, Clifton et al. 2005, Karlsson, Johansson et al. 2005). Institutional economics views supporting institutions (Romero-Martínez and Montoro-Sánchez 2008) .not only generates cluster crucial resources but also crucial resources themselves.

However, the geographical concentration of firms has also been criticised for the unsustainable development trajectory, imitation, lock-in effect, and technology homogeneity (Menzel and Fornahl 2010), which can undermine any real or perceived advantages obtained by clustered firms. Furthermore, though there is much literature on describing various aspects of clusters especially at theoretical levels, the existing literature on industrial cluster, to a sizable extent, mixes key cluster resources and the possible effects brought by these resources (Romero-Martínez and Montoro-Sánchez 2008). Take “knowledge spill over” as an example, it is viewed as a kind of cluster resource to enhance cluster firm performance in some studies (Gilbert, McDougall et al. 2008, Chyi, Lai et al. 2012) and also viewed as a consequence or a cause of geographical proximity or localised networks (Wang, Liu et al. 2012).

Previous studies on clusters are predominantly at regional level that are unable to answer questions regarding the micro mechanism of clusters (Covin, Slevin et al. 2000, Stuart and Sorenson 2003, Gilbert, McDougall et al. 2008, Wu, Geng et al. 2010). Thus, it is important to re-investigate the importance of clusters on firms from the perspective of the micro firm level. This research adopts a synthesized approach integrating resource based view (RBV), strategic alliance theory and resource dependence theory (RDT) to investigate the strategic shared resources of clusters to try to bridge the above mentioned research gaps.

2.1.1 What is an industrial cluster?

The concept of industrial clusters has been used interchangeably with the definitions of industrial agglomeration, industrial districts, geographic concentration, industry complexes, and industrial parks (Molina-Morales 2001, Molina-Morales 2002, Benzler and Wink 2010). Currently, there are three types of theoretical approaches explaining the existence of industrial clusters: urbanisation economies, localisation economies and organisational sociology (Wennberg and Lindqvist 2010). An industrial cluster in the research scope of urbanisation economies refers to concentrations of economic activities in cities or core industrial regions (Dicken and Lloyd 1990). Similarly, an industrial cluster in the domain of localisation economies refers to an assemblage of similar or related firms and/or industries in particular regions (Malmberg, Malmberg et al. 2000). From the perspective of organisational sociology, industrial clusters supply important resources to assist start-ups and growth of established firms located within them.

The original description of 'industrial clusters' can be traced back to Marshall's (1890) description of 'industrial districts' in his book *Principles of Economics.* Marshall (1890) described the dynamics of industrial districts as "*When an industry has thus chosen a locality for itself ……, the mysteries of the trade become no mysteries; but are as it were in the air ……*". Some scholars, nowadays, refer to this atmosphere of industrial districts as "knowledge spill over" or "technology know-how" (Molina-Morales and Martínez-Fernández 2008). The knowledge embedded in the atmosphere is accessible to the businesses located inside of the industrial districts, but exclusive to the businesses located inside of them. This atmosphere is also the foundation of entrepreneurial milieu (Julien 2007), innovative system (Lawson and Lorenz 1999), socio-economic environment and collective learning (Ratti, Bramanti et al. 1997). The networks and interactions of embedded actors are indispensable to the formation of this atmosphere.

Following Marshall (1890), the German economist Weber (1909) added transportation cost to the causes of industrial concentration in the 1990s. In his book *Industrial Location Theory*, Weber (1909) discussed several business-running costs such as transportation and labour costs, and proposed that transportation cost is the first consideration of firm when deciding their location.. The main contribution of Weber (1909) to industrial district research is that he differentiated agglomeration resulting from transportation and labour costs (incidental agglomeration) and agglomeration resulting from economies in expense (economies of agglomeration). Many other scholars have also significantly contributed to the classical location theory, for example see Hoover (1937), Myrdal (1957), Hirschman (1988), Chinitz (1961) and Pred (1966) to name only a few.

Modern research and practical interests in industrial clusters have been triggered by Porter's (1990) connection of regional industrial clusters to national competitiveness. In his book *The Competitive Advantage of Nations,* Porter (1990) describes how industrial clusters elevate and magnify the interactions among six factors within the 'diamond model' to achieve national advantages. These six factors are 'government', 'chance', 'firms strategy, structure and rivalry', 'related and supporting industries', 'factor conditions' and 'demand conditions'. Porter (1990,

2003) defines industrial clusters as geographic concentrations of interconnected companies and institutions in a particular field. Based on Porter's (1990;1998) definition, Rocha and Sternberg (2005) define an industrial cluster as "*a geographically proximate group of firms and associated institutions in related industries, linked by economic and social interdependences*". The latter definition of industrial clusters is more acceptable since the latter one clearly denotes that industrial clusters act as socio-economic constructions, which are often emphasized by scholars in the field of industrial clusters (Julien 2007, Li, Bathelt et al. 2012).

Drawing upon prior theories of industrial cluster and employing them to the aims of this research, an industrial cluster is defined here as *a geographic group of economically and socially interconnected companies supplying substitutive and/or complementary products and/or services*. In this definition, these related companies are supported by associated institutions and/or governments to achieve competitiveness in a particular field. Consistent with the definitions of Porter (1990), and Rocha and Sternberg (2005), this definition not only mentions the origins of industrial clusters but also emphasises the dynamic mechanisms of clusters. Different from their definitions, this definition emphasises the outcomes of industrial clusters, their core products and/or services. Furthermore, this definition is differentiated from prior definitions of industrial clusters by putting competing and/or substitutive firms into the core of research.

2.1.2 The Shared resources in industrial clusters

Although previous studies about clusters are predominantly at meso level and have largely ignored the shared resources of clusters at firm level, previous studies evidence the positive correlations between cluster specific factors and firm performance (Covin, Slevin et al. 2000, Stuart and Sorenson 2003, Gilbert, McDougall et al. 2008, Wu, Geng et al. 2010). An industrial cluster is often regarded as an innovation system due to its unique sets of resources and capabilities (Hervás-Oliver and Albors-Garrigós 2007) and collective learning among clustered entities (Menzel and Fornahl 2010).

The existence of skilled labour pools, supportive institutions and infrastructures, local demanding customers and education, training and coaching facilities are other factors that are claimed as contributing to the performance of clustered firms (Bönte 2004, Beaudry and Swann 2009). However, not all the shared resources in clusters are playing equal roles to firm performance; some are tradable while others are not; some are common resources while others are strategic resources (Keui-Hsien 2010, Zamparini and Lurati 2012). The competitive advantages of cluster firms over non -clustered firms have been largely explained by resources in clusters that are rare, valuable, imperfectly substitutable, and inimitable (Wernerfelt 1995, Molina-Morales and Martínez-Fernández 2008). Thus, it is important to identify the strategic shared resources available within clusters.

Strategic cluster resources are generated by territorial concentration, specialisation (Sforzi 2002), specific governance system of cluster actors (Mendez and Mercier 2006), unique historical conditions and social complexity (Barney 1991, Barney 1996, Barney, Wright et al. 2001). Due to barriers such as time compression diseconomies, asset mass efficiencies, interconnectedness of asset stocks and causal ambiguity (Dierickx and Cool 1989, Peteraf 1993), imitation and substitution of these resources are very difficult, if not impossible. Thus, these cluster specific resources are often the source of firm competitiveness (Peteraf 1993).

Yet there is no agreement reached on the resources shared between cluster firms. Peteraf (1993) argues that strategic resources must meet four conditions: heterogeneity, ex post limit to competition, ex ante limit to competition, and imperfect mobility. Molina-Morales (2002) investigates the Spanish ceramic industry cluster and generalises four resources of clusters contribute to firm performance: '*technological attributes', 'local institutions', 'social context', and 'knowledge transmission'*. In the following studies, Molina–Morales and Martínez-Fernández (see, Molina-Morales and Marti'nez-Ferna'ndez 2003, 2004a, 2004b, Molina-Morales 2005, 2006, 2008, 2010) constantly polish the topic on cluster shared resources. In addition they include '*common reputation', 'intensity of exchange and combination of resources', 'participation of local institutions', 'relational capital (including internal human mobility, shared vision and trusting co-operation)', 'collective information', 'technology know-how', and 'cluster affiliation'* into the classification of resources shared between cluster members.

Consistent with Molina-Morales and Martínez-Fernández, Hervás and Albors (2007) argue that strategic resources shared by clustered firms are clusters' unique capabilities. These cluster capabilities are '*skilled labour availability', 'social interactions', 'supplier linkages and collaboration', 'business sophistication of firms', 'external linkage's, and 'institutional linkages'*. Mainly drawing from the research of Molina–Morales and Martínez-Fernández, Wu and Geng et al. (2010) sort out six categories of shared resources in clusters: '*common reputation', 'intensity of exchange and combination of resources', 'trust', 'collective learning and knowledge sharing', 'competing interactive atmosphere', and 'participation and support of local institutions'*. Based on previous studies, Li and Geng (2012) empirically investigated the positive influences of shared industrial cluster resources on firm performance in Zhejiang Province, China. Their shared resources are six dimensions: '*common reputation', 'intensity of exchange and combination of resources', 'trust', 'collective learning and knowledge sharing', 'competing interactive atmosphere', and 'local institutions'*. Keui-Hsien (2010) classifies cluster resources into tradable and non-tradable resources and argues that '*inter-firm collaborations'* are tradable resources while '*history', 'social networks', 'government support' and 'supportive institutions' and 'infrastructures'* are non-tradable resources.

A couple of recent studies show that the effects of local networks on the performance of cluster firms are overestimated (Waters and Smith 2008). Knowledge acquired through non-local linkages is displacing conservative local based collective learning (Turner 2010). Closed cluster networks are said to be detrimental to cluster sustainable development (DiMaggio and Powell 1983, Tushman and Romanelli 1985, Pouder and St. John 1996, Menzel and Fornahl 2007). By contrast, external networks of clusters expose clustered firms to new ideas, visions and knowledge (Bathelt, Malmberg et al. 2004, Parker 2010), drive cluster transformation (Tappi 2005) and stimulate entrepreneurial activities (Rocha and Sternberg 2005). Moreover, globalisation and the presence of multinational corporations worldwide, largely make the involvement of industrial clusters in global value chains unavoidable (Wolfe and Lucas 2005). Firms with external cluster networks are also exposed to more opportunities and resources not locally available (Humphrey and Schmitz 2002, Wood, Watts et al. 2004, Li, Veliyath et al. 2013). Localised industries with international linkages are described as “open innovation systems” or “dynamic adaptation system” (Cooke 2005). Therefore, external openness is treated as one strategic resource of cluster firms.

We acknowledge that the attributes of clusters are quite different across different stages of cluster development, industries, origins, and governance structures. The above-identified four strategic resources of industrial clusters are not universal across different clusters. These resources identified feature the industry- based cluster of this research. In the following content, there is a brief review of the literature regarding the characteristics of a cluster and its associated strategic resources.

2.1.3 Cluster Types and Strategic Resources

The effects/importance of industrial clusters on local economy can vary tremendously according to their types and origins (Storper and Harrison 1991, Hill and Brennan 2000). One cluster might be based purely on geographic proximity, or input-output production relationships, or social and cultural networks (Gordon and McCann 2000). The origins of industrial clusters varies from spontaneous clusters (Chiaroni and Chiesa 2006), policy driven (Sellitto and Burgess 2005, Prevezer 2008), local resources driven, to foreign direct investment (FDI) (Humphrey and Schmitz 2002) as well as other causations. The unique governing structure of one cluster differenciates it from other clusters in types of shared resources and development dynamisms (Park 1996, Porter 2003). Meanwhile, the effects of clusters vary according to different industries as well (Beaudry and Swann 2009). Thus, cluster-based industry policies are often delicately designed according to unique cluster origins, governing structure, and industry areas (Rosenfeld 2003, Lall, Trade et al. 2004, McDonald, Tsagdis et al. 2006).

The strategic shared resources of clusters vary with different types of cluster governing structures, industries and cluster origins. The characteristics of shared resources in clusters are influenced by various factors such as the regional hierrarchical governance structure in the input-output production system, single industry or multiple complimentary industries (Storper and Harrison 1991). The governance system of inter-firm relationships influences knowledge absorption and dissemination and opportunity distribution (Parrilli and Sacchetti 2008). Inter-firm relationships of firms in clusters are underpinned by an homogeneous system including trust, common reputation, local vocabulary, mutual understanding and similar values (Uzzi 1996). Hervás-Oliver and Albors-Garrigós (2007), thus, suggests that inter-firm networks construct a cluster's unique set of resources and capabilities.

According to networks of firms with local customers or suppliers and firm local embeddedness, Park (1996) classified industrial districts into nine types. Park's nine types of industrial districts are Marshallian industrial districts, supplier hub and spoke industrial districts, customer hub and spoke industrial districts, advanced supplier hub and spoke industrial districts, advanced customer hub and spoke industrial districts, satellite industrial districts, mature customer satellite industrial districts, mature supplier satellite industrial districts, and pioneering high-tech industrial districts. Park (1996) then discussed the characteristics of institutions, local labour, production system, firm size, and industrial environment in these nine cluster types respectively.

The dominant strategic shared resources and resources exchange dynamism are quite different against different cluster types. According to Park (1996), inter-firm networks, the importance of supporting institutions together with other characteristics vary according to different cluster types. Based on previous cluster research of Marshallian industrial districts (Italianate variant), Markusen (1996) added further three types of industrial districts : Hub-and-Spoke districts, Satellite industrial platforms, State-anchored industrial districts. In the research, Markusen (1996) emphasised the importance of governments and external linkages in shaping the dynamism of clusters.

The strategic shared resources in clusters also vary with industry types. John and Pouder (2006) argue that the resources profile of technology based cluster (such as Silicon Valley) are different from the resource profile of industry based clusters (such as a textile and/or a wine cluster). According to the resource partition model (Carroll 1985), market concentration will reshuffle resources available to localised organisations. The resources in Carroll's (1985) model are restricted to tangible resources and some resources such as identity, reputation, knowledge and networks are not discussed. However, it is these shared intangible resources in industry clusters such as wine and other culture related industries, that are claimed as strategic resources to the competitiveness of cluster firms (Ulin 1988, Swaminathan 2001, Molina-Morales and Martínez-Fernández 2004, 2008, Li and Geng 2012).

2.1.4 The Shared resources in Cluster in this research

All the above-mentioned landmarks in the research on shared resources of cluster members view relational resources as important resources different from simply geographical concentration generated resources such as sharing of labour, technology and financial capital. The pure agglomeration and industrial complex perspectives on industrial cluster research drawn from the research of economic geography and neo-classical economics are criticised by sociologists and organisation theorists for ignoring the trust based formal and informal inter-firm dimension of geographical concentration (Gordon & McCann 2000; Granovetter 1992). As stated by Dyer and Singh (1998) that the dynamic inter-organisational networks and idiosyncratic characteristics of clustered firms are more likely to generate the relational rents than geographically isolated firms. This research adopts this point of view and focusses on relational shared resources available in clusters. Synthesised embedded relational, network based resources are illustrated in Exhibit 2.3.

According the previous section, types of relational based cluster resources are different from industry types. In this regard, this research focusses on thewine industry cluster which may or may not apply to other industries depending on the similarities of the industry to the wine industry. Accodiring to the Exhibit 2.3, these resources could be classified as govermental and institutional networks and networks inside and outside clusters. Exhibit 2.3 also shows relational resources mainly generated from the above four kinds of resources. Thus, this research, based on reviewing existing literature on resources of industrial clusters, synthesises strategic cluster shared resources in the wine industry into four categories. These categories are government support, institutional support, trusting cooperation between cluster firms, and external networks with organisations outside clusters. The following sections discuss each of these dimensions.

The first shared resource of industrial clusters is Government Support. Co-location encourages market specialisation and government industry intervention to attract relevant labour and build regional identity/reputation (McDonald, Tsagdis et al.

2006, Bellandi and Lombardi 2012). Through cluster identification, government policies and associated programs can enhance industry promotion outcomes and upgrade firm capabilities (Sellitto and Burgess 2005, McDermott, Corredoira et al. 2007). As stated above, support received from governments is treated as one of the most important non-traded factors contributing cluster firm competitiveness (Keui-Hsien, 2010).

The second shared resource of industrial clusters is Supporting Institutions. Supporting institutions refer to academic institutions, financial institutions, and other supporting agencies (Saxenian 1996). The intimate relationship between industry and institution expresses in skilled labour provision, new enterprises creation, training, consulting services, and R&D coalition (Kenney and Von Burg 1999, Basant and Chandra 2007, Tiffin and Kunc 2011).

Institutional support is strategic to individual firm growth and cluster development. Firstly, local institutions are important in revising cluster path dependence and assisting cluster revolution/updating (Meyer-Stamer 1998). Secondly, local institutions play important roles in facilitating collective learning, knowledge and information dissemination, and community building (Powell 1991, Capello 1999, Fan and Scott 2003, Belso-Martínez 2006, Pickernell, Rowe et al. 2007, Giuliani and Arza 2009). Thirdly, local institutions also link clusters to external networks of clusters to help clusters accumulate tangible/intangible resources and to accelerate internationalising of cluster firms (Belso-Martínez 2006, Bas and Kunc 2012). Thus, institutional support is not only viewed as an important aspect of social capital of firms but also as a strategic resource of individual firms located in clusters (Coleman 1990), which ensure the acquisition of valuable knowledge and other resources to add value to products and/or services (Pirolo and Presutti 2007).

The third and fourth shared resources in clusters are Trusting Cooperation and External Openness. As stated afore, different from Government Support and Institutional Support, these two types of shared resources are heterogeneous among individual cluster firms and are more capability related. Thus, in this research Trusting Cooperation and External Openness are viewed as strategic resources in clusters.

Trusting Cooperation are strategic resources of localised firms. Firstly, the localised trusting cooperation of clusters constructs one environment of co-opetition innovation (Camagni 1991, Polenske 2004), facilitates information flow (Bygrave 1988, Biggiero 2006, Kamnungwut and Guy 2012), forms /bridges structure holes (Burt 2000) and builds common reputation of clustered firms (Morosini 2004, Cooke, Clifton et al. 2005). Secondly, localised trusting cooperation provides access to cluster specific knowledge including coded knowledge and tacit knowledge (Powell 1991, Li and Geng 2012), and forms cluster specific standards and behaviours (Aldrich and Zimmer 1986, Dubini and Aldrich 1991, Lechner and Leyronas 2012). Thirdly, due to abundant resources combination and exchange accelerated by trust based inter-firm networks and cooperation, environmental uncertainty and ambiguity are largely reduced (Julien 2007). Fourthly, cluster trusting cooperation creates knowledge flows and knowledge integration that are crucial in building firm competitiveness (Dahl and Pedersen 2004, Morosini 2004, Capó-Vicedo, Expósito-Langa et al. 2008, Jenkins and Tallman 2010, Zhang, Huang et al. 2012).

A prominent feature of geographical clusters is the extensive network of inter-firm linkages supporting knowledge trading and collaborative innovation (McEvily and Zaheer 1999, Greve 2009, Molina-Morales and Expósito-Langa 2012). Trusting cooperation is created through long-term collective activities of cluster members intentionally or unconsciously (Rabellotti 1998, Rabellotti 1999, Van Dijk 2003, Fernández-Olmos and Díez-Vial 2013). The trusting cooperation can be formal market-based transactions or informal untraded relationships between firms (Storper 1997).

The fourth shared resource (strategic) is the External Openness of firms in clusters. The modern theory of open innovation is originated from the innovation models proposed by Chesbrough (1989). Contrary to traditional business models, which emphasises competition, external openness as a novel business model is based on external collaboration. The term external openness is used extensively in information collection and attitude toward change (Wu, Lin et al. 2013).

In this research context, external openness is viewed as a broad set of information/knowledge exchange activities and other sets of cooperative activities, which are carried out by a firm in a cluster with organisations outside. This definition of external openness of firms in clusters is consistent with former research (Giuliani 2011). Giuliani and Bell (see, Giuliani and Bell 2005, Giuliani 2011) classified clustered firms into four categories according to their activities as net donor or recipients of knowledge: Absorbers, Sources, Mutual exchange, and Isolated Firms. In their viewpoint, technological gatekeepers of clusters are firms with strong external and intra cluster connections, which act as important driving forces of knowledge creation and diffusion within clusters.

Authors	Analysis Context	Firm attributes reported	Network attributes reported	Cluster resource attributes reported
Molina (2002)	Spanish ceramic industry	Small, specialised firms	Knowledge transmission; Social context	Technological attributes; Local institutions
Molina and Expósito (2012)	Spanish textile industry		Cluster connectedness with other firms in the same cluster	
Hervás-Oliver and Albors-Garrigós (2007)	Spanish and Italian ceramic industry	Business sophistication	Social interactions; Supplier linkages and collaboration; Cluster external linkages; Institutional linkages	Skilled labour availability
Wilk and Fensterseifer (2003)	Brazil wine industry	Expertise; Small family owned wineries	collective efficiency; relationships between wineries and grape growers	Tourism attraction; Grape variety; Technology; Government industry policy; Wine reputation; Climate
Breckenridge and Taplin (2005)	North Carolina wine cluster		Externalities of entrepreneurial endeavours	Regional entrepreneurship
Sellitto and Burgess (2005)	Australian regional wine clusters		Government in facilitating relationships	Infrastructures
Zen, Fensterseifer and Prévot (2012)	Based on previous research	Viticulture and oenology	Market access; Regional networks	Institutions; Infrastructures; Availability of technology; Regional culture; Reputation; Labour; Finance; Climate

Exhibit 2.2: Industry Cluster Strategic Resource Synthesis

2.2 Entrepreneurial Opportunity and Entrepreneurship at Firm Level

2.2.1 The Locus of Entrepreneurship Research

The failure of the equilibrium framework and the price system of economics in explaining the entrepreneurship phenomenon challenges the position of classic economics in social science and appeals to the study of entrepreneurship (Barreto 1989, Gartner 1990, Shane and Eckhardt 2003). Although phenomenon of entrepreneurship has been concerned all along with economic development, the systematic research of entrepreneurship is still developing. Part of the reason is due to the complicated and flexible nature of the entrepreneurship phenomenon. Notwithstanding difficulties in understanding various characteristics of entrepreneurship, there do exist a mainstream that shows commonalities in the research of entrepreneurship. The following two paragraphs give a brief "taste" of the history of the research on entrepreneurship.

The description of the 'entrepreneurial phenomenon' can be traced back to Cantillon (1755) who stated that entrepreneurs are people who take opportunities arising from the discrepancy between 'supply' and 'demand' to make profit. In Von Thünen's (1826) view the discrepancy in the market place was risky and unpredictable and he regarded entrepreneurs as the residual income claimants under these uncertain conditions. Knight (1921) classified the risky conditions into risk (possibility of success can be predicted), ambiguity (hard to predict possibility of success), and true uncertainty (impossible to predict possibility of success) and entrepreneurs are people who are more willing to take risks at these levels than common workers. These views of entrepreneurship are associated with profit opportunities and risk taking

The research of Schumpeter (1934) brought entrepreneurs onto the central stage of innovation instead of risk-bearing. He regards entrepreneurs as creative destructive innovators who break market equilibrium and create wealth. In this sense, entrepreneurs are the creators of opportunities. Different from the standpoints of Schumpeter (1934), Kirzner (1973) pointed out that entrepreneurs are alert to the opportunities created by market disequilibrium and bring back market equilibrium through acting on these opportunities. Based on these previous seminal works, Casson (1982) took entrepreneurs as coordinators of scarce resources in the activities whether they disturbed market equilibrium or brought back market equilibrium. Entrepreneur is not a fixed state of existence in these viewpoints. In summary, views on entrepreneurship vary and there remains no clear single definition of it.

Entrepreneurship has been traditionally and most empirically defined as the creation of a new organisation (Gartner 1988), a new entry (Lumpkin and Dess 1996), or a new enterprise (Low and MacMillan 1988). However, in the last two decades, based on the work on Casson (1982) scholars of entrepreneurship have shown much interest in defining entrepreneurship according to entrepreneurial processes. Amit, Glosten et al. (1993) define entrepreneurship as the process of extracting profits from new, unique and valuable combinations of resources in an uncertain and ambiguous environment.

Wiklund (1998), Bull and Willard (1993) regard entrepreneurship as the process of new combinations of resources. Stevenson and Jarillo (1990) view entrepreneurship as a process of grasping profitable opportunity and they argue that individuals involved in the process disregard the resources they currently control when exploring opportunities. However, the above-mentioned definitions did not take types of not-for-profit entrepreneurship such as social entrepreneurship (Shaw and Carter 2007, Lehner and Kaniskas 2012) and entrepreneurs who failed but whose profit seeking processes are stilled called entrepreneurship (Davidsson 2005), into consideration. Thus, Hisrich and Peters (1989) redefine entrepreneurship as the process of creating something different with value, assuming financial, psychological and social risks, receiving the resulting rewards of monetary and personal satisfaction.

To date, the most influential definition of entrepreneurship is offered by Shane and Venkataraman (2000). They define entrepreneurship as *how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited* (Shane and Venkataraman 2000). They further point out that innovation, organizational creation, success and outcome are not prerequisite conditions of entrepreneurship; moreover, opportunity and enterprising individuals are the focus of entrepreneurship research (Shane and Venkataraman 2001). The central research questions drawn from their definition of entrepreneurship are: (1) why, when and how opportunities for the creation of goods and services come into existence; (2) why, when and how some people and not others discover and exploit these opportunities; and (3) why, when and how different modes of action are used to exploit entrepreneurial opportunities.

Although Shane and Venkataraman's (2000) definition of entrepreneurship is widely adopted, this definition is often criticized by other entrepreneurship researchers. Scholars who agree with Shane and Venkataraman's (2000) definition may still disagree with their arguments that entrepreneurial opportunities exist independent of the actors in a system, and only individuals can find entrepreneurial opportunities, but firms and organisations cannot. Furthermore, according to the definition of Shane and Venkataraman (2000), the opportunities that are researched and measured are recognised or identified opportunities which might not (totally) be the objectively existing opportunities (Singh 2000, Shane 2003, McMullen, Plummer et al. 2007, Plummer, Haynie et al. 2007). Finally, Shane and Venkataraman (2000) pinpoint that enterprising individuals should be treated with equal importance as opportunity in the entrepreneurship research field.

The definition of entrepreneurship offered by Shane and Venkataraman (2000), however, largely ignores factors such as organisational characteristics and external environments (Lumpkin and Lichtenstein 2005, Harms, Kraus et al. 2009, Ireland, Covin et al. 2009). In this scenario, this definition not only narrows down the entrepreneurship research area but also incurs more criticism brought by its vulnerability. Thus, further definition of entrepreneurship is necessary to make it theoretically based and practically applicable.

Based on various previous definitions of entrepreneurship, common elements could be distilled from these existing definitions: profit (value), opportunity, innovation and resources combination. Integrating previous research and the context of this research, entrepreneurship is defined as processes to perceive opportunities and create value under these perceived opportunities. The entrepreneurship in this definition does not have to be profitable, is not confined to entrepreneurial individuals, and is not necessary to be new goods or service oriented. It is value oriented and opportunity oriented. The perceived opportunities reconcile the conflicts around objective opportunity and subjective opportunity debates. The details in this regard will be discussed in the following section.

2.2.2 SEntrepreneurial Opportunity

2.2.2.1 Definition

The concept of discovering and exploiting opportunities has become one of the central elements in the entrepreneurship research framework after Shane and Venkataraman (2000) published their seminal work to reason entrepreneurship as a scholarly research field. Shane and Venkataraman (2000) put entrepreneurial opportunity into the central focus of entrepreneurship research, and the debate has never stopped.

A thorough literature review on entrepreneurial opportunity evidences that both the definition and viewpoints of entrepreneurial opportunity are fragmented, contradictory, and inconsistent (Hansen, Shrader et al. 2011). The research on entrepreneurial opportunity is in its infancy and characterised as a scattering descriptive study (Gaglio and Katz 2001) from a variety of theoretical perspectives such as neoclassical economic perspective, Austrian perspective, and cultural cognitive perspective. An entrepreneurial opportunity has been viewed as an idea (Davidsson, Hunter et al. 2006), an entrepreneurial envision, a new mean-end framework (Sarason, Dean et al. 2006), or more commonly as introducing novelty to market at a profit (Alsos and Kaikkonen 2004, Companys and McMullen 2007, DeTienne and Chandler 2007). Hansen, et al., (2011) review 19 years of entrepreneurial opportunity related research and list six composite conceptual definitions of entrepreneurial opportunity shown in Exhibit 2.3. According to Exhibit 2.3, an entrepreneurial opportunity is viewed either as a subjective perception or as an objective existence. The high fragmentation of entrepreneurial opportunity definition has presented a serious obstacle to the theoretical building of entrepreneurship research based on entrepreneurial opportunity.

The concept of opportunities has its roots in neoclassical economics and Austrian economics. Entrepreneurs act as arbitrageurs (Hayek 1945, Kirzner 1973) and innovators (Schumpeter 1934) to exploit profit opportunities by bringing market demand and supply into equilibrium or depart from equilibrium. An entrepreneurial opportunity was defined by Casson (1982) as a situation in which new goods, services, raw materials, and organising methods can be introduced and sold at greater than their cost of production. Following Casson’s definition, Venkataraman (1997) views an entrepreneurial opportunity as a set of ideas, beliefs and actions that enable the creation of future goods and services in the absence of a current market for them. Through interpreting the work of Schumpeter (1934), Kirzner (1973) and Casson (1982), Ardichvili et al., (2003) regards an entrepreneurial opportunity as '*a chance to meet market need through a creative combination of resources to deliver superior value*'. However, even this definition is ambiguous in the meaning of 'creative combination of resources' and 'superior value'(Baron 2006).

1. the possibility of introducing a new product to the market at a profit
2. a situation in which entrepreneurs envision or create new means ends frameworks
3. an idea that has developed into a business form
4. an entrepreneur's perception of a feasible means to obtain/achieve benefits
5. an entrepreneur's ability to create a solution to a problem
6. the possibility to serve customers differently and better

Exhibit 2.3: Composite Conceptual Definition of Opportunity

Adopted from Hansen, Shrader and Monllor (2011)

In order to differentiate entrepreneurial opportunities and all other profit opportunities, Shane and Eckhardt (2003) define entrepreneurial opportunities as '*situations in which new goods, services, raw materials, markets and organising methods can be introduced through the formation of new means, new ends, or new means-ends relationships*'. However, the example of Dell Computer's origin was picked up to illustrate even Shane and Eckhardt's (2003) "new mean-ends" framework could lead to confound ideas (Plummer, Haynie et al. 2007) and appealed the differentiation between objectively new and underexploited opportunities.

From the aspect of underexploited opportunities, Singh (2001) defined an entrepreneurial opportunity as "*a feasible, profit-seeking potential venture that provides an innovative new product or service to the market, improves on an existing product/service, or imitates a profitable product/service in a less-than-saturated market*". In responses to Singh's (2001) comments on their definition of an entrepreneurial opportunity, Shane and Venkataraman (2001) also rebutted Singh's (2001) definition of an entrepreneurial opportunity. According to Shane and Venkataraman (2001):

Firstly, an entrepreneurial opportunity does not have to be exploited by a new venture. It can be exploited by an existing organisation or be sold to other organisations or individuals. Secondly, entrepreneurial opportunities do not have to take the form of new products or services but can also include new organising methods, new raw materials and new geographical markets. Thirdly, an entrepreneurial opportunity should include any market inefficiency due to information asymmetry.

Drawing upon the exchanges between Singh (2001), Shane and Venkataraman (2001), Smith et al., (2009) define an entrepreneurial opportunity as '*a feasible profit-seeking situation to exploit a market inefficiency that provides an innovative, improved or imitated product, service, raw material, or organising method in a less-than-saturated market'*. However, this definition increases confusion by expanding the entrepreneurial opportunity definition and blurs the differentiation between entrepreneurial opportunities and all other profit opportunities.

In summary, the above statements illustrate the complexity and challenge of establishing a consensus definition of entrepreneurial opportunity in entrepreneurship research. In the next section, I will first review the main discussion on entrepreneurial opportunity and then offer the definition of entrepreneurial opportunity in this research.

2.2.2.2 Entrepreneurial Opportunity Properties

Entrepreneurial opportunities have been seen as an objective existence independent of entrepreneurial consciousness (Shane and Eckhardt 2003, Sarasvathy, Dew et al. 2005, Smith, Matthews et al. 2009) for their characteristics of generalisability, accuracy and timelessness (McMullen, Plummer et al. 2007). However, there are counter studies showing that entrepreneurial opportunities are subjective and depends on entrepreneurs' personal interpretation of certain situations (Sarason, Dean et al. 2006). For example, from the structuration theory point of view, an entrepreneurial opportunity is not an objective existence but interdependent with the entrepreneur as a duality (Sarason, Dean et al. 2006).

Despite previous contradictory viewpoints, a default position in entrepreneurship research is that entrepreneurial opportunities are not evident, but need entrepreneurial alertness (Kirzner 1973, Gaglio and Katz 2001) or entrepreneurial vision (Sadler–Smith, Hampson et al. 2003) to identify entrepreneurial opportunities. Based on previous idea exchanges, Buenstorf (2007) views that the subjective and idiosyncratic factors condition the creation of new opportunities in the established firms and firms' ability and willingness to pursue them. Furthermore, Renko, Shrader and Simon (2012) argue that it is impossible to measure and research the total objective existing opportunities. It is the opportunities perceived by entrepreneurs that trigger entrepreneurial actions to exploit them (Lumpkin and Dess 2001, Fletcher 2004). Thus, the usage of entrepreneurial opportunity perception nomenclature is reality oriented and promising to generate practical outcomes.

Following the extant work of previous theorists, an entrepreneurial opportunity is viewed as perceived ends that could be achieved through entrepreneurial means in certain conditions in this research. Although this definition still uses the mean-ends framework of Shane and Venkataraman (2000), it does not equate an entrepreneurial opportunity with the generation of new goods or services. The entrepreneurial opportunity perception nomenclature in this definition combines the objective and subjective aspects of opportunity phenomenon. It recognises the inextricable linkages between objective phenomenon and entrepreneurs' cognitive interpretations.

The following section discusses the origins of entrepreneurial opportunities, which can further add the meanings of adopting the conception of entrepreneurial opportunity perception.

2.2.2.3 Entrepreneurial Opportunity Perception

From the previous section, it is acknowledged that an entrepreneurial opportunity becomes meaningful only when entrepreneurs or entrepreneurial teams in firms perceive it. Although one opportunity perceived is largely decided by how entrepreneurs interpret certain conditions, the conditions that trigger entrepreneurial opportunity perception are of equal importance, if not more. Thus, it is necessary to study what factors condition opportunities. In the following paragraphs, the factors found in existing literature attributing entrepreneurial opportunity perception are synthesised.

The disequilibrium of market needs (potential needs or unsaturated needs) and the means to satisfy those needs (new means, ends, or means-ends relationships) has long been regarded as the origin of entrepreneurial opportunities (Schumpeter 1934, Kirzner 1973, Shane and Eckhardt 2003, Plummer, Haynie et al. 2007). This disequilibrium is largely due to innovation because innovation brings productivity enhancing and cost savings that can break market equilibrium (Ardichvili, Cardozo et al. 2003, Holcombe 2003, Feldman, Francis et al. 2005, Buenstorf 2007). The disequilibrium of market will change the current conditions in various ways such as information and knowledge stock, productivity, coordination and organising methods. It is the entrepreneurial individuals or entrepreneurially managed organisations that are alert and proactively take advantage of those opportunities to establish strategic positioning, to acquire and leverage valuable resources, to reduce transaction cost, and to increase organisational flexibility and discretion (Plummer, Haynie et al. 2007).

Research on factors influencing the perception of entrepreneurial opportunities is largely diverse and often takes them the same as the origins of opportunities. Network theory and the resources based view (RBV) provide the theoretical base on the factors influencing the process of entrepreneurial opportunity perception. From the network theory perspective, network heterogeneity enhance the possibility of opportunities recognition (Adler and Kwon 2002, Arenius and Clercq 2005). By arguing an entrepreneur's networks positively associate with cognitive bias (over confidence, illusion of control, representativeness) that is negatively associated with risk perception in a given situation, De Carolis and Saparito (2006) point out that networks will lead to the exploitation of entrepreneurial opportunities. According to RBV, the networks of firms are valuable knowledge sources enabling the identification and exploitation of opportunities (Clark and Lengnick-Hall 2012, Gruber, MacMillan et al. 2013). Network theory and RBV are also the foundation of the argument that localised opportunities are more easily to be exploited by ex-employees, vertical buyers, suppliers, and horizontal competitors in the localized region (Rosenfeld 1997).

Prior research shows that knowledge plays a crucial role in opportunity identification and/or perception (Holcombe 2003, Shane and Eckhardt 2003, Buenstorf 2007). There are various sources for technology and market knowledge acquisition such as experience, education, local industry atmosphere, and observation. The disequilibrium of market needs and the means to satisfy those needs exist in complicated, chaotic and dynamic environments, thus, the disequilibrium can only be perceived by individuals or teams who have relevant market or technology knowledge. Prior research also shows that knowledge alone is often not enough for opportunities perception; other complimentary factors have an equally important role. These complimentary factors are the capability of individuals to apply relevant knowledge to interpret environments, absorptive capability, and the favourability of external conditions, entrepreneurial alertness and cognitive processing (Tang, Kacmar et al. 2012, Qian and Acs 2013, Wang, Ellinger et al. 2013).

In order to perceive and exploit entrepreneurial opportunities successfully, external favourable factors and internal capabilities are the prerequisite conditions. The process of opportunity identification is complicated, involving psychological factors, collective strength, learning and entrepreneurial alertness. Understanding the sources of entrepreneurial opportunities helps to avoid being trapped in the subjective opportunities when objectively they do not exist. It also helps to assist entrepreneurial perceptions regarding "where" to look for opportunities.

In conclusion, entrepreneurial opportunities are viewed as subjective interpretation of the objective existence in this research. Entrepreneurs' subjective interpretation of the external opportunity environment triggers follow up entrepreneurial actions, which is one of the main research questions in the research. All the measures of entrepreneurial opportunities adopted in the research are subjective measures by asking survey respondents the frequency of entrepreneurial opportunities in sevel scales that they perceived. Thus, the measures of the entrepreneurial opportunity are the measures of the entrepreneurial opportunity perception of owners/general managers of firms in the research. As stated above, the measures of entrepreneurial opportunities are feasible and promising to generate reliable research outcomes.

2.2.3 Firm Level Entrepreneurship

The root of the concept of entrepreneurial firm can be traced back to the earlier works on strategic decision-making in strategic management literature. In Shane and Venkataraman's (2000) definition on entrepreneurship, entrepreneurial behaviour is concerned in the centrality of opportunity exploitation. Entrepreneurial behaviour has been long regarded as one of the core components of entrepreneurship and positioned at the heart of strategic entrepreneurship (Cooper 2007). Research on entrepreneurial behaviours is the best way to understand the phenomenon of entrepreneurship (Gartner 1988), since entrepreneurial behaviour is the central and essential element in entrepreneurial process (Covin and Slevin 1991). Unfortunately, entrepreneurial behaviour is often simply defined as the number of businesses (Pickles and O Farrell 1987), new start-ups/new ventures

(Pickles and O Farrell 1987, Amit, Muller et al. 1995, Stuart and Sorenson 2003, Giannetti and Simonov 2004), or private sector economy (Acs and Armington 2004).

Various theories have been used to explain entrepreneurial phenomenon and their focus of entrepreneurial behaviours vary too. Furthermore, entrepreneurial behaviours happen at multi-levels, from individual, group to organisation and industry to society (Low and MacMillan 1988). Institutional theory defines entrepreneurial behaviours as a strategic response to institutional pressures (Welter 2005). At individual level, entrepreneurial behaviours are seen as a set of entrepreneurial actions under uncertainty (McMullen and Shepherd 2006). At firm/business level, entrepreneurial behaviours are practices that exhibit entrepreneurial orientations (Pearce, Kramer et al. 1997).

The individual level of entrepreneurial behaviour is the most common level of analysis in entrepreneurship research, in comparison to the research of entrepreneurship at the firm level (Davidsson 2005). However, entrepreneurial practices of a firm are not the result of characteristics of individual men but are shaped and conditioned by the firm itself (Penrose 1995). The research on firm level entrepreneurship is necessary since it is one central issue in entrepreneurship research and entrepreneurial activates are found at multiple levels within a firm (Zahra 1993). To address this research gap, entrepreneurship is researched at firm level in this research.

2.2.3.1 Entrepreneurially Managed Firms

Entrepreneurially managed firms are viewed as organisational forms to pursue entrepreneurial opportunities efficiently (Stevenson and Gumpert 1985, Stevenson and Jarrillo-Mossi 1986, Stevenson and Jarillo 1990, Stevenson and Jarillo 1990, Brown, Davidsson et al. 2001). Entrepreneurial firms exist '*in order to generate and appropriate the economic rents associated with market opportunities*' (Alvarez and Barney 2004). According to Burgelman (1984), entrepreneurship in established firms can '*extend the firm's domain of competence and corresponding opportunity set…*'. Mintzberg (1973) describes that an entrepreneurial decision making mode in firms is dominated by the active search for new opportunities as well as a dramatic leap forward in the face of uncertainty. In pursuing opportunities, the strategic behaviours of entrepreneurial firms could depart from predominant and historic strategies or structural patterns (Burgelman 1984, Sharma and

Chrisman 1999). Unfortunately, a fully-fledged explanation to identify the factors constructing organisational arrangements under which opportunities are identified, evaluated, and exploited have not been developed (Davidsson 2005, Alvarez and Parker 2009, Shane 2012).

The diverse viewpoints around the entrepreneurially managed firms lead to various arguments and definitions. Entrepreneurship in established firms in Burgelman's viewpoint (1983, 1984) is equal to the process of firm diversification. According to operational relatedness and strategic importance of internal entrepreneurial proposals, Burgelman (1984) classifies corporate entrepreneurship into nine categories: '*direct integration'*, *'new product/business department'*, *'special business units'*, *'micro new ventures department'*, *'new venture division'*, *'independent business units'*, *'nurturing and contracting'*, *'contracting'*, *and 'complete spin off'*. Sharma and Chrisman (1999) define entrepreneurship at firm level as '*the process whereby an individual or a group of individuals, in association with an existing organisation, create a new organisation or instigate renewal or innovation within that organisation*'. Sharma and Chrisman (1999) classify entrepreneurship at firm level into corporate venturing, innovation and strategic renewal.

The entrepreneurship research of Sharma and Chrisman (1999) and Burgelman (1983, 1984) is domain-focussed, that is, it specifies where to look for entrepreneurship at firm level. Comparatively speaking, the research of Miller (1983), Covin and Slevin (1986, 1991), and Zahra (1993a) is more phenomenon-focussed. In the next section, more is discussed regarding the work of Miller (1983), Covin and Slevin (1986, 1991), and Zahra (1993) on entrepreneurial oriented firms.

2.2.3.2 Entrepreneurial Orientated Firms

The seminal works of Covin, and Slevin (1986, 1988) and Miller (1983) are the foundation of the research on entrepreneurial oriented firms. The research of Covin and Slevin (1991), and Zahra (1993) view entrepreneurial firms as firms with risk-taking, innovative, proactive, bold and aggressive strategic orientations when pursuing opportunities. In some similar pioneering work exploring characteristics of entrepreneurially managed firms, the orientation of entrepreneurial firms are often characterised as risky, proactive, aggressive decision-making and innovative (Khandwalla 1976, Miller 1983). Similarly, Morris and Paul (1987) conceive an entrepreneurial oriented firm '*as one that with decision-making norms that emphasize proactive, innovative strategies that contain an element of risk'*. These characteristics of firm level entrepreneurship are arguably highly related to top level managers (Covin and Slevin 1988). Based on Miller's (1983) seminal work on firm level entrepreneurship, Covin and Slevin (1989) developed a nine-item scale to measure entrepreneurship at firm level, which was the very first time that phenomenon focussed entrepreneurship at firm level came to quantitative research.

Drawing from strategic management literature and integrating prior research on entrepreneurial oriented firms, Lumpkin and Dess (1996) proposed a five dimensional framework of entrepreneurial orientation (EO) for investigating firm level entrepreneurship: autonomy, innovativeness, risk taking, proactiveness and competitive aggressiveness. Lumpkin and Dess (1996) define EO as the methods, practices, and decision-making styles managers use to act entrepreneurially. Lumpkin and Dess's (1996) research of EO is analogous to Stevenson and Jarillo's (1990) concept of entrepreneurially managed firms, since both reflect the entrepreneurial process, the entrepreneurial capabilities to identify opportunities and recombine required resources to seize these opportunities. In the past three decades or more, the research on EO has become a central focus of the entrepreneurship literature (Covin and Wales 2011). Entrepreneurial Orientation (EO) is now regarded in the field of entrepreneurship research as the most established instrument for measuring firm level entrepreneurship.

2.3 Entrepreneurial Firms in Clusters

The contingency theory suggests that the study of entrepreneurship cannot be isolated from its external environment (Gilad and Levine 1986). External environment is crucial to entrepreneurial activities since it poses threats and offers opportunities in a varying degree to entrepreneurs and entrepreneurial firms. The characteristics of environment such as hostility, munificence, and dynamism influence the outcomes of entrepreneurship (Covin and Slevin 1991, Zahra 1993). Firms located in geographical proximity with other firms often draw resources and form connectedness with other relevant organisations. Unfortunately, little is understood regarding how a firm's external environment in a cluster impacts the firm's performance.

In recent years, a group of scholars attempted to adopt the resource based view (RBV) to investigate the relationships between clusters, entrepreneurship and performance (Hervás-Oliver and Albors-Garrigós 2007, Molina-Morales and Martínez-Fernández 2008, Wu, Geng et al. 2010, Fan and Wan 2011, Li and Geng 2012). Their studies focus on the external semi-public resources shared by cluster members and excluded non-cluster members such as common reputation, identity, heritage, value, social and cultural tradition, tacit or un-codified knowledge, supporting institutions and resources combination. Although the resources based view (RBV) at the cluster level shows strength in explaining competitiveness of cluster firms, it does not differentiate between external shared resources and internal resources, resources and capabilities (Ray, Barney et al. 2004). Thus, RBV brings some other research dilemmas. For example, RBV fails to explain the heterogeneity of cluster firm performance and uneven knowledge distribution in clusters (Giuliani 2007).

It is worthwhile to look at firms' capabilities to exploit external resources in applying RBV to investigate firm level entrepreneurship. In this scenario, the perspective of resource dependence theory (RDT) brings fresh thinking (Pfeffer and Salancik 1978). RDT recognises the impacts of external factors on firm behaviours and activities that firms enact to minimize external resources dependence (Pfeffer and Salancik 1978, Hillman, Withers et al. 2009). The behaviours of firms such as mergers, joint venture, arrangement of boards of directors, political action, executive turnover (Pfeffer and Salancik 1978), outsourcing, cooperation and information sharing (Hillman, Withers et al. 2009) are commonly used methods to conquer external resource dependencies. According to the entrepreneurship literature, these behaviours undertaken by firms are entrepreneurial oriented (Lumpkin and Dess 1996, Shane and Venkataraman 2000). These entrepreneurial oriented actions of firms represent the capabilities of firms to exploit external resources (Rasmussen and Nielsen 2004, Ferreira, Azevedo et al. 2011).

Drawing from existing literature, the strategic/shared resources of clusters have received little attention. Opportunities are interdependent with contextual settings and research in this vein is difficult to operationalise. Entrepreneurial orientation is necessary for firms to grasp the strategic opportunities presented by an industrial cluster setting. The combination of factors in the research from theoretical basis provides contributions theoretically and practically. This thesis adopts a synthesized approach integrating resource based view (RBV), resource dependence theory (RDT), and entrepreneurial orientation (EO). The research is to investigate the external resources availability and internal capabilities of firms to leverage these resources and opportunities perceived to achieve higher performance.

2.4 Chapter Summary

Drawing from extensive review of the cluster and the entrepreneurship literature, this chapter integrated perspectives of RBV, RDT, EO and strategic management to propose an integrated conceptual model of interactive relationships among firm level entrepreneurial strategic management behaviours, Entrepreneurial Opportunity, shared resources in clusters and firm market performance. Four types of relational based shared resources in clusters including two strategic shared resources of Trusting Cooperation and External Openness and Two types of common shared resources of Government Support and Institutional Support were proposed for investigation in the research. Five dimensional EO is proposed to measure the firm level entrepreneurial strategic management behaviours. In order to address the research gaps identified from literature review, research hypotheses regarding the relationships of the variables of interest will be proposed in the chapter 3.

3 Research Hypotheses

3.1 Introduction

This chapter integrates the theoretical foundation laid in chapter 2 into a conceptual model and presents a group of hypotheses. The hypotheses state relationships between entrepreneurial orientations, strategic shared resources of cluster firms, entrepreneurial opportunity perception, and market performance of firms.

3.2 General Model

Exhibit 2.1 represents the overall research conceptual model. The conceptual model is segmented into several models regarding research hypotheses. Exhibit 3.1 presents the research model of the hypotheses regarding the relationships among four kinds of shared resources in clusters: Government Support, Institutional Support, Trusting Cooperation and External Openness. Exhibit 3.2 describes the research hypotheses among Entrepreneurial Opportunity, Entrepreneurial Orientation and firm Market performance. The last two models, Exhibits 3.3 and 3.4, are the research proposed models regarding how entrepreneurial firms in clusters leverage shared resources in clusters to enhance market performance, where Exhibit 3.3 is a moderation model and Exhibit 3.4 is a mediation model. The following sections discuss the hypotheses proposed in these models.

In this section, four kinds of relational based shared resources in clusters

3.3 The shared and strategic resources of cluster

including Government Support, Institutional Supports, Trusting Cooperation and External Openness are discussed. This research views that these resources are not independent to each other but are interactive. There are six hypotheses in this section from Hla to H3b.

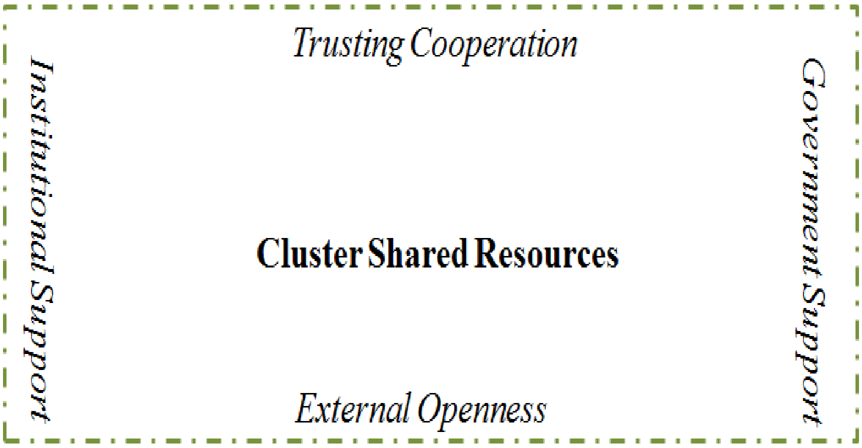

Exhibit 3.1: The Interactive Dynamic Process of Relational Based Resources in Cluster

3.3.1 The positive influences of government and institutional supports

Cluster resources are commonly shared by clustered firms but exclude to non-cluster firms (Molina-Morales 2001). The wine industry is regarded as a heavily natural resources based, capital-intensive, agricultural, and cultural industry. Compared with other types of clusters, differentiation, which has to build on strong, collective efficiency between wineries, connections with other supporting institutions, is more important for the market performance wineries, (Wilk and Fensterseifer 2003, Patchell 2008) and supports from government industry policies/projects (Breckenridge and Taplin 2005). Government support and institutional connections catalyse cluster firms' relationships inside and outside of wine regional clusters (Sellitto and Burgess 2005, Zen, Fensterseifer et al. 2012). The following paragraphs illustrate relationships among cluster strategic shared resources based on an extensive literature review.

Local governments and institutions (education and training organisations, universities, business/labour associations, and research institutions) are important agencies in creating knowledge flows and knowledge configurations of clusters (Dahl and Pedersen 2004, Morosini 2004). Cluster specific knowledge plays an important role in strengthening cooperation between cluster firms (Aleksandar, Koh et al. 2007) and naturally augments an individual firm's social resources (McDonald, Tsagdis et al. 2006, Bellandi and Lombardi 2012). Furthermore, government and institution sponsored research agencies, funded infrastructures, issued programs/policies (such as tax or rent incentives) not only strengthen relationships within regional clusters but also connect clusters to outside worlds by attracting new firms, investments and cooperation (Feldman and Francis 2003). Moreover, co-location of a mass of firms encourages government industry intervention aimed at stimulating the whole regional or clustered development through building regional reputation and linking clusters to external networks (Sellitto and Burgess 2005, McDermott, Corredoira et al. 2007).

In addition, the intimate relationship between cluster development and institutional support is expressed in skilled labour provision, new enterprise creation, training and consulting services and research and development (R&D) coalition (Kenney and Von Burg 1999, Basant and Chandra 2007, Tiffin and Kunc 2011). The intimate relationship with cluster firms provides institutions superiority over others in organising cluster collective activities and introducing external knowledge and technologies to cluster members (Sellitto and Burgess 2005, McDermott, Corredoira et al. 2007). Considering the afore-mentioned superiority, institutions become an important bridging agency for cluster firms in knowledge dissemination and cluster upgrading (Coleman 1990, Pirolo and Presutti 2007). In revising cluster path dependence and assisting cluster revolution/upgrading, institutions facilitate bridging the ties between cluster firms and firms outside of clusters (Meyer-Stamer 1998). In facilitating collective learning and community-building, local institutions are also important representatives on behalf of local cluster firm benefits to negotiate with external organisations (Powell 1991, Capello 1999, Fan and Scott 2003, Belso-Martínez 2006, Pickernell, Rowe et al. 2007, Giuliani and Arza 2009). Therefore, local institutions help cluster members to acquire external resources to achieve business growth by assisting cluster members to link to external networks (Belso-Martínez 2006, Bas and Kunc 2012).

Thus, it is hypothesised that:

H1a: Government support positively influences trusting cooperation of cluster firms

H1b: Government support positively influences external openness of cluster firms

H2a: Supportive institutions positively influences trusting cooperation of cluster firms

H2b: Supportive institutions positively influences external openness of cluster firms

3.3.2 The mediating role of trusting cooperation

A prominent feature of geographical clusters is the extensive network of inter-firm linkages (McEvily and Zaheer 1999, Greve 2009, Molina-Morales and Expósito-Langa 2012). Trusting cooperation of cluster firms ensures cluster firms' access to and sharing of tacit knowledge and norms, standards or conventions of behaviours and advanced information and technology available in clusters (Aldrich and Zimmer 1986, Powell 1991, Li and Geng 2012).

Local networks and external networks of clusters are not conflictive. Localised specialisation makes external linkages more prominent and important because of the need for specialised labour, inputs, interaction with buyers/consumers, collaboration and competition with firms and organisations, collective learning and creativity (Nachum and Keeble 2003, Doloreux 2004). Furthermore, globalisation and the presence of Multinational Corporations worldwide largely make the involvement of industrial clusters in global value chains unavoidable. Actually, it is arguably viewed that the more localised one cluster is the more necessary for the cluster to be externally open to avoid blindness and inertia. Therefore, it is a common phenomenon to see globalisation and localisation are appearing together (Wolfe and Lucas 2005).

Localised industries with international linkages are described as "open innovation systems" or "dynamic adaptation systems" (Cooke 2005). The success of government incentives and effectiveness of institutional supports largely depend on the extent of regional integrity when linking to external words (Saxenian 1996). Therefore, with the assistance of reliable localised networks, governments and institutions are more likely to promote external networks for cluster firms (Humphrey and Schmitz 2002, Wood, Watts et al. 2004, Li, Veliyath et al. 2013).

Thus, it is hypothesised that:

H3a: Trusting cooperation of cluster firms mediates the influence of government support on external openness

H3b: Trusting cooperation of cluster firms mediates the influence of institutional support on external openness

3.4 Entrepreneurial Orientation, Entrepreneurial Opportunity and Market Performance

This section focusses on the entrepreneurial process of firms that is viewed as the entrepreneurially oriented strategic behaviours to exploit/explore entrepreneurial opportunities and turn these opportunities into market performance. There are four hypotheses in the section from H4 to H6b.

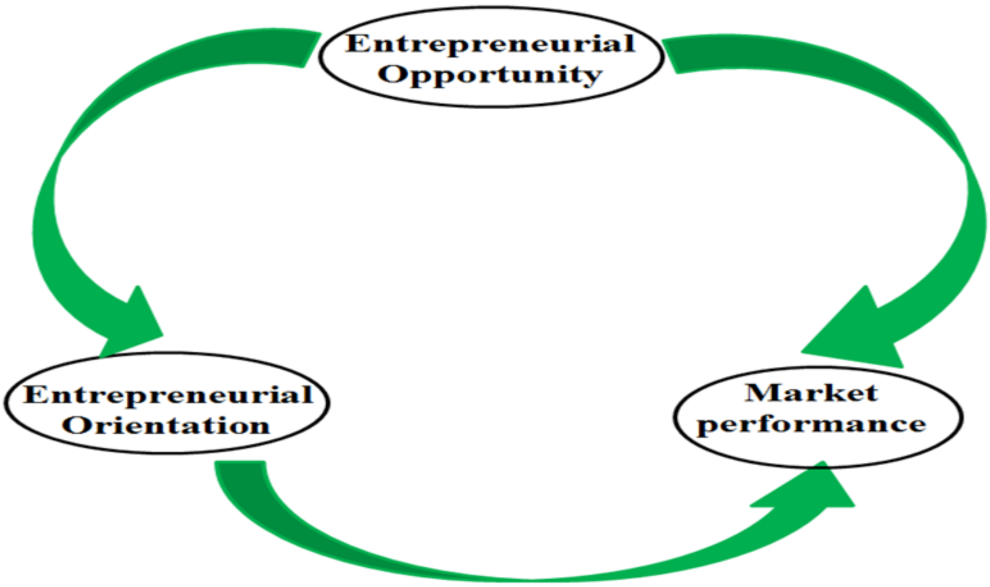

Exhibit 3.2: Entrepreneurial Process of Firms in Clusters

3.4.1 Entrepreneurial opportunity and entrepreneurial orientation

Entrepreneurial orientation (EO) consists of five dimensions including proactiveness, innovativeness, risk taking, competitive aggressiveness and autonomy. Entrepreneurial opportunities derived from market needs and means to satisfy these needs have been found associated closely with these five dimensions of entrepreneurial orientation (e.g.Bruce and Deskins 2010, Renko, Shrader et al. 2012). As stated in the previou section (refer to section 2.2.2), the entrepreneurial opportunities investigated in the research are the opportunities that have already been identified by entrepreneurial firms (individuals and/or teams within entrepreneurial firms). Thus, although this research acknowledges the possible casual influence of EO on opportunity perception, instead focusing on how can opportunities been perceived, this research emphasises how perceived opportunities influence on entrepreneurial actions/behaviours. In this regards, this research differenciates itself from the psychological entrepreneurship research, which focuses on the characteristics of entrepreneurs.

The proactive dimension of EO firms is often refered to the quick reactions to discovered opportunities (Dimitratos, Plakoyiannaki et al. 2010). Firm proactive and innovative behaviours are closely related to deliberate search and identification of entrepreneurial opportunities (Kickul, Liao et al. 2010, Shum and Lin 2010). Similarly, Nutter (1956) stated that firms tend to be innovative and willing to take risks when opportunities are discovered, especially when opportunities cannot be pursued using conventional means. In recent years, empirical studies also evidence the positive association between dimensions of EO and opportunities. Nieto and Quevedo (2005) found that firms tend to be put more effort on innovation (innovativeness) and R&D investment (taking risks) when they perceive greater opportunities for technology progress. Furthermore, firms' risk-taking and innovative behaviours tend to increase when the environment is benign and opportunities are great (Stevenson and Jarillo 1990).

Competitive aggressiveness is also regarded as a prerequisite for firms targeting high growth in high opportunity environments (Zahra and Garvis 2000). The competitive aggressiveness is viewed as one of the entrepreneurial characteristics of Australian winery marketing behaviours (Jordan, Zidda et al. 2007, Cusmano, Morrison et al. 2010). In the wine industry of other countries, situations are similar. The research outcomes of Bruwer (2003) suggest that facing the adequate growth opportunities in wine tourism industry, more and more wineries in South Africa are progressively and aggressively developing wine tourism products. It is argued that entrepreneurial firms tends to allocate more freedom to employees in decision making when more entrepreneurial opportunities are perceived (Lumpkin, Cogliser et al. 2009, Kraus, Rigtering et al. 2012). Exploitation of entrepreneurial opportunities generally requires new mean-ends frameworks and is usually beyond organisational traditions (Shane and Eckhardt 2003). Autonomy encourages organisation flexibility since it grants employees the freedom of innovation, creativity in the pursuit of opportunity and an environment of open-communication and self-directedness (Lumpkin, Cogliser et al. 2009).

In summary, the five dimensions of EO are all closely related and positively impacted by Entrepreneurial opportunities. Thus, it is hypothesised that:

H4: Entrepreneurial opportunity positively influence on entrepreneurial orientation

3.4.2 Entrepreneurial opportunity and market performance

An environment rich in opportunities indicates a dynamic market. In the entrepreneurship literature, entrepreneurial opportunity and firm high growth are closely related phenomenon (Covin and Slevin 1991). Not all entrepreneurial opportunities have to require tremendous entrepreneurial efforts to achieve market growth once they are identified. Networks and other crucial resources may decide the outcomes of opportunity exploitation such as entering new geographical markets (Mort and Weerawardena 2006, Douglas and Craig 2011). Many of the 'ready to exploit' opportunities may already be easily attainable by certain companies that control the market (Boag 1987). These companies can easily gain market growth without taking risks or being innovative.

Advanced technologies are used as important tools by traditional managerial firms to exploit these opportunities (Ozer 2000, Bond Iii and Houston 2003) as well as leadership (Abell 2006, Martin 2011) and market orientation (Laforet 2008). Firms that occupy opportunities can control market entry, dominate distribution channels and set up industry standards (Wiklund 2006). These entrepreneurial opportunities include market demands and means to meet these market demands in products, services, and processes (Dess, Ireland et al. 2003, Kollmann and Stockmann 2010). Some entrepreneurial opportunities related closely to public welfare may fall under the unified guidance of government programs or policies (Nemet 2009).

Thus, it is hypothesised that:

H5: Entrepreneurial opportunity positively influences firm market performance

3.4.3 The mediating role of entrepreneurial orientation

Although there are many studies demonstrating the positive influence of entrepreneurial orientation (EO) on firm performance, this viewpoint has been continuously challenged by opposing research outcomes (Smart and Conant 1994). Wiklund and Shepherd (2011) found EO, although, is positively related with well-established firm performance, it is also positively associated with new firm failure. They thus argue that EO might be "a performance variance enhancing strategic orientation" instead of "a performance mean enhancing orientation" (p. 925). In this scenario, the function of opportunities for entrepreneurial firms in enhancing performance attracts the attention of scholars. It is argued that the positive relationship between EO and firm performance is intimately related as acting entrepreneurially will mean that firms will take advantages of business oportunities (Wiklund 2006). Therefore, it is widely acknowledged that entrepreneurial firms enhance firm performance by identifying and exploring business opportunities in their environments (Covin and Slevin 1991, Zahra 1993, Dess, Lumpkin et al. 1997).

Entrepreneurial opportunities may require independent dimensions of entrepreneurial orientations (McMullen and Shepherd 2006). Firstly, firms of proactiveness anticipate and act on future business opportunities by introducing new methods of production, new products or services ahead of competitors to eliminate strategically operations that are in the mature or declining stages of a life cycle (Venkatraman 1989, Covin and Miles 1999, Zhao, Li et al. 2011). Proactiveness increases firms' receptiveness to market signals and awareness of customers' needs (Kollmann and Stockmann 2010) and acquisition of valuable resources (Covin and Miles 1999). Lumpkin and Dess (2001) found that proactiveness positively and significantly related to firm performance measured in sales growth and profitability. Proactive firms can successfully identify premium market niches and capitalise on these premium opportunties to gain high market margins (Zahra and Covin 1995).

Secondly, innovativeness is a chief means to create differentiation and to develop solutions that undermine those of competitors (Hughes and Morgan 2007). Profit opportunities usually require recombination of resources, during which process innovation either Kirznerian or Schumpeterian innovation is needed (Schumpeter 1934, Kirzner 1973).

Thirdly, risk-taking favours speedy decision-making and enables firms to react to changes quickly (Fombrun and Wally 1989). EO as a resource-consuming strategic orientation requires extensive investment (Covin and Slevin 1991, Wiklund 2006). The risk-taking dimension of EO is very critical in the economic situation nowadays since the opportunity may have already disappeared after a systematic investigation (Tan 2001).

Fourthly, competitive aggressiveness refers to an intensity of efforts of a firm to outperform and undermine its industry rivals (Lumpkin & Dess 2001). It is characterised by a combative posture or an aggressive response to achieve market entry and/or to secure/enhance market position (Dess and Lumpkin 2005). It strengthens the firm's competitiveness at the expense of rivals (Lumpkin & Dess 1996, Wiklund 2006, Hughes and Morgan 2007). Covin et al (1990) analysed 143 small manufacturing-bases firms and found that high-performing firms often exhibit an aggressive competitive orientation when faced with environmental hostility (low opportunity environment). A competitive aggressiveness strategy has been found beneficial to wineries in the Niagara Wine Region (Telfer 2001), California (Geraci 2004), and South Africa (Bruwer 2003). In multinational corporations, Williams and Lee (2009) also found a positive relationship between aggressiveness and assets growth. Similarly, Lee and Slater (2007) pinpoint that Samsung's remarkable achievements are largely due to its aggressive entrepreneurial behaviours in the market place. Geraci (2004) argues that aggressive marketing behaviours of wineries in California combining with sustainable and innovative behaviours in vineyards and wineries set up the world renowned reputation of the region.

Finally, autonomy facilitates knowledge transfer and sharing, helping to generate new ideas and is beneficial to organisational culture (Lumpkin, Cogliser et al. 2009). Thornhill and Amit (2001) argue that autonomy contributes to venture performance since it prevents corporate inertia. Consistent with their research outcomes, Nolan and Yeung (2001) find that autonomy in leadership is the main factor contributing to the success of two state owned giant firms in China, Shougang and Sanjiu.

Thus, it is hypothesised that:

H6a: Entrepreneurial orientation positively influences on market performance

H6b: Entrepreneurial orientation mediates the influence of entrepreneurial opportunity on market performance

3.5 The Interaction Effects of Cluster Strategic Shared Resources

From a social network perspective and strategic alliance theory on industrial clusters, it is viewed that the strategic resources of individual firms located in clusters, Trusting cooperation and External Openness, are crucial factors to firm performance by contributing to the entrepreneurial process of firms. There are eight hypotheses in this section from 7a to 10b.

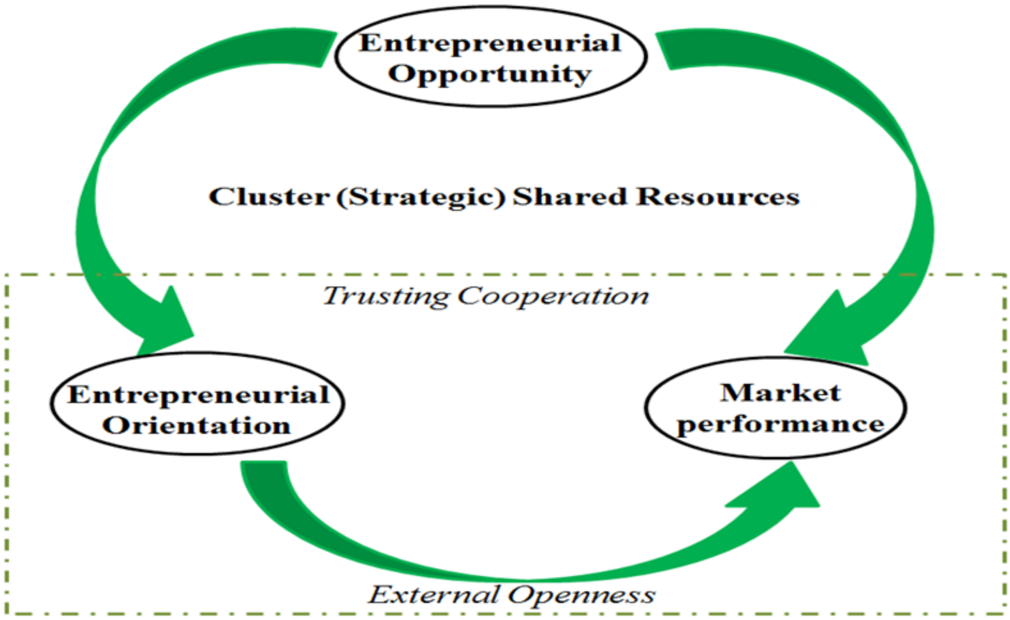

Exhibit 3.3: The Interactive Effects of Strategic Shared Resources in Clusters

3.5.1 Interaction effect between entrepreneurial opportunity and entrepreneurial orientation

Opportunities are usually developed locally (Garavaglia and Breschi 2009). An industrial cluster has been regarded as a social network system, which is often viewed as a source for opportunity creation and perception (Rosenfeld 2003, Wixted 2009). Research has found that not all opportunities are evenly diffused in clusters and some are only available to firms in certain network positions (Burt 2000, Giuliani and Bell 2005). The strategic distribution of cluster resources mirrors the scatter of opportunities (Shane and Eckhardt 2003, Stuart and Sorenson 2003). Entrepreneurial behaviours of firms utilise these local based networks to strengthen individual capability and build cluster advantage (Caniëls and Romijn 2003). By facilitating opportunity perception and exploitation, firms in clusters with trust based inter-organisational networks are more innovative, proactive and willing to take risks in the face of uncertainty than firms located outside of clusters are (Pirolo and Presutti 2007, Capó-Vicedo, Expósito-Langa et al. 2008). As Porter (2000) stated:

> *"The existence of a cluster in itself signals an opportunity. Individuals working somewhere in or near the cluster more easily perceive gaps in products, services, or suppliers to fill……while local entrepreneurs are likely entrants to a cluster, entrepreneurs based outside a cluster frequently relocate, sooner or later, to a cluster location"(P.263).*

Similarly, Shane and Eckhardt (2003) view an intimate relationship between an entrepreneur's social network structure and entrepreneurial opportunity:

> *"The structure of social relationships determines the quantity of information, the quality of information, and how rapidly people can acquire information necessary to discover opportunities for profit. Further, social capital theorists believe that people are able to purpose fully design the structure of their social relationships to enhance their chance of discovering opportunities" (p.175).*

A company will take its external resources into consideration when developing strategies to pursue entrepreneurial opportunities under conditions of uncertainty (Zen, Fensterseifer et al. 2012). In opportunity exploitation, network is seen as crucially important to entrepreneurial firms (Dubini and Aldrich 1991). In highly volatile environments, trusting cooperation, regarded as an external resource of firms, reduces obstacles to knowledge access and information exchange, which can reduce environmental uncertainty and thus stimulate entrepreneurial activities (Li, Veliyath et al. 2013). Giuliani et al (see, Giuliani and Bell 2005, Giuliani 2007) argue that innovation knowledge is not evenly distributed in clusters but limited within a narrow networks. Networks of trust bring firms valuable information based resources outside formal transactions (Wu, Geng et al. 2010). The valuable information enables firms to conduct innovative behaviours even under environmental uncertainty (Enright 1998, Alvarez and Busenitz 2001, de Oliveira Wilk and Fensterseifer 2003).

External networks expose cluster firms to new visions, information, technology and new market trends (Parker 2010), which often contain new business opportunities for cluster firms through the processes of socialisation, articulation, combination and internalisation (Roveda and Vecchiato 2008). Knowledge exchange happens either in formal business communications such as contracts and regulations or in informal business communications with organisations outside clusters, which usually bringing in new growth opportunities that is often not available from localised networks (Audretsch and Feldman 1996, Dahl and Pedersen 2004, Wilson and Spoehr 2010). Moreover, with the growth of clusters, local markets could not meet cluster productivity demand, thus, connections with external networks are not only needed to meet production and technology demands but also the needs of markets. The ever-closing relationship between regional and international makes the involvement of cluster firms with external networks unavoidable. External openness leads cluster firms to the frontiers of market needs and changes. Therefore, Humphrey and Schmitz (2002) proposed that industrial clusters with external networks facilitate opportunity exploitation for clustered firms.

Taylor et al., (2007) argue that the risk-taking inclination of firms is closely related to their networking activities in clusters. It has been demonstrated that entrepreneurs choose to start their firms where their family members, relatives, friends (strong ties) have already had firms (Klyver, Hindle et al. 2008).

Gordon and McCann (2000) argue that *"...firms within the social network are willing to undertake risky co-operative and joint-ventures without fear of opportunism, willing to reorganise their relationship without fear of reprisals, and are willing to act as a group in support of common mutually beneficial goals"* (P.720).

By investigating the cluster involvement activities of 188 firms in four international industrial clusters in the USA, China, Taiwan, and Sweden, Keui-Hsien (2010) found that a firm's involvement in cluster resources has positive impact on its exploitation and/or exploration of changing environment opportunities to enhance firm performance.

Thus, it is hypothesised that:

H7a: Trusting cooperation positively moderates the influence of entrepreneurial opportunity on entrepreneurial orientation

H7b: External openness positively moderates the influence of entrepreneurial opportunity on entrepreneurial orientation

3.5.2 Interaction effect between entrepreneurial opportunity and market performance

The successful industrial cluster cases worldwide have evidenced the close relationship between firm competitiveness and geographical proximity (Capó-Vicedo, Expósito-Langa et al. 2008, Jenkins and Tallman 2010, Zhang, Huang et al. 2012). Industrial clusters have been viewed as regional innovative systems, market organizations, social market constructions, and socio-economic contexts of territorial production in literatures because of the ambulant opportunities brought by transactional activities and non-transactional connections (Ratti, Bramanti et al. 1997, Bagnasco 1999, Maskell and Lorenzen 2004).

These opportunities often are exploited using unique sets of strategic resources of clusters (Hervás-Oliver and Albors-Garrigós 2007, Menzel and Fornahl 2010, Fernández-Olmos and Díez-Vial 2013). These resources could be external and internal linkages of members of clusters as well as other kinds of resources generated by these linkages such as reputation, knowledge flow, common value and regional identity (Camisón 2004, Hervás-Oliver and Albors-Garrigós 2007, Li and Geng 2012). Trusting cooperation among cluster members acts as the basis for cluster firms' constructive dialogues, effective exchange of information and technology and collective development of strategies to exploit opportunities (Singh and Shrivastava 2013). The spread of tacit and codified knowledge based on trust relationships offers cluster firms the advantage over non-cluster firms in the exploitation of opportunities (Jaffe, Trajtenberg et al. 1993, Dahl and Pedersen 2004, Cooke 2007, Romero-Martínez and Montoro-Sánchez 2008, Chyi, Lai et al. 2012). Audretsch (1998) argues that ideas based on tacit knowledge cannot be easily transferred across distance, that is why firms always choose geographically proximity. Baptista and Swann (1999) believe that the frequent informal exchange of information and collaboration in clusters are of foremost importance for seizing opportunities for technology development and growth of firms in clusters.

Thus, it is hypothesised that:

H8a: Trusting cooperation positively influences on market performance

H8b: Trusting cooperation positively moderates the influence of entrepreneurial opportunity on market performance

The factor of local linkages of wineries in wine clusters alone is not enough to transfer entrepreneurial opportunities to profitability. External openness of clusters compliments conservative local based collective learning and reduces negative effects brought by local embeddedness (Molina-Morales and Martínez-Fernández 2004, Julien 2007, Molina-Morales and Martínez-Fernández 2008, Keui-Hsien 2010, Turner 2010). Cluster firms with external linkages can use externally sourced ideas within the local context to improve firm marketing strategies (Love, Priem et al. 2002). These external networks of firms in clusters can overcome the side effects brought by geographical proximity such as path dependence, innovation inertia, and cognitive embeddedness (Baptista and Swann 1998, Kenney and Von Burg 1999, Beaudry and Breschi 2003, Newlands 2003). External networks of clusters expose clustered firms to new ideas, visions and knowledge that are crucial to firm performance (Bathelt, Malmberg et al. 2004, Parker 2010), stimulate cluster transformation (Tappi 2005).

With new ideas, information and technologies brought by external networks, clustered firms are more likely to successfully exploit opportunities (Audretsch and Feldman 1996, Baptista and Swann 1998, Rosenthal and Strange 2003, Menzel and Fornahl 2010). Multinational corporations are evidence of using networks worldwide to seize opportunities by introduction of new products, services or advancing business processes (Wolfe and Lucas 2005). Similarly, empirical research has found that cluster firms with the assistance of external networks can gain market growth and market expansion through successful opportunity exploitation (Humphrey and Schmitz 2002, Wood, Watts et al. 2004, Li, Veliyath et al. 2013).

Thus, it is hypothesised that:

H9a: External openness positively influences market performance

H9b: External openness positively moderates the influence of entrepreneurial opportunity on market performance

3.5.3 Interaction effect between entrepreneurial orientation and market performance

Entrepreneurship is regarded as a networking activity (Dubini and Aldrich 1991, Hoang and Antoncic 2003). Networks of a firm external and internal to its cluster play a crucial role in the entrepreneurial process of the firm. According to network theory, networks benefit entrepreneurs through providing them access to knowledge, capital, information, advice and other exclusive and valuable resources. Previous research has shown that market growth often occurs to firms that have entrepreneurial abilities and related resources (Bianchi and Wickramasekera 2013). In addition, social networks facilitate reputation building and social legitimacy, which are important elements in ensuring business success (Sorenson 2003, Klyver, Hindle et al. 2008).

According to social exchange literature, mutual trust in exchange relationships is beneficial for the outcomes of such relationships (Granovetter 1985, Pirolo and Presutti 2007). The function of trust is particularly important in uncertain and risky environments since it relies on the reliability and predictability of others (Ring and Van de Ven 1992, Ring and Van de Ven 1994). Trust induces joint efforts and promotes resources exchange and combination and facilitates collective learning and joint innovative and risk taking behaviours to strengthen the relationship between entrepreneurial orientation and market performance (Ring and Van de Ven 1994, Molina-Morales and Martinez-Fernandez 2006). Furthermore, trust based cooperation also enhances the quality of resources exchange and combination that are crucial parts of entrepreneurial processes (De Clercq, Dimov et al. 2010).

The strategic choices and innovative ideas of a firm can be represented from its external networks (Takeda, Kajikawa et al. 2008). External openness exposes clustered firms to new ideas, visions and knowledge (Bathelt, Malmberg et al. 2004, Parker 2010), thus, stimulates cluster firm innovative behaviours. This scenario is particularly important for firms involved in global value chains (Wolfe and Lucas 2005). The Australian wine industry is an export-oriented industry and many innovative practices have been conducted to keep step with the ever-changing international market. Many Australian wine regions characterised with localised relationships with international linkages which is described as an “open innovation systems” (Cooke 2005). These specific capabilities of entrepreneurial oriented firms to extract external resources are closely related to building competitiveness of firms (Turner 2010).

In recent years, research has demonstrated conceptually and empirically how entrepreneurial firms leverage networks in opportunity exploitation to achieve higher firm performance. Based on an empirical research of 220 manufacturing firms in Spain, Molina-Morales and Martínez-Fernández (2010) found that trust based networks have a positive impact on firm market performance.

Thus, it is hypothesised that:

H10a: Trusting cooperation positively moderates the influence of entrepreneurial orientation on market performance

H10b: External openness positively moderates the influence of entrepreneurial orientation on market performance

3.6 The Mediation Effects of EO on Cluster Shared Resources and Market Performance

Drawn from institutional theory and the resources based view on industrial clusters, Government Support and Institutional Support are seen as common shared resources among individual firms located in clusters. It is viewed in the research that these common resources benefit performance of clusters firms through building up individual firm entrepreneurial capability that is conceptualised as Entrepreneurial Orientation. Two hypothese are made in this section.

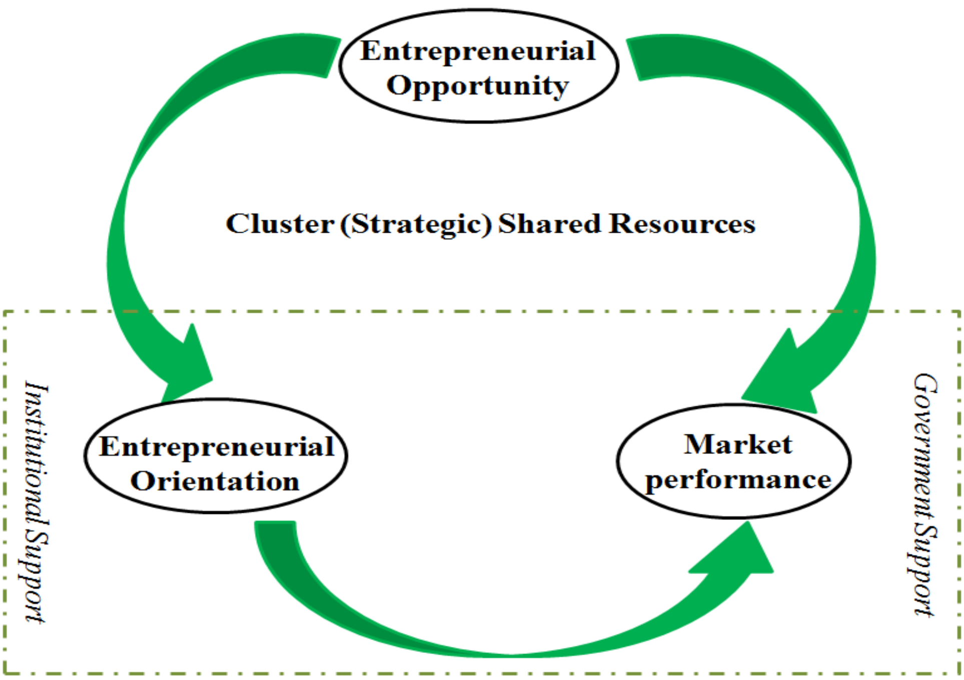

Exhibit 3.4: The Effects of Common Shared Resources in Clusters

Entrepreneurial orientation of established firms needs a social environment favouring entrepreneurship including access to financial capital and other resources, access to market information and the latest outcomes of R&D, protection of intellectual property and patents, in which governments/government policies play significant roles (Boso, Story et al. 2013). Research has shown that a range of government policies such as taxes, funding and regulations as well as government programs such as incubators, science parks and industrial districts, can facilitate entrepreneurial processes at individual, firm, regional or even national level (Bruce and Mohsin 2006).

Knowledge, information, technology as well as human resources are important factors influencing entrepreneurship, in which local institutional conditions not only impose direct and indirect impacts on both the supply and demand of entrepreneurs, but also the dynamics of entrepreneurship (Acs, Desai et al. 2008). Educational institutions could supply training and education that are needed for entrepreneurial activities and play an important role in generation, utilization and dissemination of knowledge (Wiklund, Davidsson et al. 2011). As such, the performance of entrepreneurship can be vastly different depending on institutional arrangements (Acs, Desai et al. 2008). Etzkowitz (2003) explained that institutions like universities should be involved in training and sharing knowledge processes and government should play a role in promotion of entrepreneurship through SME policy and industrial cluster policy.

Regarding the dynamism of government support and institutional support of individual firm performance, institutional theory has served as an efficient tool to understand strategic entrepreneurial behaviours in enhancing firm performance (Phillips and Tracey 2007). Carlsson (2002) found that both the science base of institutional conditions and the entrepreneurial management skills of firm have contributed significantly to firm growth in the biomedical/biotechnology and polymer-based industry clusters in Sweden and Ohio. By providing entrepreneurship favouring environments, governments and institutions have indirect influences on individual firm performance in clusters.

Thus, it is hypothesised that:

H11: Entrepreneurial Orientation mediates the positive influence of Government Support on Market Performance

H12: Entrepreneurial Orientation mediates the positive influence of Institutional Support on Market Performance.

4 Research Method

4.1 Chapter Introduction and Overview

Chapter 4 describes the questionnaire design, processes of data collection, as well as empirical methods used for testing hypotheses and interpretation in the research. It provides specific details about the approaches of questionnaire design and data collection, ethical considerations, measurements of variables of interest, validation of these measurements and AMOS procedures to test research hypotheses. This chapter also provides details on profiles of the Australian wine industry, distribution of wineries participated in survey.

4.2 Research and Questionnaire Design

Research design is the logical structure of an enquiry, which aims to collect evidences to answer research questions as unambiguously as possible (Yin 2008). There are different types of research design such as action research, case study, causal, cohort, cross-sectional, descriptive, experimental, exploratory, historical, longitudinal, observational design and so on (Creswell 2003, USC 2013). Causal design maybe thought of as understanding of the relationships between variables of a phenomenon. Most social scientists use causal design to seek causal explanations that reflect the results of hypotheses tests (Creswell 2003, USC 2013). The broad approaches of research design could be generally classified as qualitative, quantitative or the combination of the two.

In this research, the primary methods used to examine the relationships among variables of interest were quantitative. Primary data was collected through a survey questionnaire. Therefore, questionnaire design is a vital part of the survey process to achieve the research objectives. Furthermore, a well written questionnaire can be easily understood and answered by respondents while maintaining their interest (Brace 2008). In order to gain a high participation rate of the survey, ahead of data collection, a series of research procedures were conducted to assist writing up the questionnaire draft, question validation and to improve thesis conceptualisation. Closed questions are used in the questionnaire for later quantitative analyses. Pilot interviews were conducted with wine industry experts including consultants and academics. Pilot tests were conducted with these interviewees and wine students in the Waite Campus of the University of Adelaide. The objectives of the pilot interviews and the pilot tests were to find misleading and hard to understand questions in the Australian wine industry context, and to calculate the average time usage for completing the questionnaire. Details of the procedures for questionnaire design and modifications are illustrated in Exhibit 4.1.

Several modifications to the questionnaire were made because of the pilot interviews and the pilot tests. The modifications include adding two questions for winery size classification and rectification of some statements about wine regions. The finished questionnaire comprises five sections. The first section is about the generic background of participant wineries such as grape sources, tonnes grape crushed, and cases sold; the second section is about wine cluster statements; the third section is on entrepreneurial orientation statements; the fourth section is on winery performance statements; and the final section is on demographic questions of participants. All the statements are gauged in seven point scales.

In order to enhance the participation rate of the survey, the Winemakers' Federation of Australia (WFA) and Grape and Wine Research and Development Corporation (GWRDC) were contacted, which are two of the main national level organisations/authorities in the Australian wine industry. WFA represents the wineries' interest and GWRDC issues annual research foci for the Australian wine industry and allocates wine research funds. After a period of communications, the logos and comments to the research of WFA and GWRDC were added in the invitation letter page of the questionnaire to encourage wine companies to take part in data collection of the research.

The efficacy and validity tests of the questionnaire were all done in paper format; much effort was then given to the aesthetic modification of the online questionnaire. With the assistance of an IT expert, the invitation letter of the questionnaire was coded via html and the font, font size and format of the questionnaire body were modified as well to fit online usage purpose. After the completion of this process, the questionnaire was further tested online by sending them to colleagues. This process was to make sure the invitation letter was readable and the link of the questionnaire in the invitation letter could be accessed and worked well in different computer models.

After completing the online testing processes, the questionnaire was ready to send to wineries in six states[1] in Australia: Western Australia, South Australia, Queensland, New South Wales (including ACT), Victoria and Tasmania. The questionnaire was sent via email to all the registered wineries in the database of *Winetitles* that is the major publisher in the Australian and New Zealand wine and viticulture industries. The database is considered as a premier directory of Australian wine producers for it is accurate and comprehensive (Winebiz 2009).

The online survey, assisted with phone calls, was the main instrument used in the research for data collection. This research is not the first research relying on online data collection since online survey has been used and justified by many other previous social science researchers (Donald 2009, Marzo-Navarro, Pedraja-Iglesias et al. 2010). Furthermore, internet has been used widely by wineries to build competitive advantage in Australia (Goodman 2002). Thus, online data collection for the research is reasonable while time and cost saving.

Participant Organisations	**Winemakers' Federation of Australia (WFA); Grape and Wine Research and Development Corporation (GWRDC)**	**The University of Adelaide**
Purpose	Justify the research questions to the research context; Identify misleading and hard to understand questions.	Identify misleading and hard to understand questions; Calculate the average time usage to complete the questionnaire.
Modifications Made	Added winery size classification questions; Rectification of some items about Geographic indications of wineries.	Rectification of some items about geographic indications of wineries.

Exhibit 4.1: Qualitative research method –Questionnaire Modifications

4.3 Research Sample and Data Collection

4.3.1 Introduction of research sample

The Australian wine industry was chosen to test the relationships proposed in the research. This is because the Australian wine industry has a long reputation of being innovative (Henderson and Rex 2012) and entrepreneurial (Mattiacci, Nosi et al. 2006). The success of the Australian wine industry has been attributed to innovative behaviours (Jordan, Zidda et al. 2007), cooperation and entrepreneurial competitive behaviours (Coulthard 2007). Meanwhile as an innovative industry, Australian wine is entering a new era flush with opportunities. As stated by Ruthven (GWRDC 2010):

> *"...There would be new customers/markets both domestically and overseas, new products and product mix changes, new systems and technologies, new dominant states/areas (due in part to changes in water reliability and climate) and new owners: sale and leaseback of vineyards and wineries" (p.5).*

Therefore, regarding the development trajectories and characteristics of the Australian wine industry, it provides an ideal case for the research of interest.

In regard to cluster definition in the wine industry, this research is consistent with previous research by using an officially defined wine region, Geographical Indication (GI), as a wine industry cluster. Correspondingly, wine cluster shared resources are shared resources in wine GIs. A Geographical Indication (GI) is an official description of Australian wine zones, regions or sub-regions, which commenced in response to Australia's increasing wine exports to European Community (EC) countries during the late 1980s and early 1990s (Winebiz 2011). In 1994, Australia signed an agreement with the European Community (EC) relating to wine nomenclature. The wine agreement recognises some Australian winemaking practices and technologies and reduces the requirement of certification of Australian wine in EC. Wine or wine grape related individuals (winemakers, grape growers) or organisations have the right to apply GI to Geographic Indications Committee (GIC) that is a statutory committee of Wine Australia. There are currently 64 wine regions in Australia as stated in Exhibit 4.2.

State/Zones	Regions*	Subregion
South Australia		
Barossa	Barossa Valley	
	Eden Valley	High Eden
Far North	Southern Flinders Ranges	
Fleurieu	Currency Creek	
	Kangaroo Island	
	Langhorne Creek	
	McLaren Vale	
	Southern Fleurieu	
Limestone Coast	Coonawarra	
	Mount Benson	
	Mount Gambier	
	Padthaway	
	Robe	
	Wrattonbully	
Lower Murray	Riverland	
Mount Lofty Ranges	Adelaide Hills	Lenswood
		Piccadilly Valley
	Adelaide Plains	
	Clare Valley	
The Peninsulas		
New South Wales		
Big Rivers	Murray Darling2	
	Perricoota	
	Riverina	
	Swan Hill2	
Central Ranges	Cowra	
	Mudgee	
	Orange	
Hunter Valley	Hunter	Broke Fordwich
		Pokolbin
		Upper Hunter Valley
Northern Rivers	Hastings River	
Northern Slopes	New England Australia	
South Coast	Shoalhaven Coast	
	Southern Highlands	
Southern New South Wales	Canberra District	
	Gundagai	
	Hilltops	
	Tumbarumba	
Western Plains		
Western Australia		
Central Western Australia		
Eastern Plains, Inland and North of Western Australia		
Greater Perth	Peel	
	Perth Hills	
	Swan District	Swan Valley
South West Australia	Blackwood Valley	

	Geographe	
	Great Southern	Albany
		Denmark
		Frankland River
		Mount Barker
		Porongurup
	Manjimup	
	Margaret River	
	Pemberton	
West Australian South East Coastal		
Queensland		
	Granite Belt	
	South Burnett	
Victoria		
Central Victoria	Bendigo	
	Goulburn Valley	Nagambie Lakes
	Heathcote	
	Strathbogie Ranges	
	Upper Goulburn	
Gippsland		
North East Victoria	Alpine Valleys	
	Beechworth	
	Glenrowan	
	King Valley	
	Rutherglen	
North West Victoria	Murray Darling2	
	Swan Hill2	
Port Phillip	Geelong	
	Macedon Ranges	
	Mornington Peninsula	
	Sunbury	
	Yarra Valley	
Western Victoria	Grampians	Great Western
	Henty	
	Pyrenees	
Tasmania		
Northern Territory		
Australian Capital Territory		

This research focusses on the regions as units of cluster-shared resources analyses.

Exhibit 4.2: Wine Clusters (GIs) of the Australian Wine Industry

4.3.2 Data Collection

The research comprises four main phrases, literature review, expert consultancy, pilot tests and mail survey. Based on an extensive review of the literature, field studies were conducted before the research began. In the stage of expert consultancy, face-to-face interviews with wine industry officials, winery owners/managers and experts were conducted to make a thorough and comprehensive understanding of the Australian wine industry realities, and to identify the main challenges that can be interpreted from entrepreneurship and industrial cluster perspectives.

Items measuring entrepreneurial orientation (EO) were adopted from Hughes and Morgan (2007) who developed questions measuring EO of young high-tech firms in the UK. Because of different industry and country background in this research, pilot tests of the questionnaire were firstly conducted using students from the School of Agriculture and Wine of the University of Adelaide, to make sure all the questions and statements in the questionnaire were understandable and to calculate the average time of completing the questionnaire. Some modifications were made to the statements in the questionnaire and the average time was estimated to be 15 minutes.

Then pilot tests were conducted with staff from Winemakers' Federation of Australia (WFA), Grape and Wine Research and Development Corporation (GWRDC), and South Australia Wine Industry Association (SAWIA). Face to face discussions with staff from WFA and GWRDC were conducted to ensure all the questions and statements in the questionnaire made sense in the Australian wine industry. In this stage, several changes were made to the questionnaire. Finally, an email survey targeting all the wineries in Australia was conducted using the database of the 2012 Australian and New Zealand Wine Industry Directory (ANZWID), which lists 2532 registered wineries. Since 262 wineries' email addresses were not included in the database (either because these wineries did not supply email addresses to ANZWID or they did not have an email address), a manual web search for these wineries' email addresses was conducted, which generated 132 additional email addresses. Thus, there were 2402 wineries available for email questionnaire survey in the research.

We emailed the questionnaire to the 2402 wineries at the end of July 2012. The questionnaire was sent to winery owners, general managers or people who had equivalent positions in wineries. Three email reminders followed the survey in August, September and October 2012 respectively. We did follow up phone calls to 112 wineries that responded to the survey but did not finish it, which generated another 26 responses. The survey was ended at the end of January 2013, with 410 wineries responding to the survey. Among those who satisfactorily finished the survey, 264 wineries were located inside wine regions (GIs) and 40 wineries were located outside of wine regions (GIs).

One of the main reasons for participants quitting the questionnaire was due to the data collection setting in the data collection process. Respondents were not let go if they did not complete all previous questions. Although this setting lowered the completion rate, there is no need to replace the random missing data. Data bias was not a concern since the setting only referred to non-sensitive questions. Furthermore, only 15 responses (5.3%) gave up because of the setting of online data collection. Non-response bias was tested by contacting a sub-sample of firms that did not reply to the email in order to determine whether they were different from respondents in terms of firm size, age, etc. (Tang, Kreiser et al. 2009). No statistical differences were found in age, size and locations of wineries suggesting that no non-response bias existed in the survey data collected.

4.4 Variables and Measures

4.4.1 Measures of Industrial cluster

The diverse definitions of industrial clusters cause inconsistent measurements of industrial clusters. In the regional or national level of industrial cluster research, the most commonly used empirical methods are Location Quotient (LQ), Gini Coefficient, and input-output analysis. Otherwise, Porter's (1990) Diamond Model as a qualitative analysis method often combines with empirical methods to identify cluster strength and weakness. The LQ is probably the most widely used measurement for industrial clusters/agglomeration because of its ease of use and data accessibility, and applicability at different geographical scales. LQ is a measure, which compares the relative importance (in terms of output or employment) of an industry in a region to its relative importance in the nation.

If a region is showing greater than one of LQ[1] for industry j, it is believed to be producing more than its share of national output in this industry j, and thus is defined as specialized in industry j. The limitations of the LQ are its arbitrary cut-off point and inability to measure absolute size of local industries. Responding to the arbitrary cut-off point of LQ, O'Donoghue and Gleave's (2004) definition of industrial cluster is based on the statistical significance of agglomeration activities. They calculated the z-score for each location and named the methods as Standardised Location Quotient (SLQ). However, as O'Donoghue and Gleave (2004) stated, SLQ can only be calculated if the LQ values are normally distributed and, as with LQ, the size of firms in clusters cannot be measured. McCann (2001) used a method by calculating the percentage of regional workers employed in small and medium sized firms in industry j accounted the national industry j workers to measure regional industry agglomeration. However, this method is not widely adopted due to its limitations similar to LQ.

Gini Coefficient is also used to measure the geographical distribution of industries (Krugman 1991). Gini Coefficient measuring the concentration of economic activities in a range of economic sectors, similar to LQ, has an arbitrary cut-off point. The measurements of an industrial cluster using LQ or Gini Coefficient do not take the interaction of localised organisations into account. The input-output analysis identifies the linkages between industries and formal/informal activities between organisations in one functional cluster. Due to the limitation of data accessibility (Bergman and Feser 1999, Feser, Renski et al. 2008), and disagreement on cluster boundary, the input-output analysis has been used at a relatively higher geographical level.

In view of the above inconsistency measurements and associated ambiguous definitions of industrial cluster, a wine cluster was not quantitatively defined

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[1] The basic formulation of LQ is

$$LQ = \left(\left(E_{ij} / E_i \right) \Big/ \left(\sum_i E_{ij} / \sum_i E_i \right) \right)$$

using LQ, Gini Coefficient or input-output analysis in this research. Instead, the 65 officially classified wine regions in Geographical Indications (GI) were used in the research. There are several reasons to underpin this choice. Firstly, for a wine area to be officially recognised as a wine region, it must meet relevant criteria set out by Geographical Indications Committee (GIC) (producing at least 500 tonnes of grapes and comprising at least 5 wine grape vineyards of at least 5 hectares each that do not have any common ownership). These criteria already contain standards for "geographical agglomeration" with considerations of national and industrial context. Thus, the research would face same arbitrary cut-off points if LQ, Gini Coefficient or input-output analysis methods were adopted to define cluster, which would also cause difficulty in later practical implications.

Secondly, consistent with the argument of Rocha (2005), this research acknowledges that inter-firm network and institutional network are other two elements defining "cluster". Actually, the network dimension of clusters has its roots in strategic management, organisation theory and entrepreneurship literatures (Polanyi 1957; Granovetter 1985; Coleman 1990; Storper 1997). In recent years, research from the network perspective investigating industrial cluster has advanced conceptual and operational definitions of cluster and gained meaningfull outcomes (Molina-Morales & Martinez – Fernandez 2003, 2004a, 2004b, 2006; Wu & Geng 2010; Li & Geng 2012; Keui-Hsien 2010). Therefore, the network dimension of cluster is used in this research to define wine clusters.

Thirdly, the research of industrial clusters on specific wine regions is not uncommon in the literature (Centonze 2010, Tomšík and Prokeš 2011, Doloreux and Lord-Tarte 2012). This research is consistent with previous research, thus, it is reasonable to treat wine clusters as the 65 wine regions (GIs) officially defined by GIC. This adoption provides theoretical and practical foundations for examining specific economic activities and shared resources available through the geographically defined close proximity.

4.4.2 Wine cluster shared resources

Wine industry as a special agricultural industry is regionally specific relying on natural resources, history, and norms to compete in the market place. The cluster concept has drawn the attention of Australian wine industry both academically and practically for more than a decade (Enright and Roberts 2001, Roberts and Enright 2004). Although scholars like Aylward (2004b, 2004a, Aylward and Clements

2008) continually claim positive impact of regional agglomeration, especially wine supporting institutions, on firms and regional development, little has been done to identify strategic shared resources accounting for the successful industry development.

Some exploratory case studies in the wine industry area provide valuable reference materials for the research. Compared with other types of clusters, differentiation is more important for wineries in wine clusters, which has to build on stronger collective strategic resources (Patchell 2008). According to Patchell (2008), strong collective strategic resources are essential for winery differentiation and would bring more outcomes. Wilk and Fensterseifer (2003) applied the resources based view (RBV) to investigate strategic resources at a southern Brazil wine cluster and identified nine strategic resources: expertise, tourism attraction, grape variety, technology, small family owned wineries, wine reputation, collective efficiency, relationships between wineries and grape growers, and climate.

Zen, Fensterseifer and Prévot (2012) identified a series of shared resources in wine industry: terroir (climate, location, viticulture and oenology), institutions, infrastructures, availability of technology, labour and finance, regional culture and reputation, market access, and regional networks. From an evolutionary perspective, Breckenridge and Taplin (2005) pointed that government industry policy and regional entrepreneurship were strategic resources for the growth of the North Carolina wine cluster. Consistent with the research arguments of Breckenridge and Taplin (2005), Sellitto and Burgess (2005) evidenced the positive role of government in facilitating relationships in wine regional clusters in Australia.

In recent years, there has been a tendency in incorporating cluster theory and network theory to investigate wine regional resources (Centonze 2010). Instead of focusing on wine regional infrastructures and labour forces, this kind of research pays more attention to networks between wineries and theirs stakeholders (Claudine and Fearne 2011). From the perspective of network theory, knowledge spillover from regional collective learning and external openness of wine regional wineries is gaining more and more research attention (Turner 2010, Díez-Vial and Fernández-Olmos 2012, Dries, Pascucci et al. 2013). From network perspective, the competitive advantage of the Australian wine industry has been claimed to be cooperation, government and institutional support as well as external markets

(Wittwer and Anderson 2001, Smith and Marsh 2007). Exhibit 4.3 shows the summary of previous research on wine cluster shared resources from perspectives of natural resources and networks based perspective.

In this research, I acknowledge the importance of natural resources such as soil and climate, and other resources such as technology, infrastructures and labour skills, on the development of regional wine industry and growth of individual wineries. However, these natural resources are not the main research foci since it is assumed that an officially defined wine region has equal advantage in viticulture and winemaking technologies, infrastructure and so on. Besides, the importance of tangible resources like technology, infrastructures and labour for the winery industry has frequently appeared in literature.

In this research, the interactions between clusters shared resources and winery entrepreneurial behaviours are the focus. Thus, network based shared resources are investigated in the research to address prior research gaps and to simulate more interest in wine cluster research in Australia or other countries. Therefore, based on a comprehensive literature review on wine cluster shared resources, four cluster resources are used to investigate shared resources in the wine regions of the Australian wine industry. These four wine cluster shared resources are government support, institutional support, trusting cooperation and external openness. All items are gauged on seven point frequency scale using statements anchored from 1= strongly disagree to 7= strongly agree.

These variables of shared cluster resources have two to four scales to measure them. For example, the variable of Institutional Support is measure by the following three scales: 1) Wine industry consulting, marketing and distribution services are extensively available in or near to (within 1-hour drive) your GI. 2) Wine industry financial services (venture capital and investment funds) are readily available in or near to (within 1 hour drive) your GI. 3) There are many support institutions (e.g., trade and professional associations, training centres, research and technology centres, technical assistance centres and universities…etc) in or near to (within 1 hour drive) your GI. Detailed measures of these variables could not found at the appendix part of the thesis.

Author	Year	Identified Wine Cluster resources	
		Natural Resources Perspective	Relational Perspective
Patchell	2008	N/A	Differentiation, Wine regional collaboration
Wilk and Fensterseifer	2003	Tourism attraction, grape variety, technology, small family owned wineries, and climate	Expertise, wine reputation, collective efficiency, relationships between wineries and grape growers,
Zen, Fensterseifer and Prévot	2012	Terroir (climate, location, viticulture and oenology), infrastructures, availability of technology,	Institutions, labour and finance, market access, regional culture and reputation, and regional networks
Breckenridge and Taplin	2005	N/A	Government industry policy and regional entrepreneurship
Sellitto and Burgess	2005	N/A	Government support, Regional relationships
Aylward	2004	N/A	Institutions and regional networks
Claudine and Fearne	2011	N/A	networks between regional wineries and theirs stakeholders
Díez-Vial and Fernández-Olmos	2012	N/A	regional collective learning and external openness
Dries et al.	2013	N/A	regional collective learning and external openness
Turner	2010	N/A	regional collective learning and external openness
(Smith, K and Marsh;	2007	N/A	cooperation, government and institutional support as well as external markets
Wittwer and Anderson	2001	N/A	cooperation, government and institutional support as well as external markets

Exhibit 4.3: Wine Cluster Shared Resources

4.4.3 Entrepreneurial Orientation

A sound literature review of Entrepreneurial Orientation (EO) found that there has been discussion over a long time on the measurement of EO around reflective or formative perspectives, uni-dimensional or multidimensional perspective (Covin and Lumpkin 2011, Covin and Wales 2011), to three dimensions or five dimensions (Miller 1983, Morris and Paul 1987, Lumpkin and Dess 1996, Hughes and Morgan 2007). EO is regarded in the field of entrepreneurship research as the most established instrument for measuring firm level entrepreneurship (Covin and Wales 2011). Miller (1983) and Covin and Slevin (1989) developed a nine-item scale to measure entrepreneurial posture of firms including innovation, proactiveness and risk-taking in an aggregated manner. Drawing from strategic management literature, Lumpkin and Dess (1996) proposed a five dimensional framework of entrepreneurial orientation (EO) for investigating firm level entrepreneurship: autonomy, innovativeness, risk taking, proactiveness and competitive aggressiveness.

Due to simplicity in data collection and data analysis, most research on EO has adopted the nine measurement items of EO developed by Miller (1983), Covin and Slevin (1988). However, researchers have moved on beyond this method, measuring EO with disaggregated dimensions or the five-dimension EO perspective with adding competitive aggressiveness and autonomy to the original three dimensions (Kreiser 2010, 2013; Hughes & Morgan 2007; Lumpkin & Dess 2001; Covin & Lumpkin 2011).

The definition of EO in this research adopts the definitions of Lumpkin and Dess (1996) containing five dimensions rather than three dimensions. Furthermore, the measurement of EO uses reflective measurement model since previous research recommend it is appropriate (Coltman, Devinney et al. 2008, Covin and Lumpkin 2011, Edwards 2011). Thus, a previous justified questionnaire with five dimensions of EO is favourable to the research. The approach to measure EO using reflective-type scales was developed by Hughes and Morgan (2007) and is described by Covin and Wales (2011) as “attractive” and “reasonable”.

Therefore, following the recommendation of Covin and Wales (2011), the survey items of five dimensions of EO were drawn from Hughes and Morgan (2007). The survey of EO contains 23 items at seven-point frequency scale ranging from 1= strongly disagree to 7= strongly agree, measuring EO at five dimensions: autonomy, innovativeness, risk taking, proactiveness and competitive aggressiveness. The precise items measuring five dimensions of EO are shown in Chapter 5.

4.4.4 Entrepreneurial Opportunity

Given the ambiguity of (entrepreneurial) opportunity conception (Dimov 2010, Hansen, Shrader et al. 2011), it is not surprising to see that there is limited empirical research measuring opportunity in the literature. Entrepreneurial opportunities exploitation has been viewed as “opportunity-based firm behaviour” (Stevenson 1983, Stevenson and Jarillo 1990, Covin and Slevin 1991, Brown, Davidsson et al. 2001), thus, it is reasonable to source data regarding entrepreneurial opportunities from established firms (Siegel and Renko 2012).

According to the school of Austrian economics, entrepreneurial opportunities that are generated from Schumpeterian innovative changes (Schumpeter 1934), are in the form of new products/services, new geographical markets, new raw materials, new methods of production and new ways of organising. According to Schumpeter’s loci of changes, Shane and Eckhardt (2003) classify entrepreneurial opportunities into five categories stemmed from these five categories of changes. However, research on the impact of entrepreneurial opportunities on firm level entrepreneurial behaviours is empirically scarce due to conceptual and methodological limitations.

One research conducted by Ruef (2002) investigating organisational innovation is referred by Shane (2003) as a rare valuable research on entrepreneurial opportunities. According to the research of Ruef (2002), entrepreneurial opportunities could be classified into eight types with corresponding measurements. Ruef’s (2002) eight types of entrepreneurial opportunities are the opportunity to introduce a new type of product/service, to introduce a new method of production, to introduce a new method of distribution, to introduce a new method of marketing, to develop new supplier linkages, to enter an unexploited niche, to reorganise organisational population and to enter a new geographical market.

Based on previous limited and valuable research venturing to measure entrepreneurial opportunities, this research adopts a synthesised approach by integrating the measurements of Shane and Eckhardt’s (2003) advancement of Schumpeterian (1934) changes, Ruef’s (2002) innovation categories and the experience of the Australian wine industry to measure entrepreneurial opportunities in the following six aspects:

- Opportunities to introduce new wine styles/services;
- Opportunities to advance production methods;
- Opportunities to adopt new marketing methods;
- Opportunities to find new ways to improve business strategy;
- Opportunities to develop new supply chain function and linkages; and
- Opportunities to sell in new geographical markets.

All items are gauged on seven point frequency scales using statements anchored "1=None", "2=Annually", "3=Bi-annually", "4=quarterly", "5=Monthly", "6=Weekly", "7=Daily".

The measures of entrepreneurial opportunities using six items not only capture the multi-dimensional character of entrepreneurial opportunities but also illustrate the perceived (subjective interpretation of objective existence) nature of opportunities defined in the research. As stated in the hypothesis section of Chapter 3, this research focuses on examining the influences of the opportunities that have already been perceived/identified on entrepreneurial behaviours of firms. Thus, these measures adopted from literatures are reasonable to be used for the research purpose in the research.

4.4.5 Business Performance

Acknowledging business performance is multidimensional in nature (Wiklund and Shepherd 2005), we use market performance to measure firm business performance. Four items are drawn and adopted from Troilo, De Luca and Guenzi (2009) to measure market performance. Acknowledging that comparing a firm with its direct competitors can best tap relative firm performance (Wiklund and Shepherd 2011), the items measuring market performance are measured by asking the respondents to rate their winery business performance in comparison with what they know or believe about their closest competitors. Market performance was measured in four aspects including sales growth, market share growth, profitability and customer retention.

4.4.6 Control Variables

Following previous studies (Sher and Yang 2005), firm size, age, ownership (domestic or international) and cluster status (GIs, located in South Australian wine regions or not) are used as control variables. Following previous research, firm size and firm age are introduced as two control variables as these two variables are not only associated with performance, but also with resource leveraging capabilities and firm entrepreneurship (Molina-Morales and Marti'nez-Ferna'ndez 2003, Wu, Geng et al. 2010, Craig, Pohjola et al. 2014). Firm size was measured using number of employees who work in a winery. Firm age was measured as the years of establishment.

4.4.7 Dummy Variables

Dummy variables (usually take the value 0 or 1) are used to indicate the absence or presence of some categorical effects that may be expected to shift the outcome. Dummy variables were introduced into the data collection process to determine whether a winery is located in a wine cluster or not. At the beginning of the survey, participants were asked whether their wineries were located in a wine region or not. If the answer was no, the participant was transferred to answer the questions exclusive of wine regional resources. If the answer was yes, the participant was asked to choose a wine region from the 65 wine regions officially listed in Australia. In order to ensure the accuracy of the answer, the postcode of the wine region specified was required. Then, the participant was transferred to answer survey questions including wine regional resources, management behaviours, entrepreneurial opportunities, performance and other categorical questions.

4.5 Survey Winery Profile

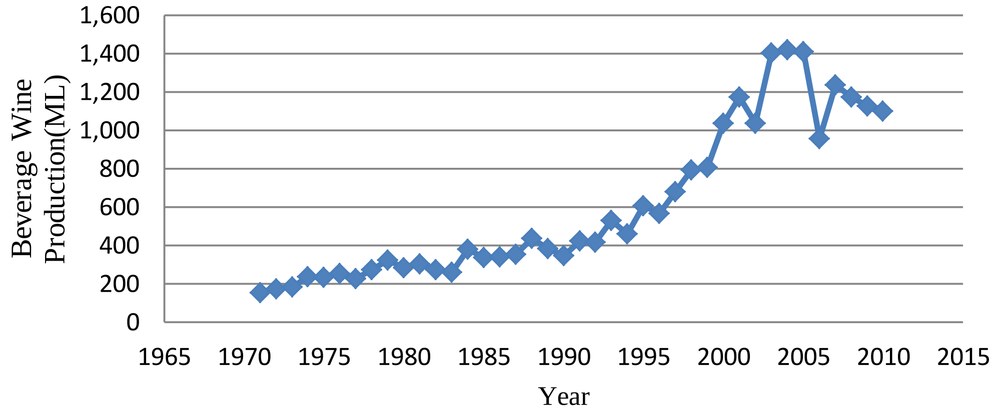
In this section, the characteristics of the wineries in the Australian wine industry as well as distribution of participant wineries in the research are described and discussed.

4.5.1 Characteristics of the Australian wine industry

Australia has more than 200 years history of winemaking and viticulture, most of its vineyards and wineries are concentrated in South Eastern Australia. The rapid expansion of wine production (see Exhibit 4.4) in Australia over the last two decades has seen the Australian wine industry become increasingly export oriented. The 2012 Australian and New Zealand Wine Industry Directory (ANZWID) lists 2532 wine producers who commercially sell their wine. The majority of the wineries were established in the last 20 years and are very small. According to ANZWID, among the 2532 wine producers listed in 2012, predominantly the wineries are distributed in South Eastern Australia accounting for 76% (South Australia (SA) accounts 27%, New South Wales (NSW) and Australian capital Territory 18.7%, Victoria 29.6%) and almost 15.6% are located in Western Australia (WA) as shown in Exhibit 4.5. In the production aspect, the top five wine companies accounted for about 51% of the national crush in 2011 while the top 20 companies accounted for 76% (ANZWID 2013).

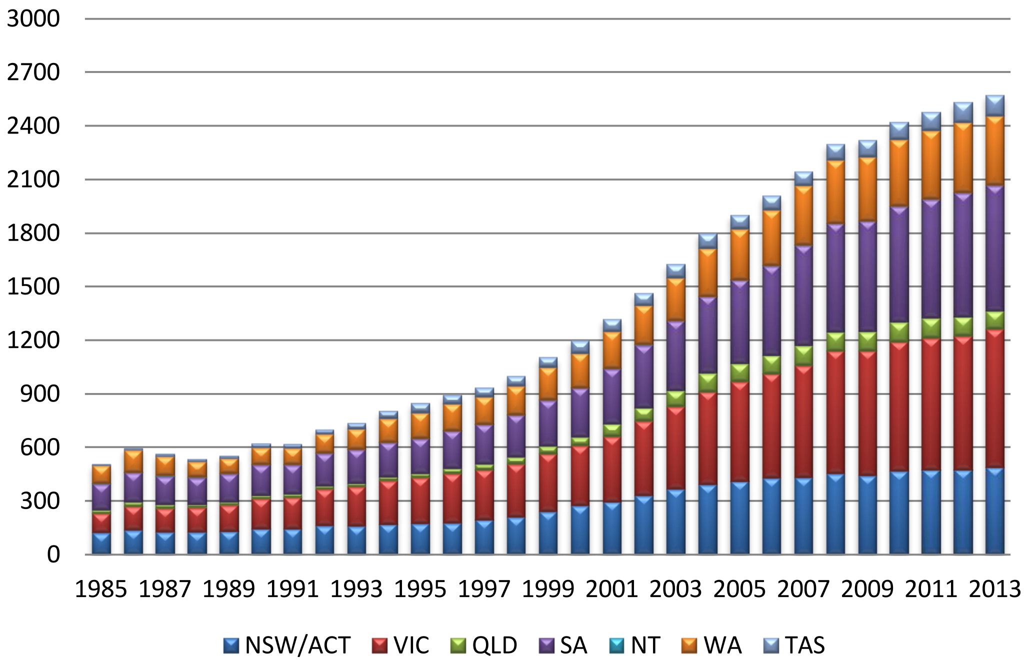
Historically, the Australian wine industry has experienced three industry booms. The first came after the gold rush from the middle of the 1850s (Osmond and Anderson 1998). The second industry boom came after the end of the Second World War (1939-1945) seeing a rapid influx of immigrants from Europe, who brought with them a strong culture related to wine, which provided an important impetus to the Australian wine industry (Australian Government 2008). The third boom began in the 1960s when numerous industry innovations began to happen from winemaking methods (stainless vessel), bottle shapes (flagon, a refillable retail bulk container owned by Wynns, wine in a box), closures (screw cape), to wine styles (age worthy red wines) (Halliday 1994, Allen，M. 2012). In order to drive marketing, and research and development in the wine industry, a variety of wine industry associations were established and wine organisational activities occurred progressively from the middle of 1980s until the middle of 1990s (Marsh and Shaw 2000, Nipe, York et al. 2010).

The latest wine industry boom, overwhelmingly driven by export success in the UK, began in the mid-1980s. This latest boom evolved sophisticated market promotion by wine associations and multinational wine corporations and government intervention (Halliday 1994, Osmond and Anderson 1998). Apart from these reasons, the world leading research institutions and tertiary facilities have made Australia in the forefront of viticulture and oenology. The successful transformation of grapes and wine into a value added knowledge-based product largely accounted for its ability to “vertically and fully integrate education, research and technology diffusion as a culture in synergy with business and marketing principles” (Hoj 2003). The supporting organisations for the Australian wine industry are shown in Exhibit 4.6.



Source: Australian Bureau of Statistics, Australian Grape Crush and Wine Production, Cat, Nos. 8366.0, 1329.0

Exhibit 4.4: Beverage Wine Production (Million Litres)



Source: The Australian and New Zealand Wine Industry Directory, 2013

Exhibit 4.5: Number of Australian wine producers by states

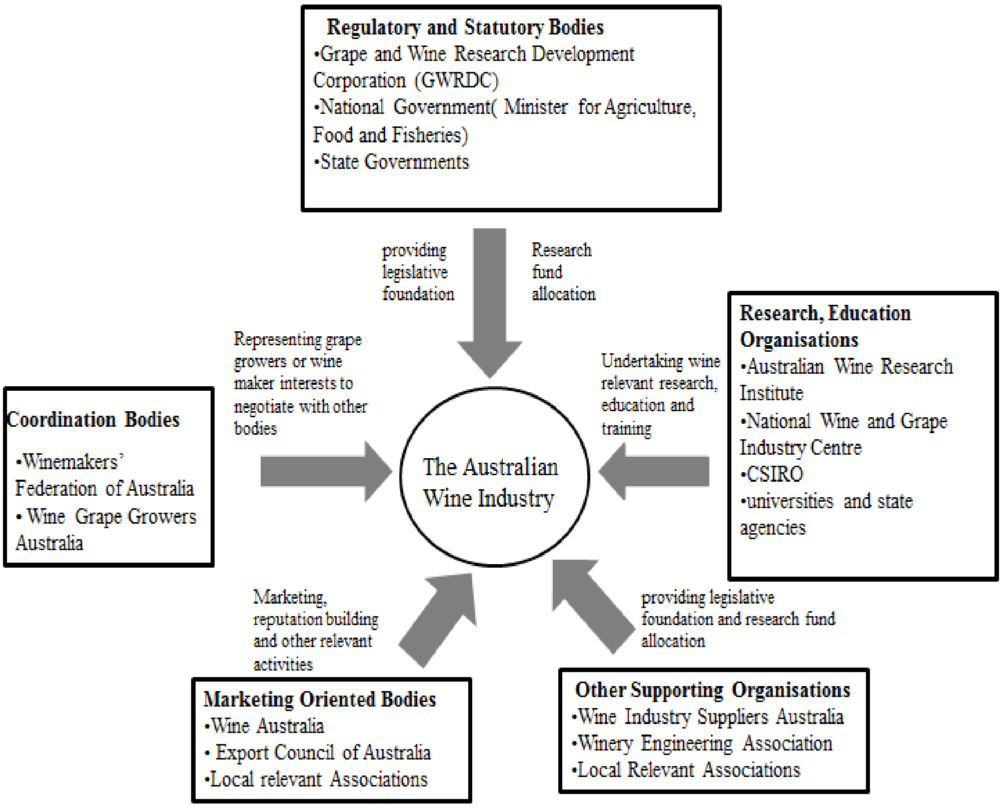


Exhibit 4.6: Supporting Organisations in the Australian wine industry

4.5.2 Distribution of Participant Wineries

410 wineries responded to the survey of the research, among which 264 wineries located inside wine regions finished the survey and 40 wineries located outside of wine regions finished the survey, as shown in Exhibit 4.7.

Respondents	In GI (Cluster)	Out GI (Cluster)	Total (percentage)
Questionnaire completed	264 (64%)	40(10%)	304(74%)
Questionnaire uncompleted	106 (26%)	0 (0%)	106 (26%)
Total (percentage)	370 (90%)	40 (10%)	410 (100%)

Exhibit 4.7: Survey Participants Response Ratio

The distribution of the 264 survey participants located in wine regions is compared with the actual winery distribution in Australia. Most participants of the survey are from South Australia (35.23%), which was followed by Victoria (26.14%) and Western Australia (16.29%). The percentages of survey participants from New South Wales (including ACT), Queensland and Tasmania are 12.88%, 3.79% and 5.68% respectively. The distribution of the survey participants is quite similar to the distribution of all the wineries across Australia (Refer to Exhibit 4.8 and Exhibit 4.9). Thus, the response of the survey from six states (there was no wine producers in Northern Territory in 2012) of Australia are representative of the whole wine industry in Australia.

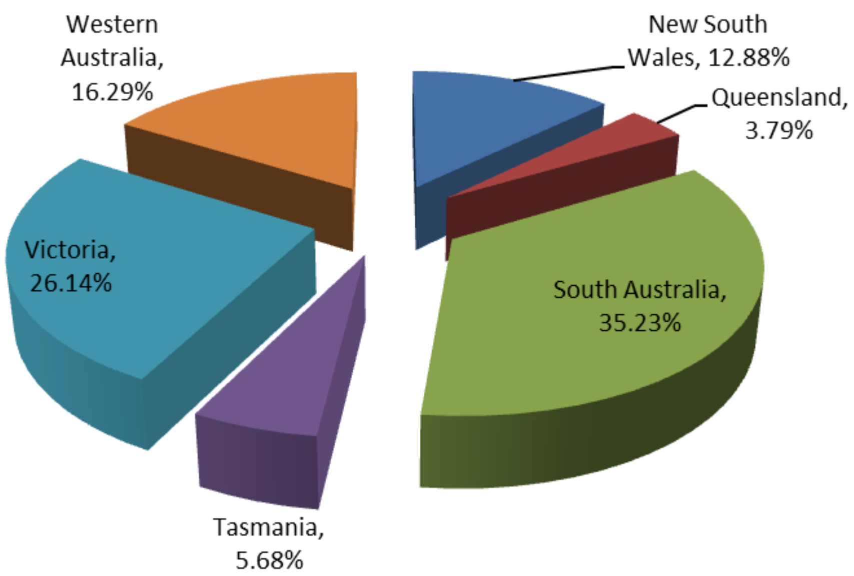


Exhibit 4.8: Survey Participant Distribution by State

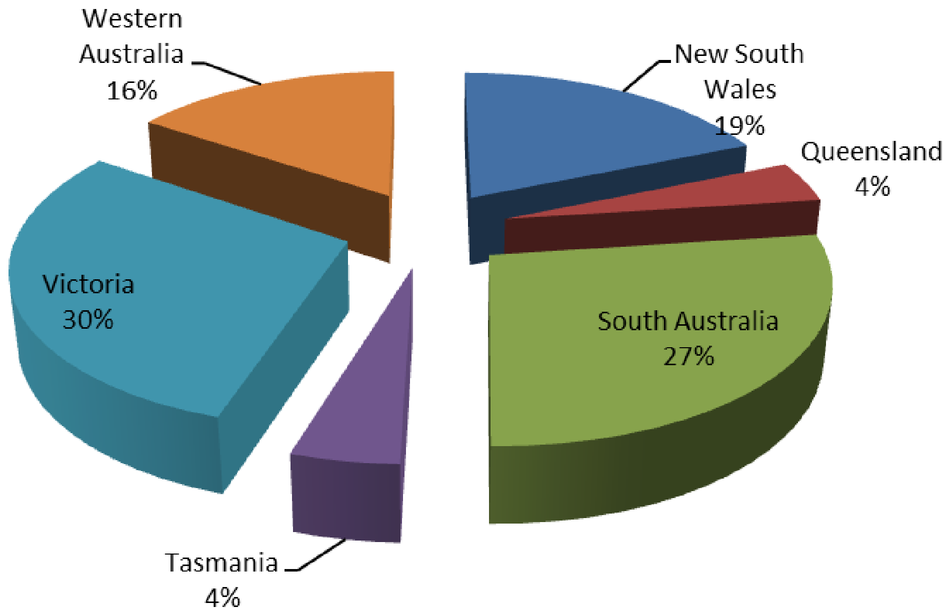


Exhibit 4.9: Percentage of Australian wineries by State (2)

4.6 Data Analysis Process

4.6.1 Data reliability

The data analysis process commenced with downloading data from SurveyMonkey that was used as the online data collection tool. The data was downloaded in a '.sav' format, thus it can be analysed directly by SPSS (or PASW) software. Then, reliability analyses for all the item scales were conducted. Scale reliability is the extent to which a measuring procedure yields consistent results on repeated administrations of the scale (Hair, Black et al. 2010). A number of reliability measures are most commonly used such as internal consistency, test – retest, and alternative forms reliability. According to previous research suggestions, internal consistency of items was used to test reliability in the research (Satorra and Bentler 1988).

Internal consistency is one of the main issues concerning the scale's reliability. It refers to the degree to which the items that make up the scale "hang together" (Pallant 2010). Cronbach's alpha coefficient is the most widely used indicator for internal consistency. The Cronbach's alpha coefficient values above 0.7 are considered acceptable and values above 0.8 are preferable (Nunnally 1978, Hair, Black et al. 2010). However, Cronbach's alpha coefficient values increase with the number of items in the scale and is often criticised for its inability to measure internal consistency (Sijtsma 2009). Scales less than ten items are very hard to get Cronbach's alpha coefficient value more than 0.7. In this regard inter-item correlation from 0.2 to 0.4 is recommended as an alternative method for evaluating scale reliability (Gao, Mokhtarian et al. 2008).

A large item size exits in this study, thus it is necessary to use other methods to measure internal consistency in addition to Cronbach's alpha coefficient. Fornell and Larcker (1981) recommend that Composite Reliability (CR) > 0.6 and Average Variance Extracted (AVE) > 0.5 represent construct internal consistency. The values of CR and Cronbach's alpha are usually very similar and AVE is used to assess construct discriminant validity. In this research, Cronbach's alpha coefficient, inter-item correlation, CR and AVE will be used jointly to assess internal consistency to avoid biases of adopting a single method.

4.6.2 Construct validity

Construct Validity is also a concern before the main data analysis. Construct Validity refers to the degree to which a good representation of the measures can be made from the operationalisations in the study with the theoretical constructs on which those operationalisations were based. The most widely adopted two subcategories of construct validity are convergent validity and discriminant validity. Convergent validity measures the extent to which items converge on the same latent variable, or one measure correlates positively with other measures of the same construct. If the inter-correlations of the items are very high (greater than 0.7), the items are most probably related to the same construct (KnowledgeBase 2008). Fornell and Larcker (1981) suggest factor loadings above 0.4 indicating convergent validity as each item shared more variance within its construct than with the error variance.

Discriminant validity measures the extent to which one measure does not correlate with other conceptually distinct constructs. There are various methods recommended in previous research of measuring discriminant validity. Campbell and Fiske (1959) suggested to use the Multitrait-Multimethod Matrix (MTMM) method was to test convergent validity and discriminate validity. Anderson and Gerbing (1988) suggest a confirmatory two-step approach, estimating five nested structural models and a series of sequential chi-square difference tests to measure construct validity.

Fornell and Larcker (1981) suggested that if the AVE[2] of two measurement constructs exceeds the square of the correlation between the two constructs, then discriminant validity holds. Bagozzi and Phillips (1991) suggested a nested model method by constrained correlations of two constructs of the nested model into 1 and compare χ^2 and p value between the constrained model and the unconstrained model. If the constrained model significantly worsened the model fit, then discriminant construct validity is evidenced. Yi (2008) recommended using Principle Component Analysis (PCA) of SPSS to get the variance contribution ratios of the first component of every latent variable. If the variance contribution ratio is bigger than 0.4, then, construct validity is evidenced.

Although there are various methods available for testing construct discriminant validity, the Fornell and Larcker's (1981) method is most widely adopted. Thus, in this study, Fornell and Larcker's (1981) AVE method is used as the main method to assess construct discriminant validity. Meanwhile, the AMOS output "goodness of fit" indicators of confirmatory factor analysis (CFA) are used as well to assist in testing construct validity. If the p value ≥ 0.05, Goodness of Fit (GFI) ≥ 0.95, Comparative Fit Index (CFI) ≥ 0.90, Tucker-Lewis Index (TLI) ≥ 0.90, Root Mean-Square Error Approximation (RMSEA) < 0.05, Standardised Root Mean-square Residual (SRMR) < 0.05 and other parameters within the relevant ranges, then construct validity is evidenced.

4.6.3 Data Normality

Structural Equation Modeling (SEM) is the main instrument to examine the proposed hypotheses in the research. Like many other statistical techniques, it needs certain underlying assumptions to be achieved. These assumptions include large sample size, continuous and multivariate normal sample, completely random missing data, and correct model specification (Kaplan 2008). The meaning of a normal distributed population is where the greatest frequency of population lies in the middle of a symmetrical, bell shaped curve with smaller frequencies towards

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[2] $\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \theta_i}$, λ_i is the standardised regression weight for each observed variable. θ_i is the error variance of each observed variable

the extremes. Non-normal data can invalidate the Chi – square test and deflate the standard errors that are used to test the significance of the individual parameter estimation (Hoyle 1995, West, Finch et al. 1995). Large sample size, adjusted Chi-square for elliptical distribution, and fit indices selection can mitigate non-normal data's effects (Wang, Fan et al. 1996).

Skewness and Kurtosis values are typical for data normality assessment. The Skewness value is an indication of data symmetry distribution. The values of skewness vary in the interval [-0.995, 0.995] (Teuscher and Guiard 1995). If the Skewness value is positive (positive skew), scores cluster at the right-hand side of a graph. On the other hand, if the Skewness value is negative, scores cluster at the left-hand side of a graph. If the Skewness value is zero, the data is normally distributed. The further the Skewness value is away from zero, the greater the Skewness in the distribution of data. Although there is no consensus on the cut-off point of Skewness value as normal distribution, the absolute values of Skewness below 0.2 is a rough rule of thumb (West, Finch et al. 1995).

The Kurtosis value is an indication of data peakiness. Positive Kurtosis values indicate a peaked data distribution with scores clustered in the centre of a graph and with long thin tails. Negative Kurtosis values indicate a flat distribution. Similar to Skewness value, there is no consensus cut-off point for Kurtosis value. It is recommended that the standardised normal distribution has a Kurtosis of three (Craig, Pohjola et al. 2014). It is worth noticing that due to some software using "excess Kurtosis" function, that is the Kurtosis function minus three, the standardised normal distribution may have a Kurtosis of zero.

Skewness and Kurtosis values, are commonly used in literature to assess data normality, although the estimation effects of Skewness and Kurtosis values on data normality weaken as the sample size becomes big (Taylor and Cihon 2004) and cannot assess multivariate data normality. In this scenario, Mardia's coefficient of multivariate Kurtosis (Mardia 1970, Mardia 1974) is used to assess multivariate normality. Mardia's coefficient measures are based on both univariate normal distribution and bivariate normal distribution, thus it is commonly used in SEM software such as AMOS (Gao, Mokhtarian et al. 2008). Critical ratio of Mardia's multivariate Kurtosis is obtained by dividing the sample coefficient by its standard error. If critical ratio is smaller than 1.96 indicating Mardia's coefficient of multivariate Kurtosis is not significantly different from zero, then the sample can be considered to be multivariate normally distributed at the 0.05 level of significance (Gao, Mokhtarian et al. 2008).

AMOS is the main statistical analysis tool used in this research. Thus, Mardia's coefficient of multivariate Skewness and Kurtosis will be used to assess sample distribution normality. In dealing with multivariate none-normal distribution, AMOS offers Bollen-Stine bootstrap (Bollen and Stine 1992) to assess model fit. Generally speaking, if Bollen-Stine p is smaller than 0.05, the proposed model should be rejected.

4.6.4 Full SEMs with Latent Variables Using AMOS

Structural Equation Modelling (SEM) is chosen for testing hypothesis. This is decided by the attributes of the exogenous and endogenous variables in the model since the variables are unobserved and are measured by manifest/observed variables. Besides factor analysis, path analysis (which examines the casual relationships between latent variables) is the other powerful function of SEM. Furthermore, the results of SEM are more reliable than conventional regression analysis since it partitions out the measurement errors of observed variables, thus, the regression coefficients represents the true relationship between the variables involved.

Many packages are available now to conduct SEM. The most commonly used packages are AMOS (Analysis of Moment Structures), Mplus (a redevelopment of LISCOMP), LISREL (LInear Structural RELationships), and EQS. AMOS is used in this research to conduct SEM for the proposed model. The reason for this is because AMOS can implement the Bollen-Stein adjusted p and bootstrap standard errors (Bollen and Stine 1992) and it has a user friendly graphic interface.

4.6.5 One Factor Congeneric Measurement Models

There are three ways of investigating the measurement construct of a latent variable, namely parallel measures, tau-equivalence measures, and congeneric measures. Parallel measures assume that all indicators contribute equally to the measurement of the underlying latent variable and each indicator variable has equal error variances (Lord and Novick 1968). Tau-equivalent measures, although still assuming the equal regression weight of all indicators, differ in the error variances of indicators. A congeneric measurement model neither constrains the regression coefficients of the factor on its indicators nor constrains the errors of indicators (Jöreskog 1971).

The constrained measures of parallel and tau-equivalence could cause concerns of construct validity. In contrast, congeneric measures represent a more realistic construct of the measurement models. If a congeneric model fitting is achieved, the construct validity is achieved as well. Thus, the fitting statistics of a one-factor congeneric measurement model can also be used to evaluate construct validity of the measurement model. If the inter-item correlations and factor loading are high and significantly different from zero (sometimes Cronbach's alpha greater than 0.7 is also required), the convergent validity of the measurement model is achieved.

4.6.6 Multi-Factor Confirmatory Factor Analysis

Confirmatory factor analyses (CFA) are used for testing whether measurement constructs are consistent with related theories (convergent validity) and the measures (factors) are discriminate from each other (discriminant validity) (Jöreskog 1969). The fitting indices of CFA could be used for evaluating convergent validity and discriminant validity. Meeting CFA tests ensures that each construct is validated and differentiated from others. Thus, conducting CFA is a necessary step before running the structural models in the research.

4.6.7 The Structure Equation Modelling Approach

Structure Equation Modelling (SEM) is a comprehensive statistical approach to test hypothesised models of relations among latent variables. It begins with model specification and commonly follows with model estimation, evaluation of fit, modelling modification, and interpretation etc. (Hoyle 1995). The following statement provides main steps regarding using the SEM approach.

- **Model conceptualisation:** The theoretical framework to be investigated includes a set of variables. Model conceptualisation involves the relationships between these variables (structural part) and if some variables are latent variables (LVs), how to measure these LVs (measurement part of the model). In developing hypotheses between a set of variables, researchers should be theoretically driven. Model misspecification may occur because of omitted explanatory variables, misdirection of the influences etc. A latent variable cannot be measured directly. Reflective indicators are used to measure a latent variable. Two assumptions underline the measurement part of one model: continuality and normality of latent variables.

- **Path Diagram Construction and Model Specification:** The hypothesised relationships between latent variables can be directional or non-directional. Each latent variable has a defined scale. Path diagrams are the representations of relationships among variables considered in SEM models. Model specification is to write coded instructions for SEM programs so that the model can be estimated correctly. In the thesis, AMOS Graphics were used to construct path diagram and to conduct model specification.
- **Model Identification:** A testable model needs a positive degree of freedom (df). Model identification includes three types: under identified, just identified, and over identified. For model identification, two conditions should be always checked: one is a scale must be established for every latent variable in the model. The other one is the effective number of model parameters must not exceed the number of sample variance/covariance for measure variables, which is known as "t-rule" (Bollen 1989).
- **Parameter Estimation:** the parameters of SEM are the regression coefficients and the variances and covariance of independent variables (Chou and Bentler 1995). There are three types of parameters: free parameters, fixed parameter and restricted parameters. The methods for parameter estimations in AMOS are Maximum Likelihood (ML), Generalised Lest Squares (GLS), Un-weighted Least Squares (ULS), and Asymptotically Distribution-Free (ADF), among which ML and GLS assume multivariate normality and zero Kurtosis (Tinsley and Brown 2000). These methods are different in terms of the criteria and can generate slightly different outcomes (Chou and Bentler 1995). Each of these estimation methods has its unique discrepancy function but all of them include complex iterative procedures.
- **Evaluation of Model Fit:** if the covariance matrix of a model implied is equivalent to the observed covariance matrix, the model fits the observed data. Assessment of fit involves comparing two or more theory-based models of the same data (Hoyle 1995). Many indices are available for

evaluating model fit, however, the cut-off points of these indices suggested for model acceptance are a bit subjective and lack consistency in literature (Tinsley and Brown 2000, Yi 2008). Many scholars have contributed to the model fit indices such as McDonald (1989), Bollen (1989), and Goffin (1993), to name a few. Normally, three types of fit statistics are used to evaluate model fit, namely fit statistics, residuals and incremental fit indices. Hu and Bentler (1995) advise to use the absolute value of the average discrepancy between observed, rather than reproduced, correlations to accompany report of model fit. Through long-time usage in practices and research, the cut-off point of these model fit evaluation indices acts as guidance. DiLalla (2000) provided a summary of the indices for model fit evaluation, shown in Exhibit 4.10. Schreiber et al., (2006) provided another summary of the cut-off criteria of model fit indices, which differentiated the cut-off criteria for continuous data and categorical data shown in Exhibit 4.11. According to Schreiber et al., (2006), for categorical data, RMSEA< .06, TLI> .95, CFI > .95, and SRMR< .90 are usually suggested as the cut-off criteria (Hu and Bentler 1995, Yu and Muthen 2002, Schreiber, Nora et al. 2006).

Test Name	Ideal Score[a]	Notes	Estimated well with non-normality?	Consistent across sample size?	Assesses parsimony?
Absolute fit indices					
Chi-square statistic	p>.05	Useful for comparing groups.	No	No	No
Goodness-of-fit index (GFI) (Bollen 1989)[b]	>.90	Behaves consistently across estimation methods.	Unknown	No	No
Adjusted goodness-of-fit index(Tanaka and Huba 1984)[b]	>.90	Adjusts GFI for degrees of freedom. Otherwise, same benefits and concerns as for GFI.	Unknown	No	Yes
Root mean square residual (RMSR) (Jöreskog and Sörbom 1993)[b]	<.05	Can be used to compare the fit of two different models with the same data; easier to interpret if all observed variables are standardised.	Unknown	Yes	No
Centrality Index (CI) (McDonald 1989)	>.90	Small sample size becomes a problem if the latent variables are dependent.	Unknown	Yes, but see notes	No
Root mean square error of approximation (RMSEA) (Steiger and Lind 1980)[b]	<.08	Measures absolute fit but adds a penalty for lack of parsimony.	Unknown	No	Yes
Comparative fit indices					
Comparative fit index (CFI) (Goffin 1993)[b]	>.90	Accurate across estimation methods; useful for comparing nested models.	Modest underestimation	Yes	No
Normed Fit Index (NFI) (Bentler and Bonett 1980)	>.90	Of the comparative fit indices, most sensitive to violation of normality and to small sample size.	Severe underestimation with small N	No	No
Tucker-Lewis Index(TLI or NNFI) (Tucker and Lewis 1973)	>.90	Performs best with maximum likelihood (ML) method; performs badly with Generalised Lest Squares (GLS). Good for comparing nest models.	Modest underestimation	Unclear	No
Incremental Fit Index (IFI) (Bollen 1989)[b]	>.90	Preferred over TLI/NNFI when using Generalised Lest Squares (GLS).	Modest underestimation	Yes	No

[a] "Ideal score" is the cut-off score used by most researchers. There is no empirical basis for these conventions. The appropriateness of the cut-off for each test depends on the model being tested, the sample size, and the normality of the data, and the debate continues about the interpretation of fit indices. [b] Recommended

Exhibit 4.10 SEM Model Fit Evaluation Indices

Indexes	Shorthand	General rule for acceptable fit if data are continuous	Categorical data
Absolute/predictive fit			
Chi-square	χ^2	Ratio of χ^2 to df'' 2 or 3, useful for nested models/model trimming	
Akaike information criterion	AIC	Smaller the better; good for model comparison (nonnested), not a single model	
Browne–Cudeck criterion	BCC	Smaller the better; good for model comparison, not a single model	
Bayes information criterion	BIC	Smaller the better; good for model comparison (nonnested), not a single model	
Consistent AIC	CAIC	Smaller the better; good for model comparison (nonnested), not a single model	
Expected cross-validation index	ECVI	Smaller the better; good for model comparison (nonnested), not a single model	
Comparative fit		Comparison to a baseline (independence) or other model	
Normed fit index	NFI	≥ .95 for acceptance	
Incremental fit index	IFI	≥ .95 for acceptance	
Tucker–Lewis index	TLI	≥ .95 can be 0 > TLI > 1 for acceptance	0.95
Comparative fit index	CFI	≥ .95 for acceptance	0.95
Relative noncentrality fit index	RNI	≥ .95, similar to CFI but can be negative, therefore CFI better choice	
Parsimonious fit			
Parsimony-adjusted NFI	PNFI	Very sensitive to model size	
Parsimony-adjusted CFI	PCFI	Sensitive to model size	
Parsimony-adjusted GFI	PGFI	Closer to 1 the better, though typically lower than other indexes and sensitive to model size	
Other			
Goodness-of-fit index	GFI	≥ .95 Not generally recommended	
Adjusted GFI	AGFI	≥ .95 Performance poor in simulation studies	
Hoelter .05 index		Critical *N* largest sample size for accepting that model is correct	
Hoelter .01 index		Hoelter suggestion, *N* = 200, better for satisfactory fit	
Root mean square residual	RMR	Smaller, the better; 0 indicates perfect fit	
Standardised RMR	SRMR	≤ .08	
Weighted root mean residual	WRMR	< .90	< .90
Root mean square error of approximation	RMSEA	< .06 to .08 with confidence interval	< .06

Exhibit 4.11 SEM Model Fit Evaluation Indices

- **Model Re-specification:** If one model results in unfavorable fit indices, then, model modification is required. Model modification is the process to adjust a specified and estimated model by freeing or fixing the formerly fixed or free parameters respectively (Hoyle 1995). AMOS offers several indicators to perform a model re-specification including critical ratios (t-values), the standardised residuals, and modification indices. Model modification process should be theory driven by including or omitting variables in the specified model (Lindsay 2012).

- **Model Interpretation:** SEM is not available to test causal relationships between variables directionality (Hoyle 1995). SEM analysis is based on the correlation or covariance between variables, thus, normally model fit indices in a path diagram are not accurate to interpret the causal relationships between variables (DiLalla 2000).

4.7 Chapter Summary

This chapter provides a detailed illustration regarding the research methods used in the thesis. It provides insights into the research design of using cross sectional data to examine the relationships of interest. Data collection was conducted mainly through online survey with assistance of follow-up telephone interviews. Validated scales from previous and pilot interviews were used to measure the constructs of interest, namely industrial cluster resources, entrepreneurial orientation, entrepreneurial opportunity, and market performance. A structural model is proposed incorporating these constructs based on existing literatures on resources based view (RBV), strategic management and entrepreneurship, industrial cluster etc. Primary descriptive analysis of the research was conducted using SPSS in this chapter and more in Chapter 5. The procedures of advanced structural equation modeling analysis using AMOS are presented in this chapter, which will be conducted using AMOS in chapter 6.

5 Preliminary Analyses and Measurement Models

5.1 Introduction

Chapter 5 presents the results of preliminary data analyses using SPSS and advanced data analyses of Confirmatory Factor Analysis (CFA) of one factor congeneric measurement models and multi-factor using AMOS. Preliminary data analyses provide the characteristics of research responses, scale reliability and normality of data. Advanced data analyses involve the CFA of individual measurement models and the combined measurement models. The fit of CFA undertaken in this chapter is the precondition for analyses of structural equation models as presented in chapter 6.

5.2 Descriptive Data Analysis

5.2.1 Winery Characteristics

Winery size classification in the research survey was made according to the existing standards in the wine industry (Looney 1995, Ullman and Bentler 2003, Doloreux, Chamberlin et al. 2013). It can be seen from Exhibit 5.1 and Exhibit 5.2 that a dominant percentage of the wineries is small family owned and members of regional wine associations. More than 70% of these wineries employ less than 5 people and almost 90% percent of these wineries sold less than 30,000 cases of wine in 2011. Only 27 (10.2%) responding wineries crushed more than 500 tonnes of wine grapes in the 2012 vintage.

Winery age distribution is comparatively even among respondents with young wineries (less than 10 years) accounting for 26.1% compared with 36.4% of wineries of more than 20 years establishment. Percentage of winery turnover spent on research and development (R&D) is quite low with only 26.9% of wineries spending more than 5%, which closely related to the characteristics of the survey response: small, family owned, well established.

Variable	Frequency Distribution				
Number of employees	*Less than 5*	*5 - 30*	*More than 30*	*Missing*	*Total*
a.v	191	62	7	*4*	264
p.v	72.3	23.5	2.7	*1.5*	100%
Age (years of establishment)	*Less than 10*	*11-20*	*More than 20*	*Missing*	*Total*
a.v	69	99	96	*0*	264
p.v	26.1	37.5	36.4	*0*	100%
Tonnes of Grapes Crushed in 2012 Vintage	*Less than 50 t*	*50 t – 499 t*	*More than 500t*	*Missing*	*Total*
a.v	138	99	27	*0*	264
p.v	52.3	37.5	10.2	*0*	100%
Cases sold in 2011	*Less than 30,000 cases*	*30,000 cases – 299,999 cases*	*More than 300,000 cases*	*Missing*	*Total*
a.v	237	22	3	*2*	264
p.v	89.8	8.3	1.1	*0.8*	100%
Percentage of R&D on Turnover	None	Less than 5%	More than 5%	*Missing*	*Total*
a.v	107	75	71	*11*	264
p.v	40.5	28.4	26.9	*4.2*	100%

Notes: a.v. absolute value; p.v. percentage value

Exhibit 5.1: Description of Sampled Wineries

According to Exhibit 5.2, 78.4 percent of the survey participants are family owned wineries and even more than 95 percent of them do not have any international investment. Membership numbers of wineries drops sharply from regional wine associations, state wine associations, and national wine associations to international wine associations. Only 4.9% of wineries are members of international wine associations compared with 86% which are members of regional wine associations. There are more wineries not joining national wine associations than those that are, but the discrepancy is small. Another feature of the respondents is that more than 80% percent of them have not changed in management structure and ownership in the last two years.

Variables	**Frequency Distribution**		
Family Owned	Yes	No	*Total*
a.v	207	57	264
p.v	78.4	21.6	100%
International Investment	Yes	No	*Total*
a.v	12	252	264
p.v	4.5	95.5	100%
Membership (Regional Associations)	Yes	No	*Total*
a.v	227	37	264
p.v	86.0	14.0	100%
Membership(State Associations)	Yes	No	*Total*
a.v	147	117	264
p.v	55.7	44.3	100%
Membership (National Associations)	Yes	No	*Total*
a.v	126	138	264
p.v	47.7	52.3	100%
Membership (International Associations)	Yes	No	*Total*
a.v	13	251	264
p.v	4.9	95.1	100%
Changed in Management Structure	Yes	No	*Total**
a.v	45	218	263
p.v	17	82.6	99.6%
Changed in Ownership	Yes	No	*Total**
a.v	21	219	240
p.v	8.0	83.0	91.0

Notes: * *missing data a.v. absolute value; p.v. percentage value*

Exhibit 5.2: Description of Sampled Wineries

Grape Source	100%	90< P <100%	75< P ≤90%	50< P ≤75%	25< P ≤50%	0< P ≤25%	Varies	None	Total*
Winery Wine region (GI) (%)	58.3	17.4	6.1	3.8	3.0	4.9	.4	5.3	99.2
Cumulative Percentage	58.3	75.8	81.8	85.6	88.6	93.5	93.7	99.2	
Own Vineyards (%)	40.5	15.2	12.9	6.1	4.9	9.1	.4	10.2	99.2
Cumulative Percentage	40.5	55.7	68.6	74.7	79.6	88.7	89.1	99.2	

* *Missing value*

Exhibit 5.3: Description of Sampled Wineries (2)

According to Exhibit 5.3, approximately 85% of the 262 regional wineries source more than 50% of grapes from their own wine regions, with more than half of these sourcing 100% from their wine regions. Almost 75% of wineries use grapes from their own vineyards. The percentage of wineries sourcing 100% of their grapes from their regions is almost 20% higher than wineries sourcing 100% from their own vineyards. This is common and reasonable since many well established wineries sell grapes or buy grapes according to their projected wine production.

In summary, the descriptive statistical analysis of the survey participant wineries provides general information of these wineries regarding their size, ownership, age, membership as well as grape sourcing status. The results of the analysis show that most of the wineries are family owned, small but well established. These wineries predominantly rely on regional resources such as wine associations and grapes. These results suggest that cluster status of these wineries is probably high, but their entrepreneurship status is hard to judge at this stage.

5.2.2 Scale Reliability

Prior to doing the statistical analysis of the relationships of variables of interest, it is important to obtain descriptive statistics of the variables. These descriptive statistics provide a range of information on Cronbach's α, mean, standard deviation. This information not only evidences scale reliability but also supplies basic information of each single item and correlations between items.

From Exhibit 5.4 to Exhibit 5.6, it can be seen that all the values of Cronbach's α of 11 variables of interest are above 0.7, which is usually used as the cut-off point for scale reliability. Three variables of interest among eleven variables have Cronbach's α bigger than 0.90. The biggest value of Cronbach's α is government support with 0.934. The smallest value of Cronbach's α is trusting cooperation with 0.747 still above the 0.70 threshold. Thus, these strong values of Cronbach's α provide support for scale reliability of the variables.

The Exhibit 5.4 shows Cronbach's α, mean, standard deviation and correlations of items of cluster shared resources. It can be seen that all items correlate relatively strongly with other items in the same scale, with the smallest one trusting cooperation whose mean item correlation is still above 0.5. In the same scale, the correlations between items should be positive (Pallant 2010), while the negative values indicate that they are measuring different things (or they have not been correctly revered scored, which is not a concern in the research).

The Exhibit 5.5 (1 and 2) shows Cronbach's α, mean, standard deviation and correlations of items of entrepreneurial orientation. The reason these three variables stand out may be related closely to the characteristics of the participant wineries, which was discussed in the previous chapter.

The Exhibit 5.6 shows Cronbach's α, mean, standard deviation and correlations of items of entrepreneurial opportunity perception and market performance. As regard to the mean of items, mean of entrepreneurial opportunities is the smallest with all of its items below the average value 4. This may be closely related to the current situations of the Australian wine industry as discussed in Chapter 2.

The Exhibit 5.7 shows means and variances of variables of interest. Innovativeness, Autonomy and risk taking have the highest means of 5.442, 4.943, and 4.812 respectively. The reason these three variables stand out may be related closely to the characteristics of the participant wineries, which was discussed in the previous chapter. Means of Trusting Cooperation, External Openness and Proactiveness are proximately 4.7 among which Trusting Cooperation has the highest mean of 4.769. Although the mean of Institutional Support is not high, it is well above average at 4.452 comparing with average score of 3.686 of Government Support. The mean scores of shared resources indicate that the level of shared resources in regions of the Australian wine industry is relatively high with the exception of Government Support.

Variables	Cronbach's α	Mean	Std. Deviation	Ins1	Ins2	Ins3	Ins4	GovS 1	GovS 2	TrCo 1	TrCo 2	TrCo 3	ExOp 1	ExOp 2
Institutional Support	0.846													
Ins1		4.67	1.956	1										
Ins2		4.17	1.907	.708*	1									
Ins3		4.24	1.978	.690*	.654*	1								
Ins4		4.72	1.902	.515*	.417*	.478*	1							
Governmen t	0.934													
GovS1		3.66	1.593	.309*	.351*	.332*	.308*	1						
GovS2		3.71	1.601	.302*	.373*	.318*	.285*	.877**	1					
Trusting Cooperation	0.747													
TrCo1		4.88	1.445	.238*	.286*	.301*	.269*	.356**	.370**	1				
TrCo2		4.70	1.430	.268*	.326*	.269*	.234*	.264**	.260**	.610**	1			
TrCo3		4.73	1.637	0.11	.149*	0.102	.190*	.163**	.196**	.427**	.473**	1		
External Openness	0.848													
ExOp1		4.69	1.559	.324*	.313*	.296*	.307*	.267**	.300**	.311**	.353**	.266**	1	
ExOp2		4.56	1.478	.364*	.294*	.304*	.352*	.304**	.327**	.298**	.346**	.248**	.737**	1

Exhibit 5.4: Scale Reliability Test on Cluster Shared Resources

Variables	Cronbach's α	Mean	SD	RT1	RT2	RT3	In1	In2	In3	Pro1	Pro2	Pro3
Risk Taking	0.780											
RT1		4.48	1.425	1								
RT2		4.82	1.335	.661**	1							
RT3		5.13	1.171	.445**	.519**	1						
Innovativeness	0.907											
In1		5.44	1.122	.306**	.327**	.572**	1					
In2		5.31	1.184	.180**	.278**	.518**	.739**	1				
In3		5.57	1.135	.214**	.283**	.493**	.709**	.826**	1			
Proactiveness	0.865											
Pro1		4.90	1.251	.291**	.333**	.505**	.524**	.604**	.578**	1		
Pro2		4.56	1.152	.129*	.142*	.401**	.360**	.514**	.477**	.674**	1	
Pro3		4.37	1.313	0.116	.172**	.393**	.386**	.509**	.440**	.666**	.714**	1
Competitive	0.851											
CA1		4.53	1.500	0.054	0.102	.289**	.308**	.384**	.355**	.478**	.385**	.360**
CA2		3.90	1.420	0.024	0.079	.196**	.239**	.329**	.303**	.465**	.463**	.367**
CA3		3.38	1.572	-0.013	0.005	0.103	0.069	.126*	.123*	.340**	.289**	.258**
Autonomy	0.904											
Aut1		4.82	1.307	.188**	.243**	0.075	.195**	.138*	.131*	.175**	0.108	0.104
Aut2		4.93	1.271	.213**	.302**	.193**	.277**	.214**	.201**	.197**	.135*	0.106
Aut3		4.87	1.306	.210**	.237**	.193**	.217**	.152*	.174**	.197**	.186**	0.089
Aut4		5.27	1.177	0.114	.154*	.178**	.248**	.203**	.199**	.153*	.128*	0.04
Aut5		4.84	1.348	0.114	.195**	0.113	.138*	.130*	.158*	.135*	0.106	0.064
Aut6		4.93	1.406	.131*	.143*	.274**	.355**	.317**	.364**	.310**	.269**	.163**

Exhibit 5.5: Scale Reliability Test on Entrepreneurial Orientation (1)

Variables	**CA1**	**CA2**	**CA3**	**Aut1**	**Aut2**	**Aut3**	**Aut4**	**Aut5**	**Aut6**
Competitive Aggressiveness									
CA1	1								
CA2	.709**	1							
CA3	.545**	.729**	1						
Autonomy									
Aut1	0.068	.137*	0.054	1					
Aut2	0.099	.137*	0.108	.805**	1				
Aut3	0.094	.181**	.180**	.734**	.810**	1			
Aut4	.127*	0.071	0.012	.579**	.592**	.610**	1		
Aut5	0.101	.142*	.128*	.654**	.655**	.724**	.589**	1	
Aut6	.175**	.177**	0.114	.372**	.495**	.496**	.609**	.505**	1

Exhibit 5.5: Scale Reliability Test on Entrepreneurial Orientation (2)

Variables	Cronbach's α	Mean	Std. Deviation	EOP1	EOP3	EOP2	EOP4	MP1	MP2	MP3	MP4
Entrepreneurial Opportunities	0.846										
EOP1		2.78	1.456	1							
EOP2		3.13	1.540	.566**	1						
EOP3		3.63	1.564	.570**	.665**	1					
EOP4		3.27	1.622	.483**	.619**	.574**	1				
Market Performance	0.882										
MP1		4.63	1.293	.278**	.309**	.298**	.211**	1			
MP2		4.40	1.220	.256**	.238**	.273**	.160**	.840**	1		
MP3		4.23	1.327	.222**	.216**	.191**	.148*	.682**	.650**	1	
MP4		4.70	1.160	.268**	.292**	.307**	.175**	.619**	.597**	.528**	1

Exhibit 5.6: Scale Reliability Test on Entrepreneurial Opportunity and Market Performance (2)

Item Means Inter-Item	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Institutional Support	4.452	4.174	4.716	0.542	1.130	0.080	4
	0.577	0.417	0.708	0.290	1.696	0.014	4
Government Support	3.686	3.663	3.708	0.045	1.012	0.001	2
	0.877	0.877	0.877	0.000	1.000	0.000	2
Trusting Cooperation	4.769	4.697	4.883	0.186	1.040	0.010	3
	0.503	0.427	0.610	0.183	1.429	0.007	3
External Openness	4.625	4.564	4.686	0.121	1.027	0.007	2
	0.737	0.737	0.737	0.000	1.000	0.000	2
Risk Taking	4.812	4.481	5.133	0.652	1.145	0.106	3
	0.542	0.445	0.661	0.216	1.485	0.010	3
Innovativeness	5.442	5.314	5.568	0.254	1.048	0.016	3
	0.758	0.709	0.826	0.116	1.164	0.003	3
Proactiveness	4.611	4.371	4.902	0.530	1.121	0.072	3
	0.685	0.666	0.714	0.048	1.072	0.001	3
Competitive Aggressiveness	3.933	3.375	4.527	1.152	1.341	0.332	3
	0.661	0.545	0.729	0.185	1.339	0.008	3
Autonomy	4.943	4.818	5.273	0.455	1.094	0.028	6
	0.615	0.372	0.810	0.439	2.181	0.014	6
Entrepreneurial Opportunities	3.202	2.777	3.633	0.856	1.308	0.125	4
	0.580	0.483	0.665	0.183	1.379	0.003	4
Market Performance	4.489	4.231	4.697	0.466	1.110	0.045	4
	0.653	0.528	0.840	0.313	1.593	0.010	4

Exhibit 5.7: Descriptive Statistics

5.2.3 Data Normality Analysis

One of the important assumptions underlying SEM is that the variables have a multivariate normal distribution. In practice, real data is often violated from this normal assumption (Micceri 1989). Maximum Likelihood (ML) and Generalised Least Squares (GLS) are the two most commonly used normal theory estimators. However, once the measured variables do not have multivariate normal distribution, their estimation ability is not reliable. In the following sections, research data normality will be tested using SPSS and AMOS since a single method is not adequate to assess data normality.

Data normality was tested using SPSS to calculate Skewness and Kurtosis of each item. As shown in Exhibit 5.8, most of the items are negatively skewed with scores clustering at the left hand side of distribution graphs. Only two items of Competitive Aggressiveness and all items of Entrepreneurial Opportunities are positively skewed. Except items of Government Support and two items of Competitive Aggressiveness, skewness of all the other items are above the recommended point of 0.2, indicating serious skewness of items. Items of Institutional Support, Government Support, External Openness, and Competitive Aggressiveness all have negative Kurtosis indicating flat distribution. In contrast, Innovativeness and Autonomy show high positive Kurtosis indicating peaked distribution. All the left variables have mixed negative and positive Kurtosis. Most of the Kurtosis absolute values of these items are far away from zero, except RT1 of Risk Taking and EOP1 of Entrepreneurial Opportunities. Therefore, the analysis of Skewness and Kurtosis of items suggest that research data is not normally distributed.

The results shown in Exhibit 5.9 supplying p value of Kolmogorov-Smirnov provide further information about the data distribution. Normal distributed data has the significant level of Kolmogorov-Smirnov bigger than 0.05 (Pallant 2010). However, none of the items of interest has Kolmogorov-Smirnov at significant level of 0.05 or above, indicating non-normal distribution.

Mardia's coefficient and Mahalanobis distances are used as well to assist data normality analysis and methods to deal with non-normal distributed data in the next section. The cut-off point of Mardia's coefficient is suggested as 3.0 (Wothke 1996, Lindsay 2012). Critical ratio (c.r.) values of 1.96 or less mean there is non-significant kurtosis (Meno, Hannum et al. 2008, Bian 2011). As seen in Exhibit 5.10, the Mardia's kurtosis is 206.291 with c.r 32.931 far above recommended cut-off points. Thus, it can be declared that the data set is serious non-normal distribution.

Values of Mahalanobis distances could be used to detect outliers, deleting which could improve model normality. It is suggested that if one response has small value in p1 and with p2 bigger than 0.05, this response is not identified as an outlier (Bollen 1987). The left eighty-eight responses are identified as outliers, which can be seen from Exhibit 5.11. Deleting these outliers could enhance data normality; however, it reduces model power and may result in wrong model specification. Thus, in the following data analysis process, models are handled carefully to avoid model specification bias. Bootstrapping with maximum likelihood is used for evaluating model fit (Sweeney, Thompson et al. 2009). In necessary cases, some extreme outliers is deleted to estimate whether there outliers seriously bias models and to justify model fit.

Descriptive Statistics

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ins1	264	-.476	.150	-1.045	.299
Ins2	264	-.218	.150	-1.075	.299
Ins3	264	-.231	.150	-1.242	.299
Ins4	264	-.525	.150	-.874	.299
GovS1	264	-.010	.150	-.758	.299
GovS2	264	-.075	.150	-.810	.299
TrCo1	264	-.768	.150	.331	.299
TrCo2	264	-.681	.150	.153	.299
TrCo3	264	-.787	.150	-.189	.299
ExOp1	264	-.419	.150	-.589	.299
ExOp2	264	-.514	.150	-.145	.299
RT1	264	-.542	.150	-.019	.299
RT2	264	-.733	.150	.248	.299
RT3	264	-.418	.150	.197	.299
In1	264	-.614	.150	.675	.299
In2	264	-.575	.150	.586	.299
In3	264	-.917	.150	1.344	.299
Pro1	264	-.412	.150	.143	.299
Pro2	264	-.209	.150	.453	.299
Pro3	264	-.204	.150	.074	.299
CA1	264	-.082	.150	-.533	.299
CA2	264	.029	.150	-.239	.299
CA3	264	.185	.150	-.537	.299
Aut1	264	-.565	.150	.497	.299
Aut2	264	-.599	.150	.548	.299
Aut3	264	-.630	.150	.509	.299
Aut4	264	-.459	.150	.275	.299
Aut5	264	-.676	.150	.648	.299
Aut6	264	-.459	.150	.088	.299
EOP1	264	.878	.150	.072	.299
EOP2	264	.525	.150	-.563	.299
EOP3	264	.200	.150	-.833	.299
EOP4	264	.371	.150	-.701	.299
MP1	264	-.252	.150	.480	.299
MP2	264	-.212	.150	.980	.299
MP3	264	-.136	.150	-.145	.299
MP4	264	-.096	.150	.039	.299
Valid N (list wise)	264				

Exhibit 5.8: Data Normality Test (1)

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Ins1	.202	264	.000	.892	264	.000
Ins2	.138	264	.000	.922	264	.000
Ins3	.195	264	.000	.907	264	.000
Ins4	.181	264	.000	.898	264	.000
GovS1	.167	264	.000	.942	264	.000
GovS2	.175	264	.000	.939	264	.000
TrCo1	.191	264	.000	.910	264	.000
TrCo2	.186	264	.000	.915	264	.000
TrCo3	.229	264	.000	.892	264	.000
ExOp1	.183	264	.000	.925	264	.000
ExOp2	.162	264	.000	.928	264	.000
RT1	.180	264	.000	.926	264	.000
RT2	.197	264	.000	.908	264	.000
RT3	.178	264	.000	.921	264	.000
In1	.202	264	.000	.886	264	.000
In2	.169	264	.000	.908	264	.000
In3	.213	264	.000	.877	264	.000
Pro1	.151	264	.000	.922	264	.000
Pro2	.183	264	.000	.927	264	.000
Pro3	.192	264	.000	.936	264	.000
CA1	.145	264	.000	.944	264	.000
CA2	.169	264	.000	.947	264	.000
CA3	.158	264	.000	.935	264	.000
Aut1	.154	264	.000	.919	264	.000
Aut2	.180	264	.000	.920	264	.000
Aut3	.181	264	.000	.920	264	.000
Aut4	.190	264	.000	.906	264	.000
Aut5	.166	264	.000	.913	264	.000
Aut6	.152	264	.000	.921	264	.000
EOP1	.264	264	.000	.876	264	.000
EOP2	.215	264	.000	.914	264	.000
EOP3	.159	264	.000	.937	264	.000
EOP4	.173	264	.000	.929	264	.000
MP1	.186	264	.000	.920	264	.000
MP2	.220	264	.000	.904	264	.000
MP3	.158	264	.000	.947	264	.000
MP4	.192	264	.000	.923	264	.000

a. Lilliefors Significance Correction

Exhibit 5.9: Data Normality Test (2)

Variable	min	max	skew	c.r.	kurtosis	c.r.
EOP1	1	7	0.873	5.791	0.048	0.158
EOP2	1	7	0.522	3.464	-0.575	-1.908
EOP3	1	7	0.198	1.316	-0.84	-2.787
EOP4	1	7	0.369	2.449	-0.71	-2.355
ExOp1	1	7	-0.417	-2.764	-0.6	-1.991
ExOp2	1	7	-0.511	-3.392	-0.165	-0.548
GovS1	1	7	-0.01	-0.065	-0.766	-2.54
GovS2	1	7	-0.074	-0.494	-0.818	-2.712
TrCo1	1	7	-0.763	-5.064	0.303	1.003
TrCo2	1	7	-0.677	-4.492	0.127	0.422
TrCo3	1	7	-0.783	-5.191	-0.208	-0.692
Ins1	1	7	-0.473	-3.141	-1.048	-3.476
Ins2	1	7	-0.217	-1.441	-1.077	-3.572
Ins3	1	7	-0.229	-1.522	-1.241	-4.116
Ins4	1	7	-0.522	-3.465	-0.88	-2.918
RT1	1	7	-0.539	-3.572	-0.042	-0.138
RT2	1	7	-0.729	-4.836	0.221	0.733
RT3	1	7	-0.416	-2.756	0.171	0.566
In1	2	7	-0.61	-4.047	0.639	2.12
In2	1	7	-0.571	-3.79	0.552	1.83
In3	1	7	-0.912	-6.048	1.296	4.298
CA1	1	7	-0.082	-0.541	-0.545	-1.808
CA2	1	7	0.029	0.194	-0.258	-0.854
CA3	1	7	0.184	1.223	-0.55	-1.824
Aut1	1	7	-0.562	-3.728	0.465	1.542
Aut3	1	7	-0.626	-4.156	0.477	1.582
Aut4	1	7	-0.457	-3.029	0.248	0.821
Aut5	1	7	-0.672	-4.458	0.613	2.034
Pro1	1	7	-0.409	-2.714	0.118	0.391
Pro2	1	7	-0.208	-1.38	0.422	1.399
Pro3	1	7	-0.203	-1.346	0.05	0.165
MP1	1	7	-0.25	-1.661	0.448	1.487
MP2	1	7	-0.211	-1.4	0.939	3.114
MP3	1	7	-0.136	-0.9	-0.165	-0.548
MP4	1	7	-0.095	-0.633	0.016	0.052
Multivariate					206.291	32.931

Exhibit 5.10: Data Normality Test (3), Mardia's Multivariate Kurtosis

Observation number	Mahalanobis d-squared	p1	p2
154	95.687	.000	.000
129	89.769	.000	.000
163	83.389	.000	.000
252	83.018	.000	.000
87	80.454	.000	.000
247	79.848	.000	.000
227	73.873	.000	.000
70	72.780	.000	.000
84	71.274	.000	.000
220	71.266	.000	.000
246	69.854	.000	.000
63	69.450	.000	.000
146	64.093	.002	.000
226	64.068	.002	.000
85	63.792	.002	.000
69	63.625	.002	.000
133	63.239	.002	.000
115	62.419	.003	.000
61	62.181	.003	.000
250	61.163	.004	.000
67	61.020	.004	.000
12	60.518	.005	.000
122	59.635	.006	.000
36	59.051	.007	.000
37	58.042	.009	.000
91	57.908	.009	.000
6	57.888	.009	.000
47	56.417	.012	.000
178	56.023	.014	.000
167	55.878	.014	.000
160	55.276	.016	.000
137	54.983	.017	.000
224	54.904	.017	.000
147	54.365	.019	.000
258	54.344	.020	.000
240	53.079	.026	.000
99	53.007	.026	.000
108	52.308	.030	.000
80	51.893	.033	.000
190	51.313	.037	.000
31	51.209	.038	.000
235	51.161	.038	.000
97	51.145	.038	.000
142	51.134	.038	.000
244	51.088	.039	.000
23	50.660	.042	.000
188	50.577	.043	.000
134	50.020	.048	.000
228	49.843	.050	.000
59	49.796	.050	.000
238	49.642	.052	.000
232	48.927	.059	.000

Observation number	Mahalanobis d-squared	p1	p2
131	48.243	.067	.000
242	48.103	.069	.000
202	47.464	.078	.000
176	47.242	.081	.000
197	46.972	.085	.000
180	46.916	.086	.000
166	46.616	.091	.000
60	46.501	.093	.000
139	45.985	.101	.000
120	45.296	.114	.000
11	45.245	.115	.000
135	45.234	.115	.000
145	45.108	.118	.000
217	45.001	.120	.000
141	44.876	.122	.000
239	44.585	.129	.000
231	43.931	.143	.000
119	43.846	.145	.000
211	43.361	.157	.000
64	43.228	.160	.000
196	42.935	.168	.000
126	42.631	.176	.000
42	41.985	.194	.000
51	41.935	.195	.000
116	41.827	.199	.000
75	41.539	.207	.000
100	41.345	.213	.001
30	40.836	.229	.003
81	40.654	.235	.005
110	40.313	.247	.011
213	40.247	.249	.010
111	40.181	.251	.009
233	40.168	.252	.006
155	39.928	.260	.010
127	39.901	.261	.008
109	39.456	.277	.027

Exhibit 5.11: Mahalanobis distance (only participants with p2 <0.05 shown here

5.3 Advanced Data Analysis Using AMOS

5.3.1 CFA of One Factor Congeneric Measurement Models --Entrepreneurial Orientation

5.3.1.1 Autonomy

Different from Parallel measures and Tau-equivalent measures, a congeneric measurement releases assumptions of equivalent scores of measures and their errors' variance (Holmes-Smith 2013). That is, for a one factor congeneric model to be accepted as a good fit model, all its indicator variables must represent the same generic true score. The fit statistics can be viewed as confirming the construct validity of the measurement model examined. The Entrepreneurial Orientation construct is comprised of five dimensions: Proactiveness, Innovativeness, Risk Taking, Competitive Aggressiveness, and Autonomy. Following are the results of the analysis for these five dimensions that demonstrate one factor congeneric measurement modelling, using a Structural Equation Modeling (SEM) approach.

All the latent variables were given a scale by fixing its variance to "1" to allow for examination of all factor loadings and their significances. Parameters are estimated using Maximum Likelihood (ML) method and unbiased covariance. The output specifications include:

- Regression Weight including standardised estimates
- Squared multiple correlations
- Sample moments
- Residual moments
- Modification indices
- Factor score weights

Since the examination of residuals acts as an indicator of model fit (Schreiber, Nora et al. 2006), Residual moments are also included in the output. Exhibit 5.12 provides an overview of the one factor congeneric measurement model for the latent variable, Autonomy. It has four manifest variables (variable names appear in brackets):

- Employees are permitted to act and think without interference (Aut1)

- Employees are given freedom and independence to decide on their own how to go about doing their work (Aut3)
- Employees are given freedom to communicate without interference(Aut4)
- Employees are given authority and responsibility to act alone if they think it to be in the best interests of the business (Aut5)

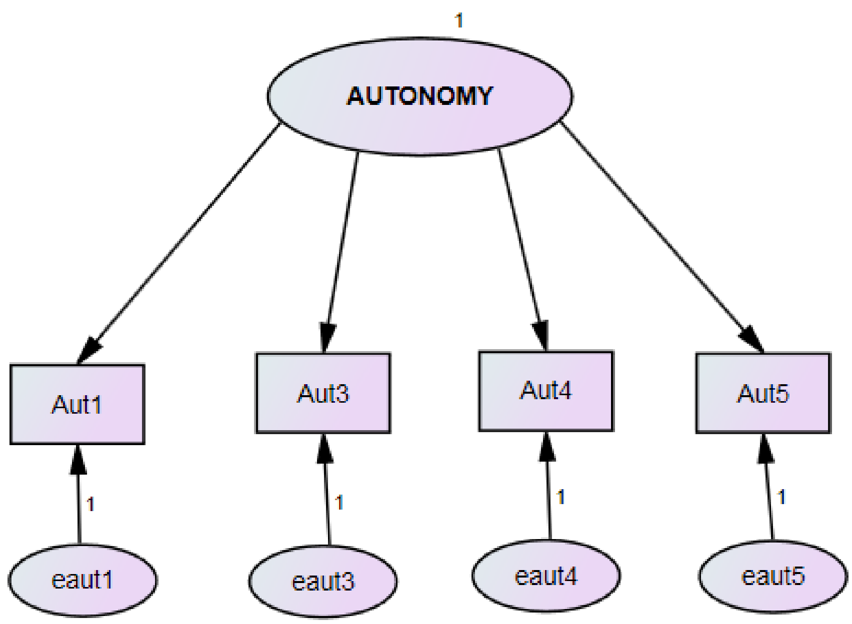


Exhibit 5.12: One Factor Congeneric Model for Autonomy

Exhibit 5.13 shows the Sample Regression Weights including standardised estimates, and Squared Multiple Correlations for latent variable, Autonomy. As can be seen from the un-standardised regression weights, all the values of critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. The Standardised Regression Weights also indicate that all the manifest variables contribute significantly toward the variance of the Autonomy. All the values of Squared Multiple Correlations (suggesting item reliability, R^2) of the four indicator variables are greater than or approximate to 0.5 (Aut4 is 0.491). This suggests that the latent construct accounts for approximately or more than 50% of the variance of each of the four indicators of the latent variable, Autonomy.

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Aut1	<---	AUTONOMY	1.071	.069	15.575	***	
Aut4	<---	AUTONOMY	.825	.066	12.499	***	
Aut5	<---	AUTONOMY	1.097	.071	15.399	***	
Aut3	<---	AUTONOMY	1.160	.066	17.572	***	

Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
Aut1	<---	AUTONOMY	.820
Aut4	<---	AUTONOMY	.701
Aut5	<---	AUTONOMY	.813
Aut3	<---	AUTONOMY	.889

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
Aut5	.662
Aut4	.491
Aut1	.672
Aut3	.790

Exhibit 5.13: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations

Exhibit 5.14 shows variances, sample correlations, Standardised Residual Covariances and eigenvalues for the one-factor congeneric model of Autonomy. The variance of Autonomy was fixed at “1” to give it a scale. The critical ratios for the error variances are greater than 1.96 indicating they are all significantly different from zero. The sample correlations of manifest variables range from 0.579 to 0.734. The reasonably high correlations among the indicator variables suggest that the variables are measuring one latent construct (generally greater than 0.3) (Pallant 2010). Based on eigenvalue greater than one, it shows that a one-factor solution is the best solution. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. If one model is correct, its standardised residuals covariance should be less than two in absolute value (Joreskog and Sorbom 1984). The absolute values of Standardised Residual Covariances of Autonomy range from 0 to 0.263 indicating there is no big discrepancy between actual covariances and implied covariances of indicator variables.

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
AUTONOMY	1.000				
eaut3	.358	.058	6.195	***	
eaut1	.560	.066	8.528	***	
eaut4	.705	.069	10.151	***	
eaut5	.615	.071	8.676	***	

Sample Correlations (Group number 1)

	Aut5	Aut4	Aut1	Aut3
Aut5	1.000			
Aut4	.589	1.000		
Aut1	.654	.579	1.000	
Aut3	.724	.610	.734	1.000

Condition number = 12.060

Eigenvalues

2.950 .460 .346 .245

Standardised Residual Covariances (Group number 1 - Default model)

	Aut5	Aut4	Aut1	Aut3
Aut5	.000			
Aut4	.263	.000		
Aut1	-.170	.056	.000	
Aut3	.018	-.179	.077	.000

Exhibit 5.14: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Autonomy

According to Exhibit 5.15, with a chi-square of 1.509, 2 degrees of freedom and a p-value of 0.470, the model is a good fit model. RMSEA is 0 with PCLOSE of 0.661 indicating very good fit. SRMR is 0.0085 indicating good fit. CFI and TLI are greater than 0.95 indicating good fit. TLI is 1.003 indicating overfit, which may be caused by data non- normal distribution (Hu and Bentler 1998). In conclusion, the good fit statistics indicate the construct validity of the measurement model of Autonomy.

Name	Abbreviation	Acceptable levels	Model fits Results
Chi-square	χ^2 (df, p)	p > 0.05	Chi-square = 1.509 df = 2 P=0.470
Root Mean-Square Error of	RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0 PCLOSE=0.661 LO 90 = 0
Root Mean-square Residual and Standardised	RMR; SRMR	SRMR < 0.06	SRMR=0.0085
Tucker-Lewis Index, Non-Normed Fit	TLI, NNFI or $\rho 2$	TLI > 0.95	TLI=1.003(indicate over fit)
Comparative Fit Index	CFI	CFI > 0.95	CFI=1

Exhibit 5.15: Model Fit Statistics for Autonomy

5.3.1.2 Risk Taking

Exhibit 5.14 provides an overview of the one factor congeneric measurement model of the latent variable, Risk Taking. There are three manifest variables (variable names appear in brackets):

- The term ‘risk taker’ is considered a positive attribute for people in our business (RT1)
- People in our business are encouraged to take calculated risks with new ideas (RT2)
- Our business emphasises both exploration and experimentation for opportunities (RT3)

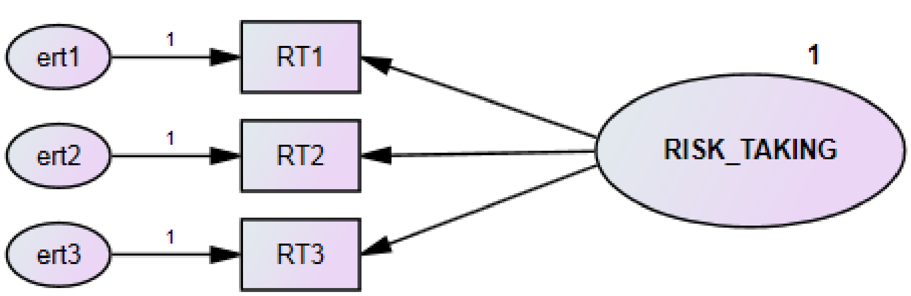


Exhibit 5.16: One Factor Congeneric Model for Risk Taking

The latent variable Risk Taking is a function of only three observed variables: RT1, RT2 and RT3 thus, its one factor congeneric measurement model could not be analysed (at least four indicator items are required). The construct validity of Risk Taking could be examined by pairing it with Autonomy whose construct validity has already been examined (Cunningham 2008). The two-factor (Autonomy, Risk Taking) confirmatory factory analysis (CFA), shown in Exhibit 5.15, is to investigate whether these four items measuring Autonomy and three items measuring Risk Taking reflect two underlying traits.

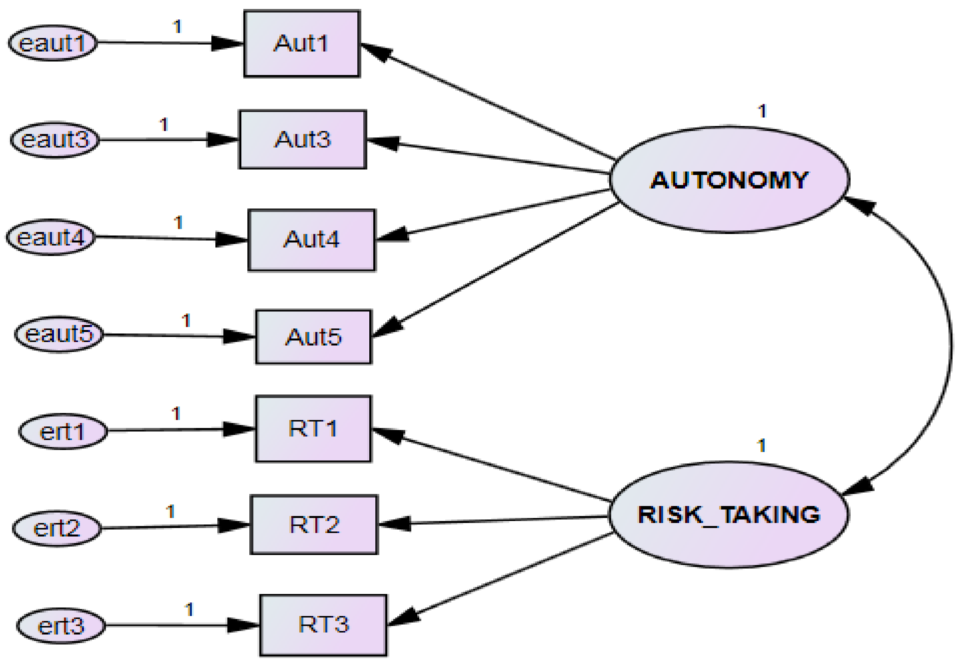


Exhibit 5.17: Paired One Factor Congeneric Model for Autonomy and Risk Taking

Exhibit 5.18 shows the Sample Regression Weights including standardised estimates, and Squared Multiple Correlations of the latent variables of Autonomy and Risk Taking. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. The Standardised Regression Weights also indicate that all the indicator variables contribute significantly toward the variance of Risk Taking. The squared multiple correlations (suggesting item reliability, R^2) for three indicator variables of Risk Taking range from 0.348 to 0.780. The latent construct accounts for 78% of the variance in RT2, but explains only 34.8% of the variance in RT3. Although a value of squared multiple correlations between 0.3 and 0.5 indicates that the item is a weak measure of the construct but still adequate (Holmes-Smith 2013). Thus, all the indicator variables are good measurements of the latent variable, Risk Taking. The covariance between Autonomy and Risk Taking is 0.299. The two factors were given a scale by fixing their covariance to one. Thus, this covariance is standardised, which means the value of the covariance-between these two variables is also the value of their correlation.

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Aut1	<---	AUTONOMY	1.072	.069	15.606	***	
Aut4	<---	AUTONOMY	.823	.066	12.475	***	
Aut5	<---	AUTONOMY	1.093	.071	15.348	***	
Aut3	<---	AUTONOMY	1.163	.066	17.660	***	
RT1	<---	RT	1.066	.088	12.187	***	
RT3	<---	RT	.690	.072	9.524	***	
RT2	<---	RT	1.179	.082	14.440	***	

Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
Aut1	<---	AUTONOMY	.820
Aut4	<---	AUTONOMY	.700
Aut5	<---	AUTONOMY	.811
Aut3	<---	AUTONOMY	.891
RT1	<---	RT	.748
RT3	<---	RT	.590
RT2	<---	RT	.883

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
RT3	.348
RT1	.560
RT2	.780
Aut5	.658
Aut4	.489
Aut1	.673
Aut3	.794

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
AUTONOMY	<-->	RT	.292	.066	4.429	***	

Correlations: (Group number 1 - Default model)

	Estimate
AUTONOMY <--> RT	.292

Exhibit 5.18: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations

Exhibit 5.19 shows variances of latent variables and error terms of indicator variables, sample covariances, sample correlations, and eigenvalues for the one-factor congeneric model of Risk Taking. The variances of Autonomy and Risk Taking were fixed at “1” to give them scales. The critical ratios for the error variances are greater than 1.96 and they are all significantly different from zero indicating they all significantly contribute to the constructs. The sample correlations between the observed items of Autonomy and Risk Taking range from 0.075 to 0.734. Based on eigenvalue greater than one, a two-factor solution is the best solution. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. If the model is correct, the residuals should be less than two in absolute value (Joreskog and Sorbom 1984). The absolute values of Standardised Residual Covariances range from 0 to 1.056 (the value of 1.056 is the standardised residual covariance between RT3 and Aut1) indicating there is no substantial discrepancy between actual covariances and implied covariances.

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
AUTONOMY	1.000				
RT	1.000				
eaut3	.352	.057	6.167	***	
eaut1	.559	.065	8.557	***	
eaut4	.707	.069	10.181	***	
eaut5	.622	.071	8.768	***	
ert2	.393	.123	3.183	.001	
ert1	.893	.125	7.145	***	
ert3	.894	.089	10.069	***	

Sample Covariances (Group number 1)

	RT3	RT1	RT2	Aut5	Aut4	Aut1	Aut3
RT3	1.370						
RT1	.742	2.030					
RT2	.811	1.257	1.782				
Aut5	.178	.219	.351	1.817			
Aut4	.245	.191	.243	.934	1.385		
Aut1	.115	.350	.424	1.153	.890	1.708	
Aut3	.295	.391	.414	1.275	.937	1.253	1.705

Condition number = 14.229

Eigenvalues

5.488 3.129 .953 .670 .597 .575 .386

Determinant of sample covariance matrix = 1.452

Sample Correlations (Group number 1)

	RT3	RT1	RT2	Aut5	Aut4	Aut1	Aut3
RT3	1.000						
RT1	.445	1.000					
RT2	.519	.661	1.000				
Aut5	.113	.114	.195	1.000			
Aut4	.178	.114	.154	.589	1.000		
Aut1	.075	.188	.243	.654	.579	1.000	
Aut3	.193	.210	.237	.724	.610	.734	1.000

Condition number = 14.412

Eigenvalues

3.250 1.794 .631 .430 .340 .329 .226

Standardised Residual Covariances (Group number 1 - Default model)

	RT3	RT1	RT2	Aut5	Aut4	Aut1	Aut3
RT3	.000						
RT1	.054	.000					
RT2	-.025	.001	.000				
Aut5	-.435	-1.007	-.222	.000			
Aut4	.925	-.620	-.413	.303	.000		
Aut1	-1.056	.140	.499	-.150	.066	.000	
Aut3	.638	.247	.121	.024	-.181	.048	.000

Exhibit 5.19: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model of Risk Taking

Exhibit 5.20 presents the model fit statistics of Autonomy and Risk Taking. Since the model fit of Autonomy has already been examined, these fit statistics indicate the fit of the measurement model of Risk Taking. According to Exhibit 5.20, with a chi-square of 21.302, 13 degrees of freedom and a p-value of 0.067, the model is a fit model. RMSEA is 0.049 with PCLOSE of 0.468 indicating very good fit. SRMR is 0.0257 indicating good fit. CFI and TLI are greater than 0.95 indicating good fit. The fit statistics indicate the measurement model of Risk Taking is a good measurement construct for indicator variables of RT1, RT2 and RT3.

Fit Indices	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	$p > 0.05$	Chi-square = 21.302 df = 13 P=0.067
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.049 PCLOSE=0.468 LO 90 = 0
RMR; SRMR	SRMR < 0.06	SRMR=0.0257
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.984
CFI	CFI > 0.95	CFI=0.990

Exhibit 5.20: Model Fit Statistics of Autonomy and Risk Taking

Discriminant Validity: The weak correlation between Autonomy and Risk Taking is 0.292, which could be used for judging discriminant validity. However, this arbitrary method has been criticised frequently in literature. In this research, Fornell and Larcker's (1981) Average Variance Extracted (AVE) Method is used to test construct discriminant validity. Fornell and Larcker (1981) suggested that discriminant validity holds if the average variance extracted from two constructs exceeds the square of the correlation between the constructs. The variance extracted for each pair of constructs is computed using the following formula:

$$\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \theta_i}$$

where λ_i is the standardised loading for each observed variable and θ_i is the error variance associated with each observed variable. The discriminant validity testing results are shown in Exhibit 5.21. The results represent that average variance extracted (0.487) is greater than the squared correlation between the constructs (0.085) so discriminant validity holds, indicating the measurement models of Autonomy and Risk Taking are measuring theoretically two different concepts.

Factor	Items	Standardised Factor loadings (l)	l^2	Error variance	Variance Extracted
Autonomy	Aut1	0.82	0.672	0.559	
	Aut4	0.7	0.490	0.707	
	Aut5	0.811	0.658	0.622	
	Aut3	0.891	0.794	0.352	
	Sum		2.614	2.24	
Risk Taking				4.854	0.539
	RT1	0.748	0.560	0.893	
	RT3	0.59	0.348	0.894	
	RT2	0.883	0.780	0.393	
	Sum		1.687	2.18	
				3.867	0.436
Ave variance extracted	0.487	Average variance extracted (0.487) is greater than the squared correlation between the constructs (0.085) so discriminant validity holds. That is, these two constructs are different constructs			
Correlation between factors	0.292				
Correlation squared	0.085				

Exhibit 5.21: Discriminant Validity Test for Autonomy and Risk Taking

5.3.1.3 Innovativeness

Exhibit 5.22 provides an overview of the one factor congeneric measurement model for the latent variable, Innovativeness. There are three manifest variables (variable names appear in brackets):

- Introduce improvements and innovations in our business (In1)
- Creative in its methods of operation (In2)
- Seeks out new ways to do things (In3)

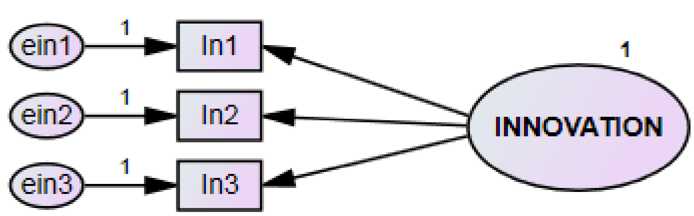


Exhibit 5.22: One Factor Congeneric Model for Innovativeness

The latent variable Innovativeness is a function of the three observed variables: In1, In2 and In3. Similar to Risk Taking, there is no positive degree of freedom for the measurement model of Innovativeness since it just has three items. Thus, its construct is paired with Autonomy to test construct validity as well. It fit indices show the construct validity of Risk Taking since the construct validity of Autonomy has already been tested. The graph is demonstrated in Exhibit 5.23.

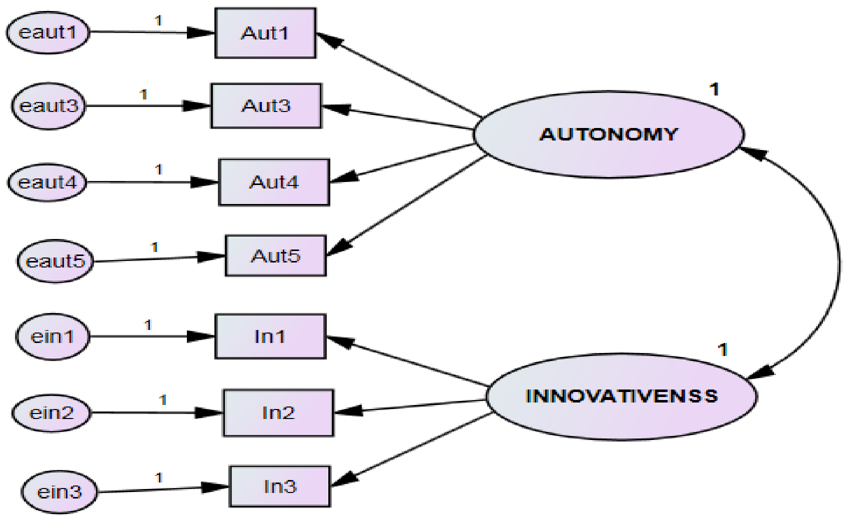


Exhibit 5.23: Paired One Factor Congeneric Model for Autonomy and Innovativeness

Exhibit 5.24 shows Sample Regression Weights including standardised estimates, and Squared Multiple Correlations of latent variables Autonomy and Innovativeness. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. The Standardised Regression Weights also indicate that all the indicator variables contribute significantly toward the variance of Innovativeness. The values of the Squared Multiple Correlations (suggesting item reliability, R^2) of these three indicator variables range from 0.638 to 0.855. The latent construct accounts for more than 60% of the variance in each of the six indicators. The covariance between Autonomy and Innovativeness is 0.220. The two factors were given scales by fixing their covariance to one. Thus, this covariance is standardised, which means the covariance is also the correlation between the two factors indicating the correlation between Autonomy and Innovativeness is very low, only 0.22.

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Aut1	<---	AUTONOMY	1.071	.069	15.564	***	
Aut4	<---	AUTONOMY	.828	.066	12.563	***	
Aut5	<---	AUTONOMY	1.096	.071	15.385	***	
Aut3	<---	AUTONOMY	1.160	.066	17.575	***	
In2	<---	INNOVATIVENESS	1.095	.058	18.863	***	
In3	<---	INNOVATIVENESS	1.012	.057	17.822	***	
In1	<---	INNOVATIVENESS	.896	.059	15.202	***	

Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
Aut1	<---	AUTONOMY	.819
Aut4	<---	AUTONOMY	.703
Aut5	<---	AUTONOMY	.813
Aut3	<---	AUTONOMY	.888
In2	<---	INNOVATIVENESS	.925
In3	<---	INNOVATIVENESS	.892
In1	<---	INNOVATIVENESS	.799

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
In3	.795
In2	.855
In1	.638
Aut5	.660
Aut4	.495
Aut1	.671
Aut3	.789

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
AUTONOMY	<-->	INNOVATIVENESS	.220	.065	3.390	***	

Correlations: (Group number 1 - Default model)

			Estimate
AUTONOMY	<-->	INNOVATIVENESS	.220

Exhibit 5.24: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations:

Exhibit 5.25 shows variances of latent variables and error terms of indicator variables, sample covariance, sample correlations, and eigenvalues for the one-factor congeneric model of Innovativeness. The variances of Autonomy and Innovativeness were fixed at “1” to give them scales. The critical ratios for the error variances are greater than 1.96 and they are all significantly different from zero. Sample correlations between the observed items of Autonomy and Innovativeness range from 0.130 to 0.826. The low values of correlations are clustered at the left bottom corner of the table where the correlations between indicators of Autonomy and indicators of Innovativeness are. Based on eigenvalue greater than one, a two-factor solution is the best solution. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. The absolute values of Standardised Residual Covariances are from 0 to 0.988 (the highest value is between In3 and Aut4), indicating there is no big discrepancy between actual covariances and implied covariances.

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
AUTONOMY	1.000				
INNOVATIVENESS	1.000				
eaut3	.359	.058	6.239	***	
eaut1	.562	.066	8.559	***	
eaut4	.700	.069	10.137	***	
eaut5	.617	.071	8.707	***	
ein1	.456	.048	9.552	***	
ein2	.203	.043	4.732	***	
ein3	.264	.041	6.510	***	

Sample Covariances (Group number 1)

	In3	In2	In1	Aut5	Aut4	Aut1	Aut3
In3	1.288						
In2	1.110	1.403					
In1	.903	.982	1.259				
Aut5	.241	.207	.209	1.817			
Aut4	.267	.283	.327	.934	1.385		
Aut1	.195	.213	.286	1.153	.890	1.708	
Aut3	.258	.236	.318	1.275	.937	1.253	1.705

Condition number = 23.072

Eigenvalues

5.298 2.956 .657 .629 .427 .369 .230

Determinant of sample covariance matrix = .234

Sample Correlations (Group number 1)

	In3	In2	In1	Aut5	Aut4	Aut1	Aut3
In3	1.000						
In2	.826	1.000					
In1	.709	.739	1.000				
Aut5	.158	.130	.138	1.000			
Aut4	.199	.203	.248	.589	1.000		
Aut1	.131	.138	.195	.654	.579	1.000	
Aut3	.174	.152	.217	.724	.610	.734	1.000

Condition number = 19.854

Eigenvalues

3.371 2.105 .455 .373 .285 .241 .170

Standardised Residual Covariances (Group number 1 - Default model)

	In3	In2	In1	Aut5	Aut4	Aut1	Aut3
In3	.000						
In2	.013	.000					
In1	-.040	.001	.000				
Aut5	-.029	-.569	-.072	.000			
Aut4	.988	.958	1.999	.240	.000		
Aut1	-.469	-.463	.821	-.155	.032	.000	
Aut3	-.002	-.452	.970	.029	-.207	.087	.000

Exhibit 5.25: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Innovativeness

Exhibit 5.26 presents the model fit statistics of Autonomy and Innovativeness. Since the model fit of Autonomy has already been examined, these fit statistics indicates the fit indices of the Innovativeness measurement model. According to Exhibit 5.26, with a chi-square of 15.993, 13 degree of freedom and a p-value of 0.249, the model is a good fit model. RMSEA is 0.03 with PCLOSE of 0.747 indicating very good fit. SRMR is 0.0346 indicating good fit. CFI and TLI are greater than 0.95

indicating good fit. The fit statistics indicate the measurement model of Innovativeness is a good construct for In1, In2 and In3.

Fit Indices	Acceptable levels	Model fits Results
χ^2 (df, p)	p > 0.05	Chi-square = 15.993 df = 13 P=0.249
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.03 PCLOSE=0.747 LO 90 = 0
RMR; SRMR	SRMR < 0.06	SRMR=0.0346
TLI, NNFI or $\rho 2$	TLI > 0.95	TLI=0.996
CFI	CFI > 0.95	CFI=0.997

Exhibit 5.26: Model Fit Statistics for Autonomy and Innovativeness

Discriminant Validity: Fornell and Larcker (1981) suggested that discriminant validity holds if the average variance extracted for two constructs exceeds the square of the correlation between the constructs. The variance extracted for each pair of constructs is computed using the following formula:

$$\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \theta_i}$$

where λ_i is the standardised loading for each observed variable and θ_i is the error variance associated with each observed variable. Having computed the variance extracted for the two constructs, the average of these two figures is compared with the square of the correlation between Autonomy and Innovativeness. If the average variance extracted from the two constructs exceeds the square of the correlation between the two constructs, then it can be concluded that the two factors display discriminant validity. The results of AVE methods are shown in Exhibit 5.27. The Average variance extracted (0.626) of Autonomy and Innovativeness is greater than the squared correlation between the constructs (0.048), so discriminant validity holds indicating the two measurement models of Autonomy and Innovativeness are theoretically two different concepts.

Factor	Items	Standardised Factor Loadings(l)	l^2	Error Variance	Variance Extracted
Autonomy	Aut1	0.819	0.671	0.562	
	Aut4	0.703	0.494	0.7	
	Aut5	0.813	0.661	0.617	
	Aut3	0.888	0.789	0.359	
	Sum		2.614	2.238	0.539
				4.852	
Innovativeness	In2	0.925	0.856	0.203	
	In3	0.892	0.796	0.264	
	In1	0.799	0.638	0.456	
	Sum		2.290	0.923	
				3.213	0.713
Ave variance extracted	0.626				
Correlation between factors	0.22	Average variance extracted (0.626) is greater than the squared correlation between the constructs (0.048) so discriminant validity holds. That is, these two constructs are different constructs			
Correlation squared	0.0484				

Exhibit 5.27: Discriminant Validity Test for Autonomy and Innovativeness

5.3.1.4 Proactiveness

Exhibit 5.28 provides an overview of the one factor congeneric measurement model for the latent variable, Proactiveness. The latent variable of Proactiveness has three manifest variables (variable names appear in brackets):

- Try to take the initiative in every situation (e.g. against competitors, in projects and when working with others) (Pro1)
- Excited at identifying opportunities (Pro2)
- Initiate actions to which other organisations' respond (Pro3)

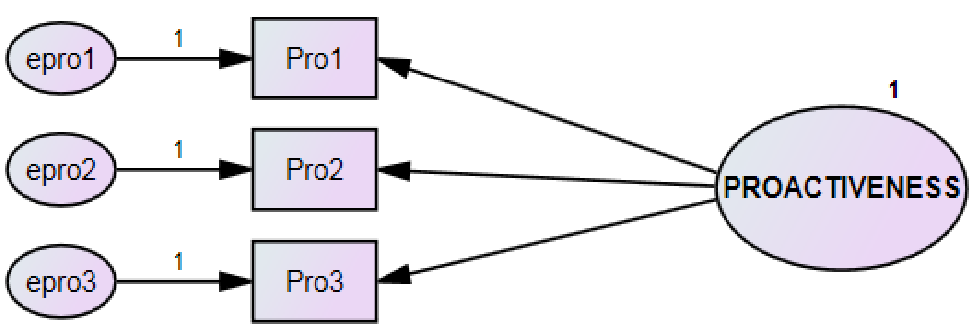


Exhibit 5.28: One Factor Congeneric Model for Proactiveness

The latent variable Proactiveness is a function of the observed variables: Pro1, Pro2, and Pro3. Similar to the measurement model of Risk Taking, there is no positive degree of freedom for the measurement model of Proactiveness since it has just three observed variables. Thus, the measurement model of Proactiveness is paired with the measurement model of Autonomy since its structure validity has already been tested, as shown in Exhibit 5.29.

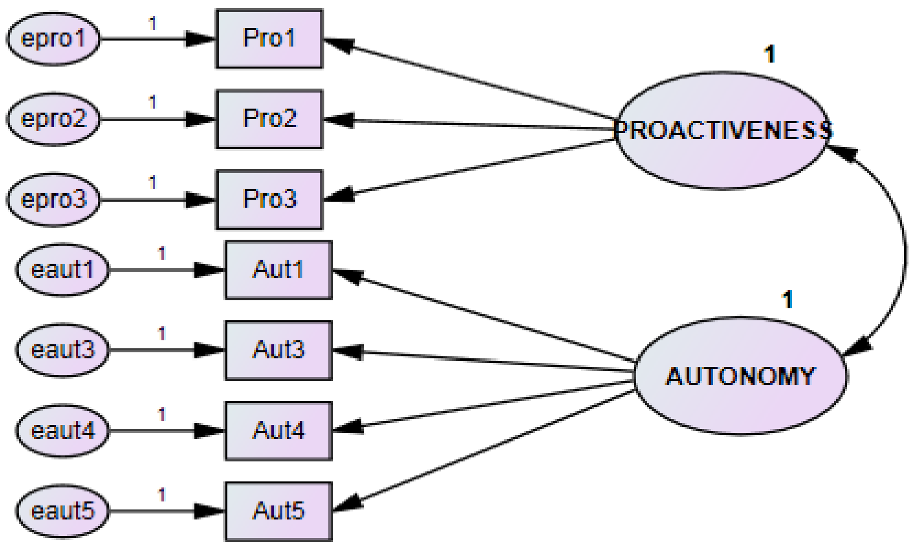


Exhibit 5.29: Paired One Factor Congeneric Model for Autonomy and Proactiveness

Exhibit 5.30 shows the Sample Regression Weights including standardised estimates, Squared Multiple Correlations, covariance and correlations of latent variables Autonomy and Proactiveness. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. The Standardised Regression Weights ranging from 0.796 to 0.852 also indicate that all the indicator variables contribute significantly toward the variance of Proactiveness. Squared Multiple Correlations (suggest item reliability, R^2) of three indicators range from 0.634 to 0.726. It indicates that latent construct accounts for more than 60% of the variance in each of the six indicators. The covariance between Autonomy and Proactiveness is 0.187. The two factors were given a scale by fixing their variances to one. Thus, this covariance is standardised, which means the covariance is also the correlation between the two factors.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P	Label
Pro3	<---	PROACTIVENESS	1.096	.071	15.528	***	par_1
Pro2	<---	PROACTIVENESS	.982	.062	15.957	***	par_2
Pro1	<---	PROACTIVENESS	.996	.068	14.603	***	par_3
Aut4	<---	AUTONOMY	.824	.066	12.491	***	par_4
Aut3	<---	AUTONOMY	1.163	.066	17.631	***	par_5
Aut1	<---	AUTONOMY	1.071	.069	15.573	***	par_6
Aut5	<---	AUTONOMY	1.095	.071	15.367	***	par_8

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
Pro3	<---	PROACTIVENESS	.835
Pro2	<---	PROACTIVENESS	.852
Pro1	<---	PROACTIVENESS	.796
Aut4	<---	AUTONOMY	.700
Aut3	<---	AUTONOMY	.890
Aut1	<---	AUTONOMY	.819
Aut5	<---	AUTONOMY	.812

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
Aut5	.659
Aut1	.672
Aut3	.793
Aut4	.491
Pro1	.634
Pro2	.726
Pro3	.697

Covariances: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P	Label
PROACTIVENESS	<-->	AUTONOMY	.187	.068	2.760	.006	par_7

Correlations: (Group number 1 - Congeneric)

			Estimate
PROACTIVENESS	<-->	AUTONOMY	.187

Exhibit 5.30: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations

Exhibit 5.31 shows variances of latent variables and error terms of indicator variables, sample covariance, sample correlations, and eigenvalues for the one-factor congeneric model of Proactiveness. The variances of Autonomy and Proactiveness were fixed at "1" to give them scales. The critical ratios for the error variances are greater than 1.96 and they are all significantly different from zero. Sample correlations between the observed items of Autonomy and the observed variables of Proactiveness range from 0.040 to 0.724. The low values of correlations are clustered at the left bottom corner of the table where the correlations between indicators of Autonomy and indicators of Proactiveness are. Based on eigenvalue greater than one, a two-factor solution is the best solution. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. If the model is correct, the residuals should be less than two in absolute value (Joreskog and Sorbom 1984). Pro3 has negative covariances with Aut4 and Aut5 indicating opposite movement tendency. The absolute values of Standardised Residual Covariances range from 0 to 1.005 (the highest value is between Pro3 and Aut4) indicating there is no big discrepancy between actual covariances and implied covariances.

Variances: (Group number 1 - Congeneric)

	Estimate	S.E.	C.R.	P	Label
PROACTIVENESS	1.000				
AUTONOMY	1.000				
epro3	.523	.074	7.048	***	par_9
epro2	.363	.057	6.423	***	par_10
epro1	.572	.070	8.232	***	par_11
eaut4	.706	.069	10.164	***	par_12
eaut3	.353	.057	6.152	***	par_13
eaut1	.561	.066	8.554	***	par_14
eaut5	.619	.071	8.725	***	par_15

Sample Covariances (Group number 1)

	Aut5	Aut1	Aut3	Aut4	Pro1	Pro2	Pro3
Aut5	1.817						
Aut1	1.153	1.708					
Aut3	1.275	1.253	1.705				
Aut4	.934	.890	.937	1.385			
Pro1	.227	.286	.321	.225	1.564		
Pro2	.164	.163	.280	.174	.972	1.327	
Pro3	.114	.178	.152	.062	1.094	1.080	1.725

Condition number = 15.103

Eigenvalues

5.219 3.364 .680 .614 .535 .474 .346

Determinant of sample covariance matrix = .643

Sample Correlations (Group number 1)

	Aut5	Aut1	Aut3	Aut4	Pro1	Pro2	Pro3
Aut5	1.000						
Aut1	.654	1.000					
Aut3	.724	.734	1.000				
Aut4	.589	.579	.610	1.000			
Pro1	.135	.175	.197	.153	1.000		
Pro2	.106	.108	.186	.128	.674	1.000	
Pro3	.064	.104	.089	.040	.666	.714	1.000

Condition number = 14.806

Eigenvalues

3.183 2.145 .466 .357 .331 .303 .215

Standardised Residual Covariances (Group number 1 - Congeneric)

	Aut5	Aut1	Aut3	Aut4	Pro1	Pro2	Pro3
Aut5	.000						
Aut1	-.151	.000					
Aut3	.017	.063	.000				
Aut4	.283	.065	-.187	.000			
Pro1	.226	.857	1.037	.782	.000		
Pro2	-.381	-.354	.714	.266	-.056	.000	
Pro3	-1.001	-.386	-.805	-1.115	.014	.034	.000

Exhibit 5.31: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Proactiveness

Exhibit 5.32 presents the model fit statistics for Autonomy and Proactiveness. Since the model fit of Autonomy has already been examined, these fit statistics indicate the fit status of the measurement model of Proactiveness. According to Exhibit 5.32, with a chi-square of 17.791, 13 degrees of freedom and a p-value of 0.166, the model is a fit model. RMSEA is 0.037 with PCLOSE of 0.665 indicating very good fit. SRMR is 0.0301 indicating good fit. CFI and TLI are greater than 0.95 indicating good fit. In conclusion, the fit statistics indicate the measurement model of Proactiveness is a good construct for the observable variables of Pro1, Pro2 and Pro3.

Fit Indices	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	p > 0.05	Chi-square = 17.791 df = 13 P=0.166
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.037 PCLOSE=0.655 LO 90 = 0
RMR	SRMR < 0.06	SRMR=0.0301
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.992
CFI	CFI > 0.95	CFI=0.995

Exhibit 5.32: Model Fit Statistics for Autonomy and Proactiveness

Discriminant Validity: The correlation between Autonomy and Proactiveness is 0.187 indicating their two measurement models are very unlikely a one concept measurement. This judgement is arbitrary. Fornell and Larcker (1981) suggested that discriminant validity holds if the average variance extracted for two constructs exceeds the square of the correlation between the constructs. The variance extracted for each pair of constructs is computed using the following formula:

$$\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \theta_i}$$

where λ_i is the standardised loading for each observed variable and θ_i is the error variance associated with each observed variable. Having computed the variance extracted for the two constructs, the average of these two figures is compared with the square of the correlation between Autonomy and Proactiveness. If the average variance extracted from the two constructs exceeds the square of the correlation between the two constructs, then it can be concluded that the two factors display discriminant validity. The results of the AVE method are shown in Exhibit 5.33. The Average variance extracted (0.562) of Autonomy and Proactiveness is greater than the squared correlation between the constructs (0.035) so discriminant validity holds, suggesting the two measurement models measure two conceptually different constructs.

Factor	Items	Standardised Factor Loadings (l)	l^2	Error Variance	Variance Extracted
Autonomy	Aut4	0.7	0.490	0.706	
	Aut3	0.89	0.792	0.353	
	Aut1	0.819	0.671	0.561	
	Aut5	0.812	0.659	0.619	
	Sum		2.612	2.239	
Proactiveness				4.851	0.538
	Pro3	0.835	0.697	0.523	
	Pro2	0.852	0.726	0.363	
	Pro1	0.796	0.634	0.572	
	Sum		2.057	1.458	
				3.515	0.585
Ave variance extracted	0.562	Average variance extracted (0.562) is far greater than the squared correlation between the constructs (0.037) so discriminant validity holds. That is these two constructs are different constructs			
Correlation between factors	0.187				
Correlation squared	0.035				

Exhibit 5.33: Discriminant Validity Test for Autonomy and Proactiveness

5.3.1.5 Competitive Aggressiveness

Exhibit 5.34 provides an overview of the one factor congeneric measurement model for the latent variable, Competitive Aggressiveness. The latent variable of Competitive Aggressiveness has three manifest variables (variable names appear in brackets):

- Business is intensely competitive (CA1)
- Takes a bold or aggressive approach when competing (CA2)
- Try to undo and out-manoeuvre the competition as best as we can (CA3)

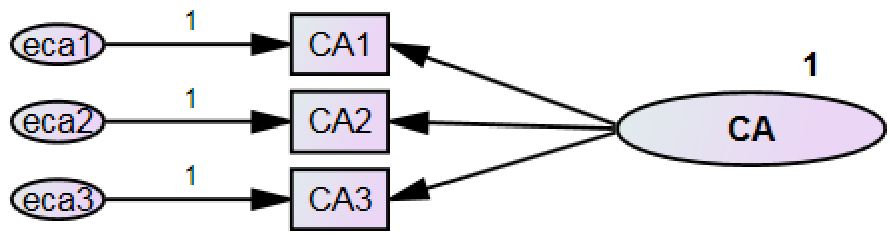


Exhibit 5.34: One Factor Congeneric Model for Competitive Aggressiveness

The latent variable Competitive Aggressiveness is a function of the observed variables: CA1, CA2, and CA3. Similar to the measurement model of Risk Taking, there is no positive degree of freedom for the measurement model of Competitive Aggressiveness since it just has three observed variables. Thus, its measurement model is paired with the measurement model of Autonomy whose structure validity has already been tested, as shown in Exhibit 5.35.

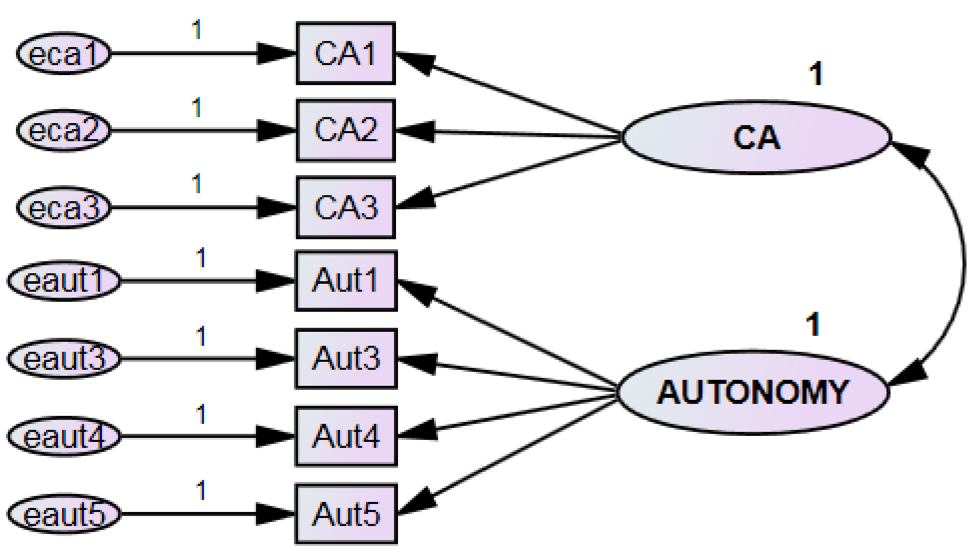


Exhibit 5.35: Paired One Factor Congeneric Model for Autonomy and Competitive Aggressiveness

Exhibit 5.36 shows the Sample Regression Weights including standardised estimates, Squared Multiple Correlations, covariance and correlations of latent variables Autonomy and Competitive Aggressiveness. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. Standardised Regression Weights range from 0.727 to 0.976 indicating that all the indicator variables contribute significantly toward the variance of Competitive Aggressiveness. The squared multiple correlations (suggest item reliability, R^2) for three indicator variables are 0.528 (CA1), 0.952 (CA2), and 0.559 (CA3) indicating the observed variable CA2 dominates the measurement construct. The covariance between Autonomy and Competitive Aggressiveness is 0.187. The two factors were given scales by fixing their variances to one. Thus, this covariance is standardised, which means the covariance is also the correlation between the two factors.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P	Label
CA3	<---	CA	1.175	.088	13.339	***	par_1
CA2	<---	CA	1.385	.073	18.859	***	par_2
CA1	<---	CA	1.090	.085	12.890	***	par_3
Aut4	<---	AUTONOMY	.823	.066	12.461	***	par_4
Aut3	<---	AUTONOMY	1.163	.066	17.643	***	par_5
Aut1	<---	AUTONOMY	1.070	.069	15.559	***	par_6
Aut5	<---	AUTONOMY	1.096	.071	15.395	***	par_7

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
CA3	<---	CA	.748
CA2	<---	CA	.976
CA1	<---	CA	.727
Aut4	<---	AUTONOMY	.699
Aut3	<---	AUTONOMY	.891
Aut1	<---	AUTONOMY	.819
Aut5	<---	AUTONOMY	.813

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
Aut5	.661
Aut1	.671
Aut3	.793
Aut4	.489
CA1	.528
CA2	.952
CA3	.559

Covariances: (Group number 1 - Congeneric)

	Estimate	S.E.	C.R.	P	Label
CA <--> AUTONOMY	.181	.065	2.805	.005	par_8

Correlations: (Group number 1 - Congeneric)

	Estimate
CA <--> AUTONOMY	.181

Exhibit 5.36: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations

Exhibit 5.37 presents variances of latent variables and error terms of indicator variables, sample covariance, sample correlations, and eigenvalues for the one-factor congeneric model of Competitive Aggressiveness. The variances of Autonomy and Competitive Aggressiveness were fixed at "1" to give them scales. The critical ratio for the error variance of ca2 is less than 1.96 and its p value is also not significant (greater than 0.05). Sample correlations between the observed items of Autonomy and Competitive Aggressiveness range from 0.012 to 0.734. The low values of correlations are clustered at the left bottom corner of the table where the correlations between indicators of Autonomy and indicators of Competitive Aggressiveness are. Based on eigenvalue greater than one, there are actually three factors. Thus, the model needs re-specification. Standardised Residual Covariances show the residuals among the observed variables of Competitive Aggressiveness are all very small. The biggest absolute value of Standardised Residual Covariance between aut4 and ca3 is 1.331. However this standardized residual covariance is still under the threshold of 2 (Joreskog and Sorbom 1984).

Variances: (Group number 1 - Congeneric)

	Estimate	S.E.	C.R.	P	Label
CA	1.000				
AUTONOMY	1.000				
eca3	1.089	.121	9.038	***	par_9
eca2	.097	.103	.944	.345	par_10
eca1	1.062	.112	9.439	***	par_11
eaut4	.708	.070	10.176	***	par_12
eaut3	.352	.057	6.139	***	par_13
eaut1	.563	.066	8.571	***	par_14
eaut5	.616	.071	8.707	***	par_15

Sample Covariances (Group number 1)

	Aut5	Aut1	Aut3	Aut4	CA1	CA2	CA3
Aut5	1.817						
Aut1	1.153	1.708					
Aut3	1.275	1.253	1.705				
Aut4	.934	.890	.937	1.385			
CA1	.204	.134	.184	.225	2.250		
CA2	.272	.255	.336	.119	1.510	2.016	
CA3	.270	.110	.369	.023	1.285	1.628	2.471

Condition number = 14.827

Eigenvalues

5.815 4.313 1.141 .655 .595 .442 .392

Determinant of sample covariance matrix = 1.934

Sample Correlations (Group number 1)

	Aut5	Aut1	Aut3	Aut4	CA1	CA2	CA3
Aut5	1.000						
Aut1	.654	1.000					
Aut3	.724	.734	1.000				
Aut4	.589	.579	.610	1.000			
CA1	.101	.068	.094	.127	1.000		
CA2	.142	.137	.181	.071	.709	1.000	
CA3	.128	.054	.180	.012	.545	.729	1.000

Condition number = 15.273

Eigenvalues

3.130 2.150 .552 .389 .340 .234 .205

Standardised Residual Covariances (Group number 1 - Congeneric)

	Aut5	Aut1	Aut3	Aut4	CA1	CA2	CA3
Aut5	.000						
Aut1	-.155	.000					
Aut3	.002	.066	.000				
Aut4	.288	.085	-.175	.000			
CA1	-.101	-.637	-.376	.567	.000		
CA2	-.025	-.118	.382	-.842	.001	.000	
CA3	.281	-.924	.953	-1.331	.019	-.002	.000

Exhibit 5.37: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Competitive Aggressiveness

Exhibit 5.38 presents the model fit statistics of Autonomy and Competitive Aggressiveness. Since the model fit of Autonomy has already been examined, these fit statistics indicate the fit status of Competitive Aggressiveness measurement model. According to Exhibit 5.38, with a chi-square of 26.469, 13 degree of freedom, p-values of 0.015 this model is not a good fit model. The Bollen-Stine bootstrap p value is 0.186 indicating model fit. RMSEA is 0.063 with LO of 0.027 indicating poor fit. The PCLOSE of 0.665 indicates model fit. SRMR is 0.0276 indicating model fit. CFI and TLI are greater than 0.95 indicating model fit. The fit statistics indicate the measurement model of Competitive Aggressiveness is not a very good measurement model for CA1, CA2, and CA3.

Fit Indices	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	p > 0.05	Chi-square = 26.469 df = 13 P=0.015 Bollen-Stine bootstrap p = 0.186
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.063 PCLOSE=0.241 LO 90 = 0.027
RMR; SRMR	SRMR < 0.06	SRMR=0.0276
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.977
CFI	CFI > 0.95	CFI=0.986

Exhibit 5.38: Model Fit Statistics for Autonomy and Proactiveness

The modification indices in Exhibit 5.39 show that eca3 is the problematic one. Exhibit 5.39 indicates that the chi-square statistic will drop by at least 13.318 (6.212+7.106) if we covariance eca3 with eaut1 and eau3. The numbers of parameter change in the Par Change column indicate that the degree of covariance will increase (Steiger 1990). However, the variance of eca2 is negative after dropping eca3, which indicates that this is not an admissible solution. The PCLOSE of 0.665 indicating model fit. SRMR is 0.0276 indicating model fit as well. Thus, we keep the three manifest variables of Competitive Aggressiveness at this stage.

Covariances: (Group number 1 - Congeneric)

			M.I.	Par Change
eca1	<-->	eaut4	8.645	.170
eca3	<-->	eaut1	6.212	-.139
eca3	<-->	eaut3	7.106	.134

Exhibit 5.39: Modification Indices for the One-Factor Congeneric Model for Competitive Aggressiveness

Discriminant Validity: The correlation between Autonomy and Competitive Aggressiveness is 0.187 indicating it is very unlikely that their measurement models measure the same concept. Fornell and Larcker (1981) suggested that discriminant validity holds if the average variance extracted for two constructs exceeds the square of the correlation between the constructs. The variance extracted for each pair of constructs is computed using the following formula:

$$\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \theta_i}$$

where λ_i is the standardised loading for each observed variable and θ_i is the error variance associated with each observed variable. Having computed the variance extracted for the two constructs, the average of these two figures is compared with the square of the correlation between Autonomy and Competitive Aggressiveness. If the average variance extracted from the two constructs exceeds the square of the correlation between the two constructs, then we can conclude that the two factors display discriminant validity. The results of AVE methods are shown in Exhibit 5.40. The Average variance extracted (0.507) of Autonomy and Competitive Aggressiveness is greater than the squared correlation between the constructs (0.033) so discriminant validity holds.

Factor	Items	standardised factor loadings(l)	l^2	Error variance	Variance extracted
Autonomy	Aut4	0.699	0.489	0.708	
	Aut3	0.891	0.794	0.352	
	Aut1	0.819	0.671	0.563	
	Aut5	0.813	0.661	0.616	
	Sum		2.614	2.239	
Competitive Aggressiveness				4.853	0.539
	CA3	0.748	0.560	1.089	
	CA2	0.976	0.953	0.097	
	CA1	0.727	0.529	1.062	
	Sum		2.041	2.248	
				4.289	0.476
Ave variance extracted	0.507	Average variance extracted (0.507) is greater than the squared correlation between the constructs (0.033) so discriminant validity holds. That is these two constructs are different constructs			
Correlation between factors	0.181				
Correlation squared	0.033				

Exhibit 5.40: Discriminant Validity Test for Autonomy and Competitive Aggressiveness

5.3.2 CAF of One Factor Congeneric Measurement Models —Wine Cluster Shared Resources

Different from Parallel and Tau-equivalent measures, a congeneric measurement releases the assumptions that equal scores of measures and their errors' variances. That is, for a one factor congeneric model to be accepted as a good fit model, all its indicator variables must represent the same generic true score. The fit statistics can be viewed as confirming the construct validity of the measurement model examined. The wine industry cluster shared resources construct is comprised of four dimensions: Supporting Institutions, Government Supports, Trusting Cooperation and External Openness. Following are the results of the analysis for these four dimensions that demonstrate one factor congeneric measurement modelling using a Structural Equation Modeling (SEM) Approach.

All the latent variables were given a scale by fixing its variance to "1" to allow for examination of all factor loadings and their significances. Parameters are estimated using Maximum Likelihood (ML) method and unbiased covariance to be analysed. The output specifications include:

- Regression Weight including Standardised estimates
- Squared multiple correlations
- Sample moments
- Residual moments
- Modification indices
- Factor score weights

5.3.2.1 Institutional Support

Exhibit 5.41 provides an overview of the one factor congeneric measurement model for the latent variable, Institutional Support. It has four manifest variables (variable names appear in brackets) as shown below:

- Wine industry consulting, marketing and distribution services in or near to (within 1-hour drive) are extensively available in or around your GI (Ins1)
- Wine industry financial services (venture capital and investment funds) are readily available in or near to (within 1 hour drive) your GI (Ins2)
- There are many support institutions (e.g., trade and professional associations, training centres, research and technology centres, technical assistance centres and universities…etc.) in or near to (within 1 hour drive) your GI (Ins3)
- All wine industry equipment and inputs are available in your GI (Ins4)

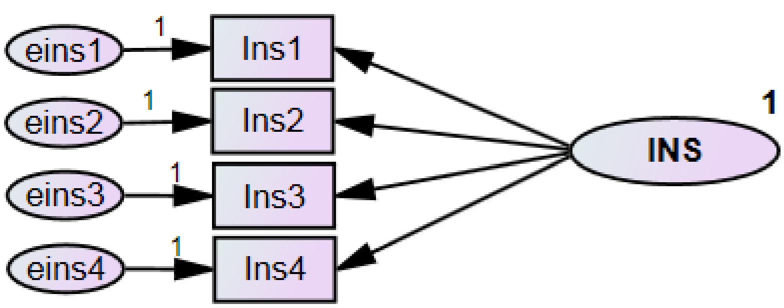


Exhibit 5.41: One Factor Congeneric Model for Institutional Support

Exhibit 5.42 shows the Sample Regression Weights including standardised estimates, and Squared Multiple Correlations of latent variable Institutional Support. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. The Standardised Regression Weights also indicate that all the indicator variables contribute significantly toward the variance of the Institutional Support construct. The

Squared Multiple Correlations (SMC) assesses the strength of the relationship between the construct and the variables. A value of SMC (suggest item reliability, R^2) means the variance of each observed variable is explained by the construct. The SMC for the variables Ins4 is only 32.7% suggesting it is a weak measure of the construct but still adequate (Holmes-Smith 2013).

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Ins1	<---	INS	1.708	.102	16.760	***	par_1
Ins2	<---	INS	1.535	.103	14.942	***	par_2
Ins3	<---	INS	1.585	.107	14.853	***	par_3
Ins4	<---	INS	1.088	.114	9.568	***	par_4

Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
Ins1	<---	INS	.874
Ins2	<---	INS	.805
Ins3	<---	INS	.802
Ins4	<---	INS	.572

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
Ins4	.327
Ins3	.642
Ins2	.648
Ins1	.763

Exhibit 5.42: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations

Exhibit 5.43 presents Variances, sample correlations, Standardised Residual Covariances and eigenvalues for the one-factor congeneric model of Institutional Support. The variance of Institutional Support was fixed at “1” to give it a scale. The critical ratios for the error variances are greater than 1.96 so they are all significantly different from zero. The sample correlations ranged from 0.478 to 0.708. The correlations among the indicator variables support that the variables measure one construct (greater than 0.3) (Pallant 2010). Based on eigenvalue greater than one, a one-factor solution is the best solution. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. If the model is correct, the residuals should be less than two in absolute value (Joreskog and Sorbom 1984). The absolute values of Standardised Residual Covariances range from

0.059 to 0.637 indicating there is no big discrepancy between actual covariances and implied covariances.

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
INS	1.000				
eIns1	.906	.150	6.037	***	par_5
eIns2	1.279	.154	8.285	***	par_6
eIns3	1.398	.167	8.371	***	par_7
eIns4	2.434	.228	10.690	***	par_8

Sample Covariances (Group number 1)

	Ins4	Ins3	Ins2	Ins1
Ins4	3.619			
Ins3	1.799	3.911		
Ins2	1.514	2.467	3.635	
Ins1	1.915	2.669	2.639	3.825

Condition number = 9.916

Eigenvalues

10.338 2.295 1.313 1.043

Determinant of sample covariance matrix = 32.485

Sample Correlations (Group number 1)

	Ins4	Ins3	Ins2	Ins1
Ins4	1.000			
Ins3	.478	1.000		
Ins2	.417	.654	1.000	
Ins1	.515	.690	.708	1.000

Condition number = 9.918

Eigenvalues

2.748 .631 .343 .277

Standardised Residual Covariances (Group number 1 - Default model)

	Ins4	Ins3	Ins2	Ins1
Ins4	.000			
Ins3	.290	.000		
Ins2	-.637	.124	.000	
Ins1	.216	-.135	.059	.000

Exhibit 5.43: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Institutional Support

According to Exhibit 5.44, with a chi-square of 3.558, 2 degrees of freedom and p-value of 0.169, the model is a good fit model. The good fit statistics indicate that the construct validity of this measurement model. RMSEA is 0.054 with PCLOSE =0.356 indicating very good fit. SRMR is 0.0164 indicating good fit. CFI and TLI are greater than 0.95 indicating good fit. Thus, the latent variable of Institutional Support is a fit construct for manifest variables: Ins1, Ins2, Ins3, and Ins4.

Indices	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	p > 0.05	Chi-square = 3.558 df = 2 P=0.169
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.054 PCLOSE=0.356 LO 90 = 0
RMR; SRMR	SRMR < 0.06	SRMR=0.0164
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.990(indicate over fit)
CFI	CFI > 0.95	CFI=0.997

Exhibit 5.44: Model Fit Statistics for Institutional Support

5.3.2.2 Trusting Cooperation

Exhibit 5.45 provides an overview of the one factor congeneric measurement model for the latent variable, Trusting Cooperation. There are three manifest variables for the latent variable of Trusting Cooperation (variable names appear in brackets):

- The social network among the companies and employees in your GI are based on more than purely economic or transactional needs (TrCo1)
- There is a high level of trust among companies in your GI (TrCo2)
- Your winery turns to other wineries in your GI when you need help with technical advice, business information or similar (TrCo3)

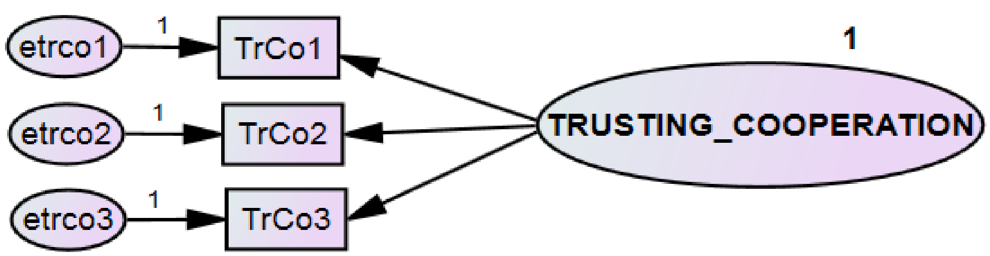


Exhibit 5.45: One Factor Congeneric Model for Trusting Cooperation

The latent variable Trusting Cooperation is a function of three observed variables: TrCo1, TrCo 2, and TrCo 3. There is no positive degree of freedom for Trusting Cooperation measurement construct since it just has three observed variables. Thus, we pair the construct with Supportive Institutions and Infrastructures since its structure has already been validated, which is shown in Exhibit 5.44.

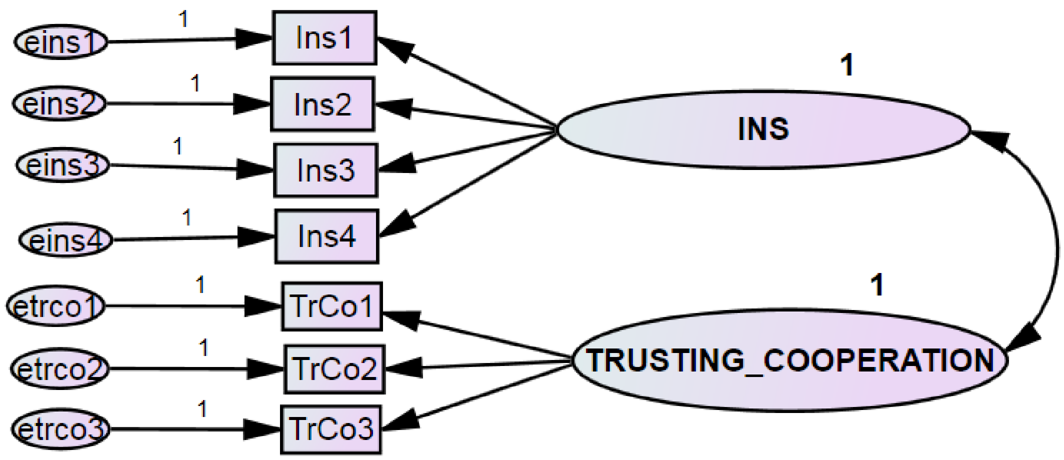


Exhibit 5.46: Paired One Factor Congeneric Model for Trusting Cooperation and Institutional Support

Exhibit 5.47 shows the Sample Regression Weights including standardised estimates, Squared Multiple Correlations, covariance and correlations of latent variables Trusting Cooperation and Institutional Support. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. The Standardised Regression Weights ranging from 0.563 to 0.824 also indicate that all the indicator variables contribute significantly toward the variance of Trusting Cooperation. The squared multiple correlations (suggest item reliability, R2) of three indicator variables are 0.559 (TrCo 1), 0.679 (TrCo 2), and 0.317(TrCo 3). The covariance between Trusting Cooperation and Supportive Institutions and Infrastructures is 0.413. The two factors were given a scale by fixing their variances to one. Thus, their covariance is standardised, which means the covariance is also the correlation between the two factors.

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Ins1	<---	INS	1.690	.102	16.561	***	par_1
Ins2	<---	INS	1.546	.102	15.130	***	par_2
Ins3	<---	INS	1.591	.106	14.962	***	par_3
Ins4	<---	INS	1.097	.114	9.658	***	par_4
TrCo2	<---	TC	1.179	.090	13.049	***	par_5
TrCo3	<---	TC	.922	.104	8.848	***	par_6
TrCo1	<---	TC	1.081	.091	11.847	***	par_7

Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
Ins1	<---	INS	.864
Ins2	<---	INS	.811
Ins3	<---	INS	.805
Ins4	<---	INS	.576
TrCo2	<---	TC	.824
TrCo3	<---	TC	.563
TrCo1	<---	TC	.748

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
TrCo1	.559
TrCo3	.317
TrCo2	.679
Ins4	.332
Ins3	.647
Ins2	.658
Ins1	.747

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
INS	<-->	TC	.413	.064	6.467	***	par_8

Correlations: (Group number 1 - Default model)

			Estimate
INS	<-->	TC	.413

Exhibit 5.47: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations

Exhibit 5.48 presents Variances, sample covariance, sample correlations, and eigenvalues of the one-factor congeneric model of Trusting Cooperation. The variances of Trusting Cooperation and Institutional Support were fixed at "1" to give them scales. The critical ratios for the error variances are greater than 1.96 and they are all significantly different from zero. The sample correlations between the observed items for the Trusting Cooperation and Institutional Support constructs ranged from 0.110 to 0.708. The low values of correlations are clustered at the left bottom corner of the table where are the correlations between indicators of Trusting Cooperation and Institutional Support. Based on eigenvalue greater than one, a two-factor solution is the best. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. If the model is correct, the residuals should be less than two in absolute value (Joreskog and Sorbom 1984). The absolute values of Standardised Residual Covariances from 0.025 to 1.448 (between TrCo1 and Ins4) indicating there is no big discrepancy between actual covariances and implied covariances.

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
INS	1.000				
TC	1.000				
eIns1	.969	.148	6.538	***	par_9
eIns2	1.244	.151	8.212	***	par_10
eIns3	1.379	.165	8.371	***	par_11
eIns4	2.416	.226	10.677	***	par_12
etrco2	.655	.142	4.626	***	par_13
etrco3	1.828	.182	10.036	***	par_14
etrco1	.921	.136	6.758	***	par_15

Sample Covariances (Group number 1)

	TrCo1	TrCo3	TrCo2	Ins4	Ins3	Ins2	Ins1
TrCo1	2.089						
TrCo3	1.010	2.678					
TrCo2	1.261	1.107	2.045				
Ins4	.738	.591	.636	3.619			
Ins3	.861	.329	.762	1.799	3.911		
Ins2	.789	.466	.890	1.514	2.467	3.635	
Ins1	.673	.352	.749	1.915	2.669	2.639	3.825

Condition number = 14.372

Eigenvalues

11.127 3.860 2.293 1.453 1.273 1.020 .774

Determinant of sample covariance matrix = 143.959

Sample Correlations (Group number 1)

	TrCo1	TrCo3	TrCo2	Ins4	Ins3	Ins2	Ins1
TrCo1	1.000						
TrCo3	.427	1.000					
TrCo2	.610	.473	1.000				
Ins4	.269	.190	.234	1.000			
Ins3	.301	.102	.269	.478	1.000		
Ins2	.286	.149	.326	.417	.654	1.000	
Ins1	.238	.110	.268	.515	.690	.708	1.000

Condition number = 12.037

Eigenvalues

3.269 1.519 .660 .562 .395 .324 .272

Standardised Residual Covariances (Group number 1 - Default model)

	TrCo1	TrCo3	TrCo2	Ins4	Ins3	Ins2	Ins1
TrCo1	.000						
TrCo3	.086	.000					
TrCo2	-.085	.130	.000				
Ins4	1.448	.900	.601	.000			
Ins3	.836	-1.362	-.066	.213	.000		
Ins2	.566	-.624	.788	-.737	.025	.000	
Ins1	-.449	-1.446	-.407	.241	-.069	.092	.000

Exhibit 5.48: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Trusting Cooperation

Exhibit 5.49 presents the model fit statistics for Trusting Cooperation and Institutional Support. Since the model fit of Institutional Support has already been examined, these fit statistics indicate the fit of Trusting Cooperation measurement model. According to Exhibit 5.47, with a chi-square of 20.402, 13 degrees of freedom and p-value of 0.086, the model is a good fit model. RMSEA is a bit high at 0.047 but still acceptable. PCLOSE is 0.515 with LO of zero indicating good fit. SRMR is 0.0384 indicating good fit. CFI and TLI are greater than 0.95 indicating good fit. The fit statistics indicate the measurement model of Trusting Cooperation is a good construct for TrCo 1, TrCo 2 and TrCo 3.

Abbreviation	Acceptable levels	Model fits Results
χ^2 (df, p)	$p > 0.05$	Chi-square = 20.402 df = 13 P=0.086
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.047 PCLOSE=0.515 LO 90 = 0
RMR; SRMR	SRMR < 0.06	SRMR=0.0384
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.983
CFI	CFI > 0.95	CFI=0.989

Exhibit 5.49: Model Fit Statistics for Trusting Cooperation and Institutional Support

Discriminant Validity: The correlation between Trusting Cooperation and Institutional Support is 0.413 indicating there is the possibility that their measurement models measure the same concept. Fornell and Larcker (1981) suggested that discriminant validity holds if the average variance extracted for two constructs exceeds the square of the correlation between the constructs. The variance extracted for each pair of constructs is computed using the following formula:

$$\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \theta_i}$$

where λ_i is the standardised loading for each observed variable and θ_i is the error variance associated with each observed variable. Having computed the variance extracted for the two constructs, the average of these two figures is compared with the square of the correlation between Trusting Cooperation and Institutional Support. If the average variance extracted from the two constructs exceeds the square of the correlation between the two constructs, then it can be concluded that the two factors display discriminant validity. The results of AVE methods are shown in Exhibit 5.50. The Average variance extracted (0.299) of Trusting Cooperation and Supportive Institutions and Infrastructures is greater than the squared correlation between the constructs (0.171) so discriminant validity holds indicating their measurement models measure theoretically different concepts.

Factor	Items	Standardised Factor Loadings (l)	l^2	Error Variance	Variance Extracted
Supportive Institutions and Infrastructures	Ins1	0.864	0.746	0.969	
	Ins2	0.811	0.658	1.244	
	Ins3	0.805	0.648	1.379	
	Ins4	0.576	0.332	2.416	
	Sum		2.384	6.008	
				8.392	0.284
Trusting Cooperation	TrCo2	0.824	0.679	0.655	
	TrCo3	0.563	0.317	1.828	
	TrCo1	0.748	0.560	0.921	
	Sum		1.555	3.404	
				4.959	0.314
Ave variance extracted	0.299	Average variance extracted (0.299) is greater than the squared correlation between the constructs (0.171) so discriminant validity holds. That is these two constructs are different constructs			
Correlation between factors	0.413				
Correlation squared	0.171				

Exhibit 5.50: Discriminant Validity Test for Institutional Support and Trusting Cooperation

5.3.2.3 External Openness

Exhibit 5.51 provides an overview of the one factor congeneric measurement model for the latent variable, External Openness. There are two manifest variables for the latent variable of External Openness (variable names appear in brackets):

➢ Being located in your GI encourages and stimulates more economic activities for your winery outside your GI (ExOp1)

➢ Being located in your GI allows your winery to establish multiple business relationships outside your GI (ExOp2)

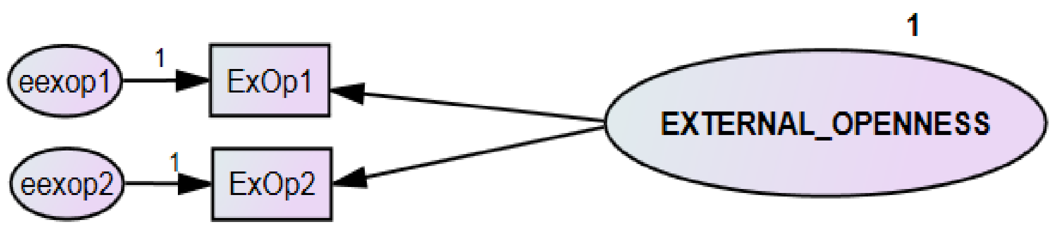


Exhibit 5.51: One Factor Congeneric Model for External Openness

The latent variable External Openness is a function of the observed variables: ExOp1 and ExOp 2. There is no positive degree of freedom for External Openness measurement construct since it just has two observed variables (It should have at least four observed variables to test construct validity on itself.). Thus, the construct is paired with Institutional Support since its structure has already been validated, which is shown in Exhibit 5.52.

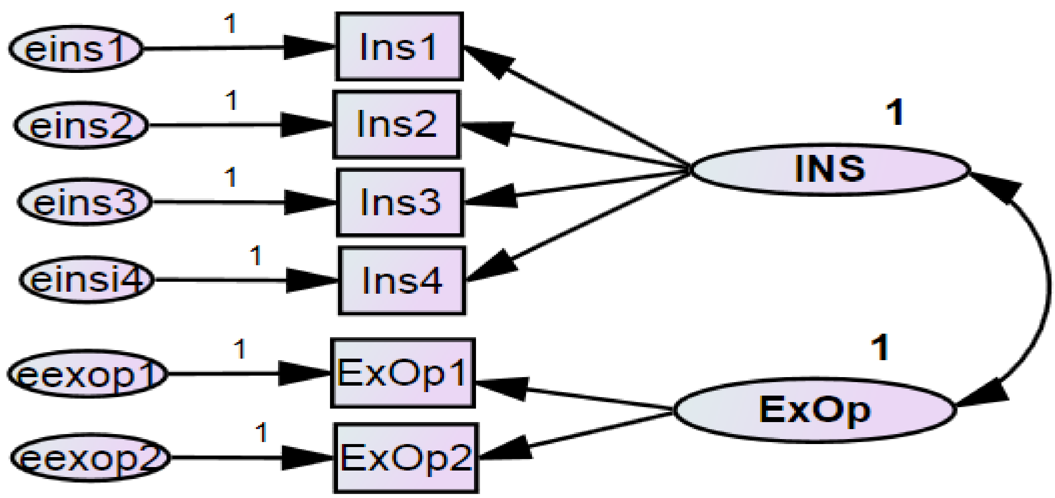


Exhibit 5.52: Paired One Factor Congeneric Model for External Openness and Institutional Support

Exhibit 5.53 shows the Sample Regression Weights including standardised estimates, Squared Multiple Correlations, covariance and correlations of latent variables External Openness and Institutional Support. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. The Standardised Regression Weights are 0.835 and 0.883 indicating that all the indicator variables contribute significantly toward the variance of External Openness. The squared multiple correlations (suggest item reliability, R2) for the two observed variables are 0.698 (ExOp 1) and 0.779 (ExOp 2). The covariance between External Openness and Institutional Support is 0.463. The two factors were given a scale by fixing their variances to one. Thus, this covariance is standardised, which means the covariance is also the correlation between the two factors.

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Ins1	<---	INS	1.710	.101	16.876	***	par_1
Ins2	<---	INS	1.529	.103	14.914	***	par_2
Ins3	<---	INS	1.580	.107	14.836	***	par_3
Ins4	<---	INS	1.106	.113	9.774	***	par_4
ExOp2	<---	ExOp	1.305	.101	12.878	***	par_5
ExOp1	<---	ExOp	1.302	.106	12.308	***	par_6

Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
Ins1	<---	INS	.874
Ins2	<---	INS	.802
Ins3	<---	INS	.799
Ins4	<---	INS	.581
ExOp2	<---	ExOp	.883
ExOp1	<---	ExOp	.835

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
ExOp1	.698
ExOp2	.779
Ins4	.338
Ins3	.639
Ins2	.643
Ins1	.764

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
INS	<-->	ExOp	.463	.058	7.911	***	par_7

Correlations: (Group number 1 - Default model)

			Estimate
INS	<-->	ExOp	.463

Exhibit 5.53: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations

Exhibit 5.54 presents Variances, sample covariance, sample correlations, and eigenvalues for the one-factor congeneric model for External Openness. The variances of External Openness and Institutional Support were fixed at “1” to give them scales. The critical ratios for the error variances are greater than 1.96 and they are all significantly different from zero. The sample correlations between the observed items for the External Openness and Institutional Support constructs ranged from 0.296 to

0.737. The low values of correlations are clustered at the left bottom corner of the table where the correlations between indicators of External Openness and Supportive Institutions and Infrastructures are. Based on eigenvalue greater than one, a two-factor solution is the best. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. If the model is correct, the residuals should be less than two in absolute value (Joreskog and Sorbom 1984). The absolute values of Standardised Residual Covariances range from 0 to 1.302 (between ExOp1 and Ins4) indicating there is no big discrepancy between actual covariances and implied covariances.

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
INS	1.000				
ExOp	1.000				
eIns1	.901	.145	6.198	***	par_8
eIns2	1.296	.153	8.471	***	par_9
eIns3	1.414	.166	8.539	***	par_10
eIns4	2.395	.224	10.674	***	par_11
eexop2	.483	.193	2.503	.012	par_12
eexop1	.735	.198	3.712	***	par_13

Sample Covariances (Group number 1)

	ExOp1	ExOp2	Ins4	Ins3	Ins2	Ins1
ExOp1	2.429					
ExOp2	1.699	2.186				
Ins4	.910	.990	3.619			
Ins3	.913	.889	1.799	3.911		
Ins2	.930	.829	1.514	2.467	3.635	
Ins1	.988	1.051	1.915	2.669	2.639	3.825

Condition number = 19.243

Eigenvalues

11.295 3.145 2.215 1.309 1.054 .587

Determinant of sample covariance matrix = 63.688

Sample Correlations (Group number 1)

	ExOp1	ExOp2	Ins4	Ins3	Ins2	Ins1
ExOp1	1.000					
ExOp2	.737	1.000				
Ins4	.307	.352	1.000			
Ins3	.296	.304	.478	1.000		
Ins2	.313	.294	.417	.654	1.000	
Ins1	.324	.364	.515	.690	.708	1.000

Condition number = 13.493

Eigenvalues3.275 1.224 .621 .343 .294 .243

Standardised Residual Covariances (Group number 1 - Default model)

	ExOp1	ExOp2	Ins4	Ins3	Ins2	Ins1
ExOp1	.000					
ExOp2	.000	.000				
Ins4	1.302	1.805	.000			
Ins3	-.196	-.343	.201	.000		
Ins2	.043	-.517	-.721	.183	.000	
Ins1	-.210	.099	.091	-.114	.085	.000

Exhibit 5.54: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for External Openness

Exhibit 5.55 presents the model fit statistics for External Openness and Institutional Support. Since the model fit of Supportive Institutions and Infrastructures has already been examined, these fit statistics indicate the fit status of External Openness measurement model. According to Exhibit 5.55, with a chi-square of 13.278, 8 degrees of freedom and p-value of 0.103, the model is a good fit model. RMSEA is a bit high at 0.05 but still acceptable. PCLOSE is 0.442 with LO of 0 indicating good fit. SRMR is 0.0344 indicating good fit. CFI and TLI are greater than 0.95 indicating good fit. The fit statistics indicate the measurement model of External Openness is a good construct for ExOp1 and ExOp 2.

Fit Indices	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	p > 0.05	Chi-square = 13.278 df = 8 P=0.103
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.05 PCLOSE=0.442 LO 90 = 0
RMR; SRMR	SRMR < 0.06	SRMR=0.0344
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.986
CFI	CFI > 0.95	CFI=0.993

Exhibit 5.55: Model Fit Statistics for External Openness and Institutional Support

Discriminant Validity: The correlation between External Openness Cooperation and Institutional Support is 0.413 indicating a likelihood of their measurement models actually measure the same concept. Fornell and Larcker (1981) suggested that discriminant validity holds if the average variance extracted for two constructs exceeds the square of the correlation between the constructs. The variance extracted for each pair of constructs is computed using the following formula:

$$\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \theta_i}$$

where λ_i is the standardised loading for each observed variable and θ_i is the error variance associated with each observed variable. Having computed the variance extracted for the two constructs, the average of these two figures is compared with the square of the correlation between Trusting Cooperation and Institutional Support. If the average variance extracted from the two constructs exceeds the square of the correlation between the two constructs, then it can be concluded that the two factors display discriminant validity. The results of AVE methods are shown in Exhibit 5.56. The Average variance extracted (0.416) of Trusting Cooperation and Supportive Institutions and Infrastructures is greater than the squared correlation between the constructs (0.214) so discriminant validity holds.

Factor	Items	Standardised Factor Loadings(l)	l^2	Error Variance	Variance Extracted
Supportive Institutions and Infrastructures	Ins1	0.874	0.764	0.901	
	Ins2	0.802	0.643	1.296	
	Ins3	0.799	0.638	1.414	
	Ins4	0.581	0.338	2.395	
			2.383	6.006	
	Sum			8.389	0.284
External Openness	ExOp2	0.883	0.780	0.483	
	ExOp1	0.835	0.697	0.735	
			1.477	1.218	
	Sum			2.695	0.548
Ave variance extracted	0.416	Average variance extracted (0.416) is greater than the squared correlation between the constructs (0.214) so discriminant validity holds. That is these two constructs are different constructs			
Correlation between factors	0.463				
Correlation squared	0.214				

Exhibit 5.56: Discriminant Validity Test for External Openness and Institutional Support

5.3.2.4 Government Support

Exhibit 5.57 provides an overview of the one factor congeneric measurement model for the latent variable, Government Support. It has two manifest variables (variable names appear in brackets):

- Government policies support wine industry development in your GI (GovS1)
- Government programs support wine industry development in your GI (GovS2)

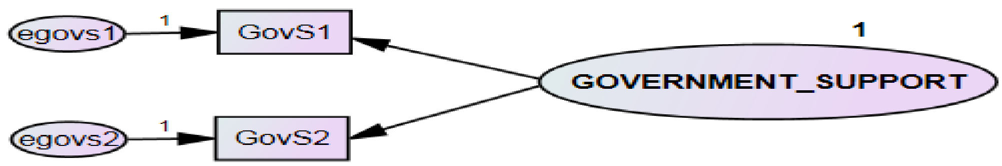


Exhibit 5.57: One Factor Congeneric Model for Government Support

The latent variable Government Support is a function of the observed variables: GovS1 and GovS2. There is no positive degree of freedom for Government Support measurement construct since it just has two observable variables. Thus, its construct is paired with Institutional Support since its structure has already been validated. Exhibit 5.58 shows the graph for conducting CFA.

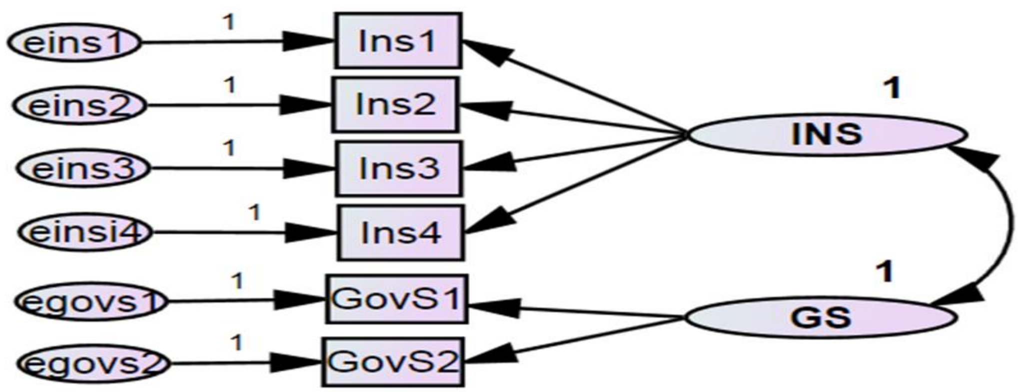


Exhibit 5.58: Paired One Factor Congeneric Model for Government Support and Institutional Support

Exhibit 5.59 shows the Sample Regression Weights including standardised estimates, Squared Multiple Correlations, covariance and correlations of latent variables Government Support and Institutional Support. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. The Standardised Regression

Weights are 0.933 and 0.940 indicating that all the indicator variables contribute significantly toward the variance of Government Support. The squared multiple correlations (suggest item reliability, R^2) for the two observed variables are 0.884 (GovS1) and 0.870 (GovS2). The covariance between Government Support and Institutional Support is 0.430. The two factors were given scales by fixing their variances to one. Thus, this covariance is standardised, which means the covariance is also the correlation between the two factors.

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Ins1	<---	INS	1.687	.102	16.544	***	par_1
Ins2	<---	INS	1.548	.102	15.165	***	par_2
Ins3	<---	INS	1.592	.106	14.979	***	par_3
Ins4	<---	INS	1.098	.113	9.674	***	par_4
GovS2	<---	GS	1.494	.093	16.073	***	par_5
GovS1	<---	GS	1.497	.092	16.219	***	par_6

Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
Ins1	<---	INS	.863
Ins2	<---	INS	.812
Ins3	<---	INS	.805
Ins4	<---	INS	.577
GovS2	<---	GS	.933
GovS1	<---	GS	.940

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
GovS1	.884
GovS2	.870
Ins4	.333
Ins3	.648
Ins2	.659
Ins1	.744

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
INS	<-->	GS	.430	.057	7.568	***	par_7

Correlations: (Group number 1 - Default model)

			Estimate
INS	<-->	GS	.430

Exhibit 5.59: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations

Exhibit 5.60 presents Variances, sample covariance, sample correlations, and eigenvalues for the one-factor congeneric model for Government Support. The variances of Government Support and Institutional Support were fixed at "1" to give them scales. The critical ratios for the error variances of government support are just around 1.96 and they are not significantly different from zero. The sample correlations between the observed items for the Government Support and Institutional Support constructs ranged from 0.296 to 0.737. The low values of correlations are clustered at the left bottom corner of the table where the correlations between indicators of Government Support and Institutional Support are. Based on eigenvalue greater than one, a two-factor solution is the best. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. If the model is correct, the residuals should be less than two in absolute value (Joreskog and Sorbom 1984). The absolute values of Standardised Residual Covariances from 0 to 1.187 (between GovS1 and Ins4) indicate there is no big discrepancy between actual covariances and implied covariances.

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
INS	1.000				
GS	1.000				
eIns1	.978	.148	6.628	***	par_8
eIns2	1.239	.151	8.218	***	par_9
eIns3	1.378	.164	8.392	***	par_10
eIns4	2.414	.226	10.679	***	par_11
egovs2	.334	.169	1.972	.049	par_12
egovs1	.295	.170	1.738	.082	par_13

Sample Covariances (Group number 1)

	GovS1	GovS2	Ins4	Ins3	Ins2	Ins1
GovS1	2.536					
GovS2	2.236	2.565				
Ins4	.934	.867	3.619			
Ins3	1.044	1.006	1.799	3.911		
Ins2	1.067	1.138	1.514	2.467	3.635	
Ins1	.962	.946	1.915	2.669	2.639	3.825

Condition number = 37.115
Eigenvalues
11.515 3.636 2.292 1.313 1.025 .310
Determinant of sample covariance matrix = 40.032

Sample Correlations (Group number 1)

	GovS1	GovS2	Ins4	Ins3	Ins2	Ins1
GovS1	1.000					
GovS2	.877	1.000				
Ins4	.308	.285	1.000			
Ins3	.332	.318	.478	1.000		
Ins2	.351	.373	.417	.654	1.000	
Ins1	.309	.302	.515	.690	.708	1.000

Condition number = 27.366

Eigenvalues

3.322 1.308 .631 .344 .273 .121

Standardised Residual Covariances (Group number 1 - Default model)

	GovS1	GovS2	Ins4	Ins3	Ins2	Ins1
GovS1	.000					
GovS2	.000	.000				
Ins4	1.187	.843	.000			
Ins3	.096	-.076	.204	.000		
Ins2	.357	.730	-.752	.013	.000	
Ins1	-.610	-.671	.243	-.058	.095	.000

Exhibit 5.60: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Government Support

Since the regression weights of GovS1 (0.940) and GovS2 (0.933) on the latent variable Government Support are almost the same. Furthermore, the error variances of the two observed variables are almost the same (egovs1 of 0.295 and egovs2 of 0.334). Thus, this measurement model probably is a parallel measurement model. Exhibit 5.61 presents the results of variances after running the parallel measurement model. The critical ratios for the error variances of government support are well above the threshold, 1.96 and they are significantly different from zero.

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
INS	1.000				
GS	1.000				
egovs2	.315	.027	11.467	***	e_gs
egovs1	.315	.027	11.467	***	e_gs
eIns1	.978	.148	6.629	***	par_8
eIns2	1.238	.151	8.215	***	par_9
eIns3	1.378	.164	8.393	***	par_10
eIns4	2.414	.226	10.679	***	par_11

Exhibit 5.61: Parallel Model Variances

Exhibit 5.62 compares the model fit statistics between parallel and congeneric measurement models for Government Support and Supportive Institutions and Infrastructures. Since the model fit of Institutional Support has already been examined, these fit statistics indicate the fit of Government Support measurement model. According to Exhibit 5.62, the model fit summary lists the fit measures for both the Congeneric model and the Parallel model. The P-values associated with the chi-square for the Congeneric model and the Parallel model are both greater than 0.05 indicating that both the congeneric and the parallel models are good fit models. Similarly, RMSEA, PCLOSE, TLI, SRMR, and CFI all suggest that the Congeneric model and the Parallel model are both good fit models.

Fit Indices	**Acceptable levels**	**Congeneric Measurement Model fits Results**	**Parallel Measurement Model fits Results**
χ^2 (df, p)	$p > 0.05$	Chi-square = 13.221 df = 8 P=0.104	Chi-square = 13.269 df = 10 P=0.209
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.05 PCLOSE=0.446 LO 90 = 0	RMSEA=0.035 PCLOSE=0.651 LO 90 = 0
RMR; SRMR	SRMR < 0.06	SRMR=0.0293	SRMR=0.0293
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.989	TLI=0.95
CFI	CFI > 0.95	CFI=0.994	CFI=0.996

Exhibit 5.62: Model Fit Statistics for Supportive Institutions and Infrastructures and Government Support

In order to test whether the parallel model with p value of 0.209, chi-square of 13.269 (with 10 df) significantly better than the Congeneric model with p value of 0.104 a chi-square of 13.221 (with 8 df), a "nested model method" is applied. The nested model comparison is shown in Exhibit 5.63.

Assuming Congeneric Model to be correct:

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Parallel Model	2	.048	.976	.000	.000	-.005	-.005

Exhibit 5.63: Comparing Congeneric Model and Parallel Model

The difference between chi-square for the unconstrained congeneric measurement model and the constrained parallel model is 0.048 with 2 degrees of freedom and a p-value of 0.976. It indicates that the Parallel model is a significantly better fit model than the Congeneric model. The same result of p value is also generated from a different chi-square test. Therefore, the null hypothesis, that the values of chi-square of the two models are equal, is rejected. It is concluded that the constrained Parallel measurement model is a significantly better model than the unconstrained Congeneric model.

Exhibit 5.64 shows the Sample Regression Weight including standardised estimates, Squared Multiple Correlations, covariance and correlations of the Parallel measurement model of Government Support. It is suggested in Exhibit 5.64 that the parallel model is a better solution than the congeneric model for the measurement model of Government Support. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. As specified by the parameter constrains placed on the Parallel model, the factor loadings of GovS1 and GovS2 on Government Support are identical. The error variances of egovs1 and egovs2 are identical as well. The squared multiple correlations (suggest item reliability, R2) for the two observed variables are 0.877 for both GovS1and GovS2. The correlation between Government Support and Supportive Institutions and Infrastructures of the Parallel measurement model is the same as Congeneric model at 0.43.

Regression Weights: (Group number 1 - Parallel Model)

			Estimate	S.E.	C.R.	P	Label
Ins1	<---	INS	1.687	.102	16.543	***	par_3
Ins2	<---	INS	1.548	.102	15.168	***	par_4
Ins3	<---	INS	1.591	.106	14.978	***	par_5
Ins4	<---	INS	1.098	.113	9.673	***	par_6
GovS2	<---	GS	1.495	.070	21.381	***	re_gs2
GovS1	<---	GS	1.495	.070	21.381	***	re_gs2

Standardised Regression Weights: (Group number 1 - Parallel Model)

			Estimate
Ins1	<---	INS	.863
Ins2	<---	INS	.812
Ins3	<---	INS	.805
Ins4	<---	INS	.577
GovS2	<---	GS	.936
GovS1	<---	GS	.936

Variances: (Group number 1 - Parallel Model)

	Estimate	S.E.	C.R.	P	Label
INS	1.000				
GS	1.000				
egovs2	.315	.027	11.467	***	e_gs2
egovs1	.315	.027	11.467	***	e_gs2
eIns1	.978	.148	6.629	***	par_8
eIns2	1.238	.151	8.215	***	par_9
eIns3	1.378	.164	8.393	***	par_10
eIns4	2.414	.226	10.679	***	par_11

Squared Multiple Correlations: (Group number 1 - Parallel Model)

	Estimate
GovS1	.877
GovS2	.877
Ins4	.333
Ins3	.648
Ins2	.659
Ins1	.744

Covariances: (Group number 1 - Parallel Model)

			Estimate	S.E.	C.R.	P	Label
INS	<-->	GS	.430	.057	7.568	***	par_7

Correlations: (Group number 1 - Parallel Model)

			Estimate
INS	<-->	GS	.430

Exhibit 5.64: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations for the Parallel model of Government Support

Discriminant Validity: The correlation between Government Support and Institutional Support is 0.430 indicating the likelihood that their measurement models measure the same concept. Fornell and Larcker (1981) suggested that discriminant validity holds if the average variance extracted for two constructs exceeds the square of the correlation between the constructs. The variance extracted for each pair of constructs is computed using the following formula:

$$\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \theta_i}$$

where λ_i is the standardised loading for each observed variable and θ_i is the error variance associated with each observed variable. Having computed the variance extracted for the two constructs, the average of these two figures is compared with the square of the correlation between Government Support and Institutional Support. If the average variance extracted from the two constructs exceeds the square of the correlation between the two constructs, then it can be concluded that the two factors display discriminant validity. The results of the AVE method are shown in Exhibit 5.65. The Average variance extracted (0.510) of Trusting Cooperation and Institutional Support is greater than the squared correlation between the constructs (0.185) so discriminant validity holds.

Factor	Items	standardised factor loadings(l)	l^2	Error variance	Variance extracted
Institutional Support	Ins1	0.863	0.745	0.978	
	Ins2	0.812	0.659	1.238	
	Ins3	0.805	0.648	1.378	
	Ins4	0.577	0.333	2.414	
			2.385	6.008	
Government Support	**Sum**			8.393	0.284
	GovS2	0.936	0.876	0.315	
	GovS1	0.936	0.876	0.315	
			1.752	0.63	
	Sum			2.382	0.736
Ave variance extracted	0.510	Average variance extracted (0.510) is greater than the squared correlation between the constructs (0.185) so discriminant validity holds. That is these two constructs are different constructs			
Correlation between factors	0.430				
Correlation squared	0.185				

Exhibit 5.65: Discriminant Validity Test for Supportive Institutions and Government Support

5.3.3 CFA of One Factor Congeneric Measurement Models ---- Market Performance and Entrepreneurial Opportunities

Unlike Parallel and tau-equivalent measures, a congeneric measurement releases the assumptions of equivalent scores of measures and variances of their errors That is, for a one factor congeneric model to be accepted as a good fit model, all its indicator variables must represent the same generic true score. The fit statistics can be viewed as confirming the construct validity of the measurement model examined. Following are the results of the analysis for the constructs of Market performance, and Entrepreneurial Opportunity Perception. These constructs demonstrate one factor congeneric measurement modelling using a Structural Equation Modeling (SEM) Approach.

All the latent variables were given a scale by fixing its variance to "1" to allow for examination of all factor loadings and their significances. Parameters are estimated using Maximum Likelihood (ML) method and unbiased covariance to be analysed. The output specifications include:

- Regression Weight including Standardised estimates
- Squared multiple correlations
- Sample moments
- Residual moments
- Modification indices
- Factor score weights

5.3.3.1 Entrepreneurial Opportunities

Exhibit 5.66 provides an overview of the one factor congeneric measurement model for the latent variable, Entrepreneurial Opportunities. There are four manifest variables (variable names appear in brackets):

- Opportunities to introduce production innovation (EOP1)
- Opportunities to change my marketing methods (EOP2)
- Opportunities to introduce new ways to improve business strategy (EOP3)
- Opportunities to sell in new geographical markets (EOP4)

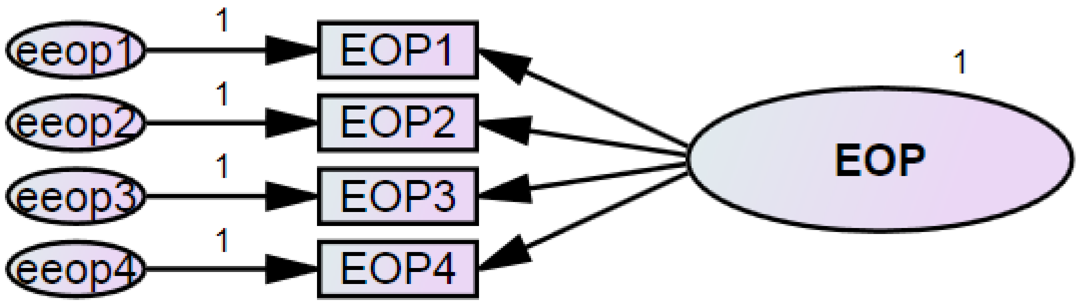


Exhibit 5.66: One Factor Congeneric Model for Entrepreneurial Opportunities

Exhibit 5.67 shows the Sample Regression Weight including standardised estimates, and Squared Multiple Correlations of latent variable Entrepreneurial Opportunity. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. The Standardised Regression Weights also indicate that all the indicator variables contribute significantly toward the variance of Entrepreneurial Opportunity. The squared multiple correlations (SMC) assess the strength of the relationship between the construct and the variables. A value of SMC (suggesting item reliability, R^2) means the variance of each observed variable is explained by the construct. The SMC for the variables EOP1 is only 42.3%, suggesting it is a weak measure of the construct but still adequate (Holmes-Smith 2013).

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P
EOP2	<---	EOP	1.335	.084	15.861	***
EOP1	<---	EOP	.947	.085	11.158	***
EOP3	<---	EOP	1.323	.084	15.838	***
EOP4	<---	EOP	1.148	.092	12.452	***

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
EOP2	<---	EOP	.847
EOP1	<---	EOP	.650
EOP3	<---	EOP	.846
EOP4	<---	EOP	.708

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
EOP4	.501
EOP3	.715
EOP1	.423
EOP2	.717

Exhibit 5.67: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations for the Parallel model of Entrepreneurial Opportunity

Exhibit 5.68 presents Variances, sample correlations, Standardised Residual Covariances and eigenvalues for the one-factor congeneric model for Entrepreneurial Opportunity. The variance of Institutional Support was fixed at "1" to give it a scale. The critical ratios for the error variances are greater than 1.96 suggesting they are all significantly different from zero. The sample correlations range from 0.483 to 0.615 indicating the variables measure one construct (greater than 0.3) (Pallant 2010). Based on eigenvalue greater than one, a one-factor solution is the best solution. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. If the model is correct, the residuals should be less than two in absolute value (Joreskog and Sorbom 1984). The absolute values of Standardised Residual Covariances range from 0.053 to 0.430 indicating there is no big discrepancy between actual covariances and implied covariances.

Variances: (Group number 1 - Congeneric)

	Estimate	S.E.	C.R.	P	Label
EOP	1.000				
eeop2	.704	.105	6.703	***	par_5
eeop1	1.224	.120	10.188	***	par_6
eeop3	.696	.103	6.734	***	par_7
eeop4	1.314	.136	9.694	***	par_8

Sample Covariances (Group number 1)

	EOP4	EOP3	EOP1	EOP2
EOP4	2.631			
EOP3	1.457	2.446		
EOP1	1.140	1.298	2.121	
EOP2	1.571	1.775	1.195	2.485

Condition number = 10.005

Eigenvalues

6.687 1.233 1.094 .668

Determinant of sample covariance matrix = 6.028

Sample Correlations (Group number 1)

	EOP4	EOP3	EOP1	EOP2
EOP4	1.000			
EOP3	.574	1.000		
EOP1	.483	.570	1.000	
EOP2	.615	.720	.520	1.000

Condition number = 10.116

Eigenvalues

2.748 .538 .443 .272

Standardised Residual Covariances (Group number 1 - Congeneric)

	EOP4	EOP3	EOP1	EOP2
EOP4	.000			
EOP3	-.337	.000		
EOP1	.332	.280	.000	
EOP2	.217	.053	-.430	.000

Exhibit 5.68: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Entrepreneurial Opportunities

According to Exhibit 5.69, with a chi-square of 4.368, 2 degrees of freedom and p-value of 0.113, the model is a good fit model. The good fit statistics indicate the construct validity of this measurement model. RMSEA is 0.067, which is a bit high but still within the acceptable range, together with PCLOSE of 0.275 and the lower end of the 90% confidence interval (LO 90) of 0 indicating model fit. SRMR is 0.0163 indicating good fit. CFI and TLI are all greater than 0.95 indicating good fit. Thus, it can be concluded that the construct is a good measure of the observed variables of EOP1, EOP2, EOP3, and EOP4.

Fit Indices	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	$p > 0.05$	Chi-square = 4.368 df = 2 P=0.113
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.067 PCLOSE=0.275 LO 90 = 0
RMR; SRMR	SRMR < 0.06	SRMR=0.0163
TLI, NNFI or $\rho 2$	TLI > 0.95	TLI=0.984
CFI	CFI > 0.95	CFI=0.995

Exhibit 5.69: Model Fit Statistics for Entrepreneurial Opportunities

5.3.3.2 Market Performance

Exhibit 5.70 provides an overview of the one factor congeneric measurement model for the latent variable, Market Performance. There are four manifest variables (variable names appear in brackets):

- Sales growth (MP1)
- Market share growth (MP2)
- Profitability (MP3)
- Customer retention (MP4)

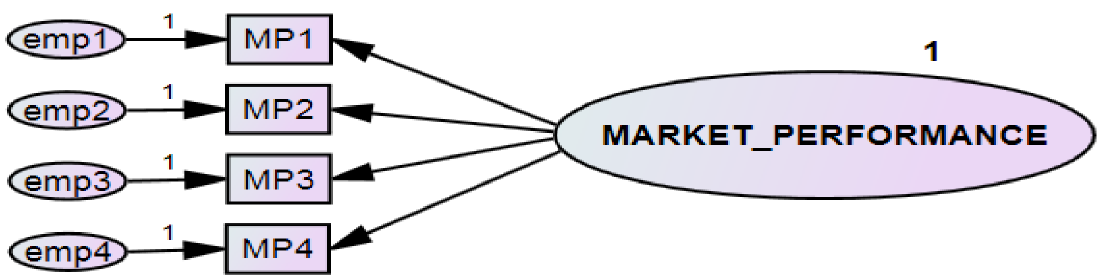


Exhibit 5.70: One Factor Congeneric Model for Market Performance

Exhibit 5.71 shows the Sample Regression Weight including standardised estimates, and Squared Multiple Correlations of latent variable Market Performance. As can be seen from the un-standardised regression weights, all the critical ratios are greater than 1.96 and all factor loadings are significantly different from zero. All the values of the Standardised Regression Weights are greater than 60% indicating these four observed variables contribute significantly to the variance of Market Performance. The squared multiple correlations (SMC) assess the strength of the relationship between the construct and the variables. The value of SMC (suggest item reliability, R^2) means the variance of each observed variable is explained by the construct. The SMC for the variance of MP4 is the lowest, 44.7%, suggesting it is a weak measure of the construct but still adequate (Holmes-Smith 2013).

Regression Weights: (Group number 1 - Congeneric)

	Estimate	S.E.	C.R.	P	Label
MP1 <--- MP	1.208	.062	19.343	***	par_1
MP2 <--- MP	1.095	.060	18.135	***	par_2
MP3 <--- MP	.971	.072	13.475	***	par_3
MP4 <--- MP	.776	.065	11.935	***	par_4

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
MP1	<---	MP	.934
MP2	<---	MP	.897
MP3	<---	MP	.732
MP4	<---	MP	.669

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
MP4	.447
MP3	.536
MP2	.805
MP1	.873

Exhibit 5.71: Sample Regression Weight including Standardised estimates, and Squared Multiple Correlations, Covariance, and Correlations for the Parallel model of Market Performance

Exhibit 5.72 presents Variances, sample correlations, Standardised Residual Covariances and eigenvalues for the one-factor congeneric model for Market Performance. The variance of Market Performance was fixed at “1” to give it a scale. The critical ratios for the error variances are greater than 1.96 so they are all significantly different from zero. The sample correlations range from 0.528 to 0.840 indicating the manifest variables are highly correlated. The high correlations among the indicator variables support that the variables measure one construct (Pallant 2010). Based on eigenvalue greater than one, a one-factor solution is the best solution. The Standardised Residual Covariances show the residuals between the estimated covariances and the implied covariances. If the model is correct, the residuals should be less than two in absolute value (Joreskog and Sorbom 1984). The absolute values of Standardised Residual Covariances from 0.021 to 0.553 indicating there is no big discrepancy between actual covariances and implied covariances.

Variances: (Group number 1 - Congeneric)

	Estimate	S.E.	C.R.	P	Label
MP	1.000				
emp1	.213	.047	4.559	***	par_5
emp2	.290	.044	6.629	***	par_6
emp3	.817	.079	10.380	***	par_7
emp4	.744	.069	10.720	***	par_8

Sample Covariances (Group number 1)

	MP4	MP3	MP2	MP1
MP4	1.345			
MP3	.812	1.760		
MP2	.845	1.051	1.488	
MP1	.928	1.171	1.326	1.673

Condition number = 18.761
Eigenvalues
4.679 .718 .620 .249
Determinant of sample covariance matrix = .519

Sample Correlations (Group number 1)

	MP4	MP3	MP2	MP1
MP4	1.000			
MP3	.528	1.000		
MP2	.597	.650	1.000	
MP1	.619	.682	.840	1.000

Condition number = 18.847
Eigenvalues
2.968 .489 .386 .157

Standardised Residual Covariances (Group number 1 - Congeneric)

	MP4	MP3	MP2	MP1
MP4	.000			
MP3	.553	.000		
MP2	-.045	-.101	.000	
MP1	-.084	-.021	.027	.000

Exhibit 5.72: Variances, Sample Correlations, and Standardised Residual Covariances for the One-Factor Congeneric Model for Market Performance

5.4 Multi-factor Confirmatory Factor Analysis (CFA)

This section presents the results of the confirmatory factory analysis (CFA) on all the latent variables of wine cluster resources. CFA models have no causal paths connecting the latent variables. The purpose of this section is not to look for model fit but to ensure there are no cross-loadings across these measurement constructs. The focus of SEM analysis for CFA is on analysing the error terms of the observed variables. Using the unstandardised estimated measurement error variance for each given indicator and indicator variances to calculate the reliability of measurement constructs (Construct reliability = one - (error variance/indicator variance)).

5.4.1 Multi-factor CFA– Wine Cluster Resources

This section presents the results of the confirmatory factor analysis of wine cluster resources. All the latent variables were given scales by fixing their variance to "1". Parameters are estimated using Maximum Likelihood (ML) method and unbiased covariance to be analysed. The output specifications include:

- Regression Weight including Standardised estimates
- Squared multiple correlations
- Factor Correlations

The output results are used to assess the accuracy of the hypothesised measurement models and ensure there are not cross-loadings among latent variables. Exhibit 5.73 presents the confirmatory factor analysis model for the latent variables of wine cluster relational based shared resources.

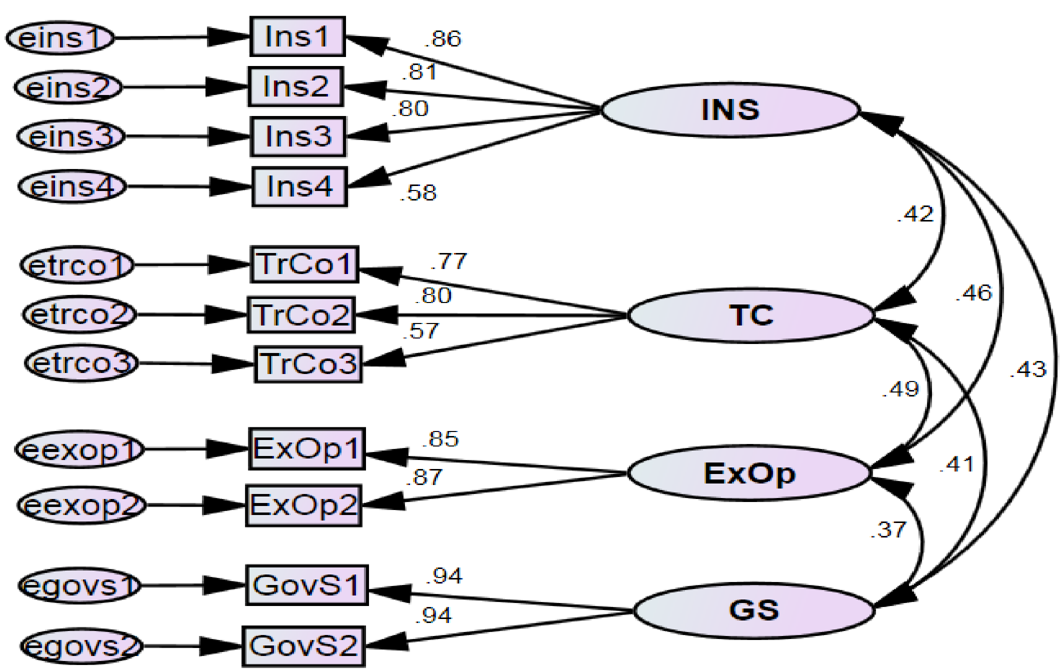


Exhibit 5.73: Multi-factor Confirmatory Factor Analysis for Wine Cluster Resources

Exhibit 5.74 provides results of the estimation (Regression Weights, Standardised Regression Weights, Correlations, and the Squared Multiple Correlations of the indicator items) for four latent variables: Institutional Support, Trusting Cooperation, External Openness, and Government Support. As can be seen from the Standardised Regression Weights, except Ins4 and TrCo3, all the other factors' pattern coefficients (factor loadings) are higher than 0.7 on their associated latent variables. Since the low loading of these two factors are consistent with prior research (Molina-Morales and Martinez-Fernandez 2006, Keui-Hsien 2010), the construct reliability holds (Lomax and Schumacker 2012).

The unconstrained factor loadings are all significant with C.R. all greater than 1.96. The Standardised Regression Weights for the indicator variables on their respective latent variables range from 0.568 to 0.937 indicating these indicators have strong influence on the variation of their respective latent variables. The factor loadings (both standardised and unstandardised) indicate that all variables are significantly related to their specific constructs, verifying the posited relationships among indicators and constructs. Values of Squared Multiple Correlations (R^2) indicate the variance of indicators explained by their respective measurement models. For example, 71.9% of the variance of indicator ExOp1 can be explained by the measurement constructs, External Openness. Adjusted R^2 are also provided through related function (Adjusted R^2 = $1- \frac{p(1-R^2)}{N-p-1}$, where p is the number of independent variables and N is the number of responds). It can be seen from Exhibit 5.74 the discrepancy between R^2 and the Adjusted R^2 is quite small. The standardised covariances (equal to correlations) of these four factors range from 0.374 to 0.491 indicating reasonably high correlations. The comparatively high correlations among measurements suggest it is necessary to check discriminant validity of the measurement models.

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Ins1	<---	INS	1.685	.102	16.574	***
Ins2	<---	INS	1.546	.102	15.173	***
Ins3	<---	INS	1.589	.106	14.978	***
Ins4	<---	INS	1.113	.113	9.847	***
TrCo2	<---	TC	1.147	.086	13.283	***
TrCo3	<---	TC	.930	.103	9.005	***
TrCo1	<---	TC	1.108	.088	12.636	***
GovS2	<---	GS	1.495	.070	21.381	***
GovS1	<---	GS	1.495	.070	21.381	***
ExOp2	<---	ExOp	1.286	.089	14.393	***
ExOp1	<---	ExOp	1.322	.094	14.020	***

Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
Ins1	<---	INS	.862
Ins2	<---	INS	.811
Ins3	<---	INS	.803
Ins4	<---	INS	.585
TrCo2	<---	TC	.802
TrCo3	<---	TC	.568
TrCo1	<---	TC	.767
GovS2	<---	GS	.937
GovS1	<---	GS	.936
ExOp2	<---	ExOp	.870
ExOp1	<---	ExOp	.848

Correlations: (Group number 1 - Default model)

			Estimate
INS	<-->	TC	.415
INS	<-->	GS	.430
TC	<-->	GS	.408
INS	<-->	ExOp	.464
TC	<-->	ExOp	.491
GS	<-->	ExOp	.374

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
INS	<-->	TC	.415	.064	6.488	***
INS	<-->	GS	.430	.057	7.576	***
TC	<-->	GS	.408	.062	6.580	***
INS	<-->	ExOp	.464	.059	7.930	***
TC	<-->	ExOp	.491	.061	8.019	***
GS	<-->	ExOp	.374	.061	6.150	***

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate (R^2)	Adjusted R^2
ExOp1	.719	0.717
ExOp2	.756	0.754
GovS1	.876	0.875
GovS2	.878	0.877
TrCo1	.588	0.583
TrCo3	.323	0.315
TrCo2	.643	0.639
Ins4	.342	0.332
Ins3	.645	0.640
Ins2	.657	0.652
Ins1	.742	0.738

Exhibit 5.74: Scalars for the Multi-factor Confirmatory Factor Analysis (CFA) of Wine Cluster Resources

The model fit summary lists the fit indices for the CFA of the four latent variables of wine cluster resources in Exhibit 5.75. With a chi-square of 49.082, 38 degrees of freedom and p-value of 0.107, the hypothesised measurement models are good fit models. RMSEA is 0.033 with PCLOSE =0.856 indicating very good fit. SRMR is 0.0384 indicating good fit. CFI and TLI are greater than 0.95 indicating good fit. The good fit statistics show that the indicators are good measures of their respective factors.

Fit Indices	**Acceptable levels**	**Congeneric Measurement Model fits Results**	**Parallel Measurement Model fits Results**
χ^2 (df, p)	p > 0.05	Chi-square = 13.221 df = 8 P=0.104	Chi-square = 49.082 df = 38 P=0.107
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.05 PCLOSE=0.446 LO 90 = 0	RMSEA=0.033 PCLOSE=0.856 LO 90 = 0
RMR; SRMR	SRMR < 0.06	SRMR=0.0293	SRMR=0.0384
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.989	TLI=0.989
CFI	CFI > 0.95	CFI=0.994	CFI=0.992

Exhibit 5.75: Model Fit Statistics for Variables of Wine Cluster Resources

Construct Validity: Although the above demonstrations of the scalars of the multi-factor confirmatory analysis provide a general idea of the convergent validity and discriminant validity of the measurement models, there are ways that are more accurate to check convergent and discriminant validity, as well as reliability. The following criteria including Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and Average Shared Variance (ASV) are used to assess convergent and discriminant validity, and construct reliability (Hair, Black et al. 2010).

Reliability

- CR > 0.7

Convergent Validity

- CR > (AVE)
- AVE > 0.5

Discriminant Validity

- MSV < AVE
- ASV < AVE

Using correlations between these four factors of wine cluster resources and the Standardised Regression Weights, Exhibit 5.76 presents the analysis results for convergent validity, discriminant validity, and construct reliability. All the values for construct reliability exceed the recommended level of 0.7 and all the values for average variance extracted exceed the recommended level of 0.5 (Hair, Black et al. 2010). All the values for maximum shared variance and average shared variance are far below the values of average variance extracted. Thus, it is clear that all these measurement models show convergent and discriminant validity, and construct reliability.

	CR	AVE	MSV	ASV	GS	INS	TS	ExOp
GS	0.934	0.877	0.185	0.164	0.937			
INS	0.853	0.597	0.215	0.191	0.430	0.773		
TS	0.760	0.518	0.241	0.193	0.408	0.415	0.720	
ExOp	0.849	0.738	0.241	0.199	0.374	0.464	0.491	0.859

Exhibit 5.76: convergent and discriminant validity, and construct reliability for the measurement models of wine cluster resources

5.4.2 Multi-factor CFA ─ Entrepreneurial Orientation

This section presents the results of the confirmatory factor analysis of entrepreneurial orientation (EO). All the latent variables were given scales by fixing their variance to “1”. Parameters are estimated using Maximum Likelihood (ML) method and unbiased covariance to be analysed. The output specifications include:

- Regression Weight including Standardised estimates
- Squared multiple correlations
- Factor Correlations

The output results are used to assess the accuracy of the hypothesised measurement models and ensure there are no cross-loadings among latent variables. Exhibit 5.77 presents the confirmatory factor analysis model for the latent variables of EO.

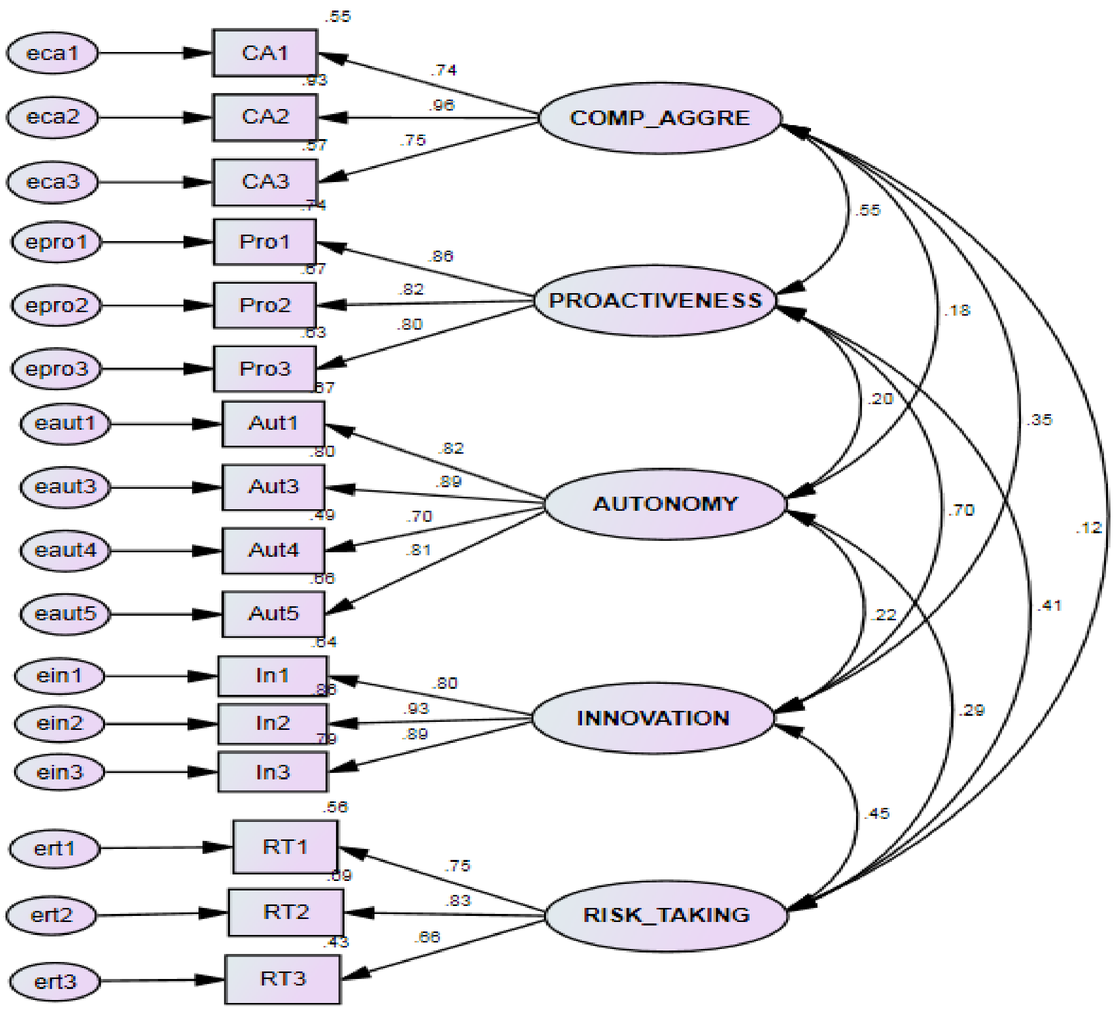


Exhibit 5.77: Multi-factor Confirmatory Factor Analysis for Entrepreneurial Orientation

With a Chi-square of 262.173, 94 degrees of freedom and a p value of zero (Bollen-Stine bootstrap p value of .002), the model is a poor fit model and modifications are required. The sample moments show the high correlations among indicators of Proactiveness, Innovativeness, and Risk Taking. Thus, it is necessary to check the model convergent validity and discriminant validity before any modifications happen to the measures.

Exhibit 5.78 presents the results of analysis of convergent validity and discriminant validity. All the values for construct reliability exceed the recommended level of 0.7 and all the values for average variance extracted exceed the recommended level of 0.5 (Hair, Black et al. 2010). All the values for maximum shared variance and average shared variance are far below the values of average variance extracted. Thus, it is clear that all these measurement models show convergent and discriminant validity.

	CR	AVE	MSV	ASV	INNO*	PRO*	AUT*	CA*	RT*
INNO	0.906	0.763	0.489	0.217	0.873				
PRO	0.864	0.679	0.489	0.251	0.699	0.824			
AUT	0.882	0.654	0.087	0.052	0.219	0.200	0.808		
CA	0.863	0.680	0.306	0.120	0.354	0.553	0.182	0.825	
RT	0.792	0.561	0.207	0.119	0.455	0.412	0.295	0.118	0.749

*(*INNO, Innovativeness; Pro, Proactiveness, AUT, Autonomy; CA, Competitive Aggressiveness; RT, Risk Taking)*

Exhibit 5.78: Convergent and Discriminant Validity, and Construct Reliability for the Measurement Models of Entrepreneurial Orientation

After checking the convergent and discriminant validity of the latent constructs of entrepreneurial orientation, it is now feasible to move to the modification indices. The standardised residual covariance matrix shows that the residual of indicator RT3 has strong correlations with the residuals of the indicators of Innovativeness, Competitive Aggressiveness, and Proactiveness. The modification indices also show that RT3 is cross loading on Innovativeness, Competitiveness Aggressiveness, and Proactiveness. Thus, RT3 should be dropped off.

Sample Covariances (Group number 1)

	RT3	RT1	RT2	In1	In2	In3	CA1	CA2	CA3	Aut	Aut	Aut	Aut	Pro1	Pro2	Pro3
RT3	1.37															
RT1	.742	2.03														
RT2	.811	1.25	1.78													
In1	.751	.489	.490	1.25												
In2	.719	.304	.440	.982	1.40											
In3	.654	.345	.429	.903	1.11	1.28										
CA1	.508	.115	.204	.519	.682	.605	2.25									
CA2	.325	.049	.149	.380	.553	.488	1.51	2.01								
CA3	.190	-.029	.010	.122	.235	.220	1.28	1.62	2.47							
Aut	.178	.219	.351	.209	.207	.241	.204	.272	.270	1.81						
Aut	.115	.350	.424	.286	.213	.195	.134	.255	.110	1.15	1.70					
Aut	.295	.391	.414	.318	.236	.258	.184	.336	.369	1.27	1.25	1.70				
Aut	.245	.191	.243	.327	.283	.267	.225	.119	.023	.934	.890	.937	1.38			
Pro1	.739	.519	.557	.736	.894	.820	.896	.826	.668	.227	.286	.321	.225	1.56		
Pro2	.541	.212	.218	.465	.701	.623	.666	.757	.523	.164	.163	.280	.174	.972	1.32	
Pro3	.605	.216	.302	.569	.792	.655	.709	.684	.533	.114	.178	.152	.062	1.09	1.08	1.72

Condition number = 41.462

Eigenvalues

9.153 4.711 3.818 2.306 1.428 .941 .752 .688 .588 .544 .517 .451 .384 .325 .275 .221

Determinant of sample covariance matrix = .149

Sample Correlations (Group number 1)

	RT3	RT1	RT2	In1	In2	In3	CA1	CA2	CA3	Aut5	Aut1	Aut3	Aut4	Pro1	Pro2	Pro3
RT3	1.000															
RT1	.445	1.000														
RT2	.519	.661	1.000													
In1	.572	.306	.327	1.000												
In2	.518	.180	.278	.739	1.000											
In3	.493	.214	.283	.709	.826	1.000										
CA1	.289	.054	.102	.308	.384	.355	1.000									
CA2	.196	.024	.079	.239	.329	.303	.709	1.000								
CA3	.103	-.013	.005	.069	.126	.123	.545	.729	1.000							
Aut5	.113	.114	.195	.138	.130	.158	.101	.142	.128	1.000						
Aut1	.075	.188	.243	.195	.138	.131	.068	.137	.054	.654	1.000					
Aut3	.193	.210	.237	.217	.152	.174	.094	.181	.180	.724	.734	1.000				
Aut4	.178	.114	.154	.248	.203	.199	.127	.071	.012	.589	.579	.610	1.000			
Pro1	.505	.291	.333	.524	.604	.578	.478	.465	.340	.135	.175	.197	.153	1.000		
Pro2	.401	.129	.142	.360	.514	.477	.385	.463	.289	.106	.108	.186	.128	.674	1.000	
Pro3	.393	.116	.172	.386	.509	.440	.360	.367	.258	.064	.104	.089	.040	.666	.714	1.000

Condition number = 34.941

Eigenvalues

5.650 2.696 2.036 1.283 .920 .522 .456 .392 .368 .324 .308 .278 .230 .209 .165 .162

Standardised Residual Covariances (Group number 1 - Congeneric)

	RT3	RT1	RT2	In1	In2	In3	CA1	CA2	CA3	Aut5	Aut1	Aut3	Aut4	Pro1	Pro2	Pro3
RT3	.000															
RT1	-.669	.000														
RT2	-.409	.543	.000													
In1	5.252	.551	.384	.000												
In2	3.758	-2.087	-1.122	-.031	.000											
In3	3.558	-1.363	-.821	.010	.013	.000										
CA1	3.754	-.186	.476	1.572	2.212	1.936	.000									
CA2	1.958	-.976	-.258	-.529	.184	-.003	-.036	.000								
CA3	.722	-1.283	-1.120	-2.280	-1.913	-1.797	-.168	.053	.000							
Aut5	-.716	-1.026	-.063	-.050	-.558	.003	-.137	-.004	.261	.000						
Aut1	-1.335	.124	.665	.838	-.457	-.442	-.678	-.103	-.949	-.128	.000					
Aut3	.321	.219	.287	.977	-.460	.014	-.424	.393	.922	.012	.050	.000				
Aut4	.678	-.638	-.278	2.024	.974	1.023	.531	-.830	-1.353	.306	.081	-.196	.000			
Pro1	4.300	.425	.601	.660	.650	.642	1.932	.110	-.277	-.072	.553	.698	.522	.000		
Pro2	2.853	-1.917	-2.162	-1.410	-.232	-.437	.786	.410	-.794	-.432	-.408	.647	.221	-.363	.000	
Pro3	2.820	-2.031	-1.571	-.853	-.104	-.782	.533	-.846	-1.125	-1.038	-.426	-.854	-1.148	-.230	.876	.000

Covariances (Congeneric)			M.I.	Par Change
ert3	<-->	RT	12.060	-.196
ert3	<-->	INNO	18.990	.200
ert3	<-->	PRO	6.783	.115
ert1	<-->	INNO	4.841	-.115
ert2	<-->	ert1	5.497	.136
ein1	<-->	RT	10.268	.141
ein1	<-->	ert3	6.731	.110
ein2	<-->	ert1	7.925	-.112
eca1	<-->	INNO	6.726	.132
eca1	<-->	ert3	9.035	.184
eca3	<-->	INNO	10.386	-.168
eaut1	<-->	ert3	11.555	-.167
eaut1	<-->	eca3	5.606	-.132
eaut3	<-->	eca1	4.147	-.100
eaut3	<-->	eca3	8.227	.144
eaut4	<-->	INNO	6.892	.113
eaut4	<-->	eca1	8.335	.165
epro1	<-->	RT	12.968	.169
epro1	<-->	PRO	7.935	-.094
epro1	<-->	eca1	5.037	.112
epro2	<-->	RT	6.015	-.113
epro2	<-->	ert2	6.606	-.114
epro2	<-->	ein1	7.777	-.094
epro2	<-->	eca2	4.472	.078
epro2	<-->	eaut3	4.069	.071
epro3	<-->	PRO	4.748	.087
epro3	<-->	epro2	13.353	.146

		Regression	M.I.	Par Change
RT3	<---	INNO	39.130	.380
RT3	<---	CA	10.333	.194
RT3	<---	PRO	34.542	.365
RT3	<---	In1	39.247	.326
RT3	<---	In2	35.465	.294
RT3	<---	In3	28.295	.274
RT3	<---	CA1	18.096	.166
RT3	<---	CA2	7.878	.116
RT3	<---	Pro1	24.667	.232
RT3	<---	Pro2	27.018	.264
RT3	<---	Pro3	24.102	.219
RT1	<---	INNO	7.187	-.185
RT1	<---	PRO	4.591	-.151
RT1	<---	In2	10.005	-.177
RT1	<---	In3	5.317	-.135
RT1	<---	Pro3	6.042	-.124
RT2	<---	INNO	4.363	-.128
RT2	<---	PRO	5.209	-.143
RT2	<---	Pro2	9.378	-.157
RT2	<---	Pro3	4.486	-.095
In1	<---	RT	8.722	.145
In1	<---	RT3	12.808	.137
In1	<---	RT1	9.968	.099
In1	<---	Aut4	4.102	.077
In2	<---	RT1	8.095	-.074
CA1	<---	INNO	11.612	.229
CA1	<---	PRO	5.579	.162
CA1	<---	RT3	10.803	.182
CA1	<---	In1	9.561	.178
CA1	<---	In2	10.825	.180
CA1	<---	In3	9.345	.174
CA1	<---	Pro1	8.190	.148
CA3	<---	INNO	10.823	-.227
CA3	<---	In1	9.138	-.179
CA3	<---	In2	11.060	-.187
CA3	<---	In3	8.462	-.170
Aut1	<---	RT3	5.218	-.101
Aut3	<---	CA3	6.881	.078
Aut4	<---	In1	4.050	.098
Pro1	<---	RT	13.250	.192
Pro1	<---	RT3	6.338	.103
Pro1	<---	RT1	11.817	.115
Pro1	<---	RT2	11.178	.120

Exhibit 5.79: Scalars for the Multi-factor Confirmatory Factor Analysis (CFA) of entrepreneurial orientation

The absolute values of standardised residuals covariances are all under the recommenced level of 1.96 (Hair, Black et al. 2010) after "RT3" was dropped, see Exhibit 5.80. The Chi-square dropped to 164.675 with df of 80 ($\chi^2/_{\mathrm{df}} = 2.058$) and

Bollen-Stine bootstrap p value of .018. The model is closer to fit but still needs re-specification. The modification indices suggest that "Pro1" is cross loading on Risk Taking. It is a common problem to have observed variables to be indicators of two or more constructs (Hair, Black et al. 2010). Especially in the EO context, it is common to see the cross-loadings of indicators. However, these five dimensions are well established in the literature, thus, they do have respective attributes. Accordingly, we decided to drop off the over-lapped indicator, which is "Pro1".

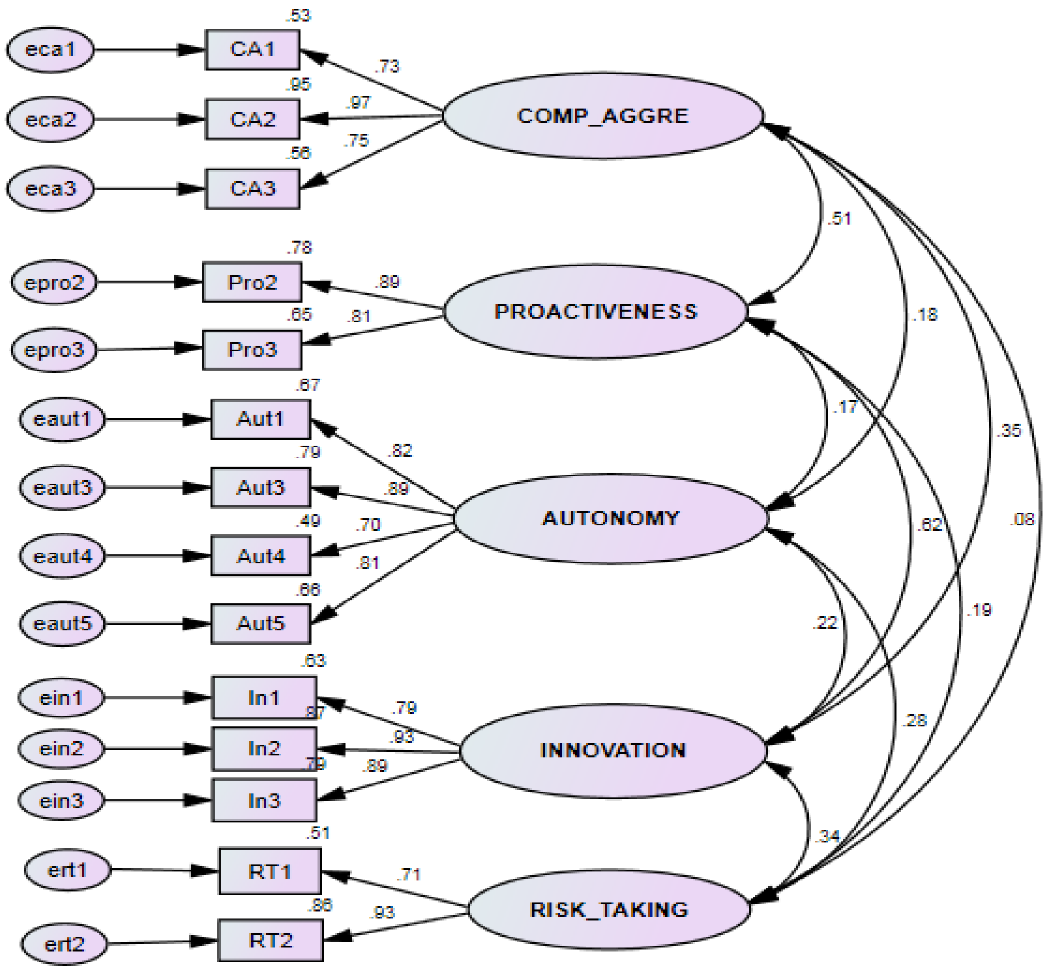


Exhibit 5.80: Multi-factor Confirmatory Factor Analysis for Entrepreneurial Orientation

Exhibit 5.81 shows that standardised residual covariances of entrepreneurial orientation all less than the threshold of 1.96. There is no big value (say, 20) in the modification indices of covariances of EO as well. Hence, there is no need for further model re-specification. The next step is to check model fit indices.

Standardised Residual Covariances (Group number 1 - Congeneric)

	RT1	RT2	In1	In2	In3	CA1	CA2	CA3	Aut5	Aut1	Aut3	Aut4	Pro1	Pro2	Pro3
RT1	.000														
RT2	.000	.000													
In1	1.657	1.187	.000												
In2	-.880	-.246	-.022	.000											
In3	-.182	.037	.044	-.002	.000										
CA1	.192	.811	1.577	2.198	1.933	.000									
CA2	-.484	.177	-.517	.174	-.001	-.037	.000								
CA3	-.898	-.781	-2.274	-1.926	-1.799	-.177	.055	.000							
Aut5	-.895	-.268	-.038	-.557	.011	-.138	-.002	.261	.000						
Aut1	.256	.452	.848	-.459	-.437	-.681	-.104	-.951	-.146	.000					
Aut3	.370	.068	.995	-.454	.028	-.422	.399	.925	.020	.048	.000				
Aut4	-.522	-.453	2.036	.977	1.031	.531	-.827	-1.352	.305	.072	-.182	.000			
Pro1	1.609	1.519	.729	.688	.699	1.955	.149	-.252	-.052	.571	.725	.541	.000		
Pro2	-.849	-1.353	-1.403	-.262	-.445	.764	.391	-.815	-.431	-.409	.653	.223	-.355	.000	
Pro3	-.990	-.775	-.844	-.132	-.789	.512	-.862	-1.143	-1.037	-.426	-.848	-1.145	-.220	.809	.000

Covariances (Congeneric)			M.I.	Par Change
ein1	<-->	RT	5.506	.105
ein1	<-->	ert1	6.792	.125
ein2	<-->	ert1	5.381	-.091
eca1	<-->	INNO	7.453	.140
eca3	<-->	INNO	10.531	-.172
eaut1	<-->	eca3	5.538	-.131
eaut3	<-->	eca1	4.074	-.099
eaut3	<-->	eca3	8.229	.144
eaut4	<-->	INNO	7.008	.115
eaut4	<-->	eca1	8.364	.166
epro1	<-->	RT	13.346	.175
epro1	<-->	INNO	4.287	.078
epro1	<-->	PRO	7.640	-.094
epro1	<-->	ein1	4.377	.073
epro1	<-->	eca1	5.202	.115
epro2	<-->	RT	6.922	-.122
epro2	<-->	ert2	4.722	-.098
epro2	<-->	ein1	7.359	-.091
epro2	<-->	eca2	4.414	.077
epro2	<-->	eaut3	4.361	.073
epro3	<-->	CA	4.012	-.096
epro3	<-->	PRO	4.440	.084
epro3	<-->	epro2	11.877	.136

Regression Weight (Congeneric)			M.I.	Par Change
In1	<---	RT	6.169	.120
In1	<---	RT1	10.961	.104
In1	<---	RT2	4.205	.069
In1	<---	Aut4	4.136	.077
In2	<---	RT1	6.485	-.066
CA1	<---	INNO	11.515	.228
CA1	<---	PRO	5.399	.160
CA1	<---	In1	9.519	.178
CA1	<---	In2	10.817	.180
CA1	<---	In3	9.335	.174
CA1	<---	Pro1	8.153	.148
CA3	<---	INNO	10.925	-.228
CA3	<---	In1	9.227	-.180
CA3	<---	In2	11.118	-.187
CA3	<---	In3	8.511	-.171
Aut3	<---	CA3	6.918	.078
Aut4	<---	In1	4.097	.098
Pro1	<---	RT	14.929	.201
Pro1	<---	RT1	14.121	.127
Pro1	<---	RT2	13.038	.130
Pro1	<---	In1	6.927	.113
Pro2	<---	RT	6.998	-.133
Pro2	<---	RT2	7.565	-.096
Pro2	<---	In1	5.886	-.100
Pro3	<---	Aut4	4.902	-.103

Exhibit 5.81: Scalars for the Multi-factor Confirmatory Factor Analysis (CFA) of Entrepreneurial Orientation

The model fit summary lists the fit measures for the CFA of the five latent variables of Entrepreneurial Orientation in Exhibit 5.82. As shown in Exhibit 5.80, the model fits well with a chi-square of 118.273, 67 degree of freedom ($\chi^2/_{\mathrm{df}} = 1.765$, indicating model parsimony), and Bollen-Stine bootstrap p value of 0.126 (well above the recommended level of 0.05) after “RT3” and “Pro1” are dropped off. Due to data size and the non-normality of the data set, p value of $\chi 2$ is still zero. The model is fit using the Bollen-Stine p value. RMSEA is 0.054 with PCLOSE =0.326 indicating very good fit. SRMR is 0.0456 indicating good fit. CFI and TLI are 0.975

and 0.966 respectively, greater than 0.95 indicating good fit. The good fit statistics indicate that the indicators are good measures of their respective factors.

Fit Indices	**Acceptable levels**	**Congeneric Measurement Model fits Results**
χ^2 (df, p)	p > 0.05	Chi-square = 118.273 df = 67 P=0.130
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.054 PCLOSE=0.326 LO 90 = 0.38
RMR SRMR	SRMR < 0.06	SRMR=0.0456
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.966
CFI	CFI > 0.95	CFI=0.975

Exhibit 5.82: Model Fit Statistics for Entrepreneurial Orientation

Exhibit 5.83 provides the estimation result (Regression weights, Standardised Regression Weights, Correlations, and the Squared Multiple Correlations of the indicator items) for five constructs of Entrepreneurial Orientation (EO): Proactiveness, Innovativeness, Risk Taking, Autonomy and Competitive Aggressiveness. As can be seen from the Standardised Regression Weights, almost all the factor pattern coefficients (factor loadings) of latent variables are higher than 0.7, except “Aut4” on Autonomy. The Standardised Regression Weights for the indicator variables on their respective latent variables range from 0.699 to 0.974 indicating these indicators have strong influence on the variation of their respective latent variables. The unconstrained factor loadings are all significant with C.R. values all greater than 1.96. The factor loadings (both standardised and unstandardised) indicate all variables are significantly related to their specific constructs, verifying the posited relationships among indicators and constructs.

The values of Squared Multiple Correlations (R^2) suggest the variance of indicators explained by their respective measurement models. Adjusted R^2 are also provided through related function (Adjusted $R^2 = 1- \frac{p(1-R^2)}{N-p-1}$, where p is the number of independent variables and N is the number of responses). It can be seen the discrepancy between R^2 and the Adjusted R^2 is quite small. The standardised covariances (equal to correlations) of these four factors range from 0.078 to 0.618 indicating variations of correlations among constructs. Except the correlation between Competitive Aggressiveness and Risk Taking, all the other correlations are significant ($p < 0.001$).

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P	Label
Pro3	<---	PRO	1.059	.075	14.136	***	par_1
Pro2	<---	PRO	1.020	.065	15.789	***	par_2
Aut4	<---	AUT	.823	.066	12.474	***	par_3
Aut3	<---	AUT	1.163	.066	17.679	***	par_4
Aut1	<---	AUT	1.072	.069	15.606	***	par_5
Aut5	<---	AUT	1.093	.071	15.356	***	par_7
CA3	<---	CA	1.173	.087	13.535	***	par_8
CA2	<---	CA	1.383	.071	19.565	***	par_9
CA1	<---	CA	1.095	.083	13.170	***	par_10
In3	<---	INNO	1.006	.056	17.830	***	par_11
In2	<---	INNO	1.104	.057	19.313	***	par_12
In1	<---	INNO	.891	.059	15.121	***	par_13
RT1	<---	RT	1.015	.109	9.290	***	par_14
RT2	<---	RT	1.239	.114	10.843	***	par_15

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
Pro3	<---	PRO	.807
Pro2	<---	PRO	.885
Aut4	<---	AUT	.699
Aut3	<---	AUT	.891
Aut1	<---	AUT	.820
Aut5	<---	AUT	.811
CA3	<---	CA	.746
CA2	<---	CA	.974
CA1	<---	CA	.730
In3	<---	INNO	.887
In2	<---	INNO	.932
In1	<---	INNO	.794
RT1	<---	RT	.712
RT2	<---	RT	.928

Covariances: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P	Label
PRO	<-->	AUT	.168	.069	2.436	.015	par_6
PRO	<-->	CA	.513	.054	9.554	***	par_16
PRO	<-->	INNO	.618	.047	13.055	***	par_17
PRO	<-->	RT	.194	.070	2.764	.006	par_18
AUT	<-->	CA	.181	.065	2.805	.005	par_19
AUT	<-->	INNO	.218	.065	3.358	***	par_20
AUT	<-->	RT	.284	.066	4.274	***	par_21
CA	<-->	INNO	.351	.058	6.014	***	par_22
CA	<-->	RT	.078	.067	1.169	.242	par_23
INNO	<-->	RT	.344	.064	5.357	***	par_24

Correlations: (Group number 1 - Congeneric)

			Estimate
PRO	<-->	AUT	.168
PRO	<-->	CA	.513
PRO	<-->	INNO	.618
PRO	<-->	RT	.194
AUT	<-->	CA	.181
AUT	<-->	INNO	.218
AUT	<-->	RT	.284
CA	<-->	INNO	.351
CA	<-->	RT	.078
INNO	<-->	RT	.344

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
RT1	.507
RT2	.861
In1	.631
In2	.868
In3	.786
CA1	.533
CA2	.949
CA3	.557
Aut5	.658
Aut1	.673
Aut3	.794
Aut4	.489
Pro2	.784
Pro3	.650

Exhibit 5.83: Scalars for the Multi-factor Confirmatory Factor Analysis (CFA) of Entrepreneurial Orientation

Construct Validity: The following criteria including Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and Average Shared Variance (ASV) are used to assess convergent and discriminant validity, and construct reliability (Hair, Black et al. 2010).

Reliability
- CR > 0.7

Convergent Validity
- CR > (AVE)
- AVE > 0.5

Discriminant Validity
- MSV < AVE
- ASV < AVE

Using the correlations between these four factors and the Standardised Regression Weights, Exhibit 5.84 presents the analysis results for convergent and discriminant validity, and construct reliability. All the values for construct reliability exceed the recommended level of 0.7 and all the values for average variance extracted exceed the recommended level of 0.5 (Hair, Black et al. 2010). All the values for maximum shared variance and average shared variance are far below the values of average variance extracted. Thus, it is clear that all these measurement models show convergent and discriminant validity, and construct reliability.

	CR	AVE	MSV	ASV	INNO*	PRO*	AUT*	CA*	RT*
INNO	0.905	0.762	0.382	0.168	0.873				
PRO	0.835	0.717	0.382	0.178	0.618	0.847			
AUT	0.882	0.653	0.081	0.047	0.218	0.168	0.808		
CA	0.862	0.679	0.263	0.106	0.351	0.513	0.181	0.824	
RT	0.810	0.684	0.118	0.061	0.344	0.194	0.284	0.078	0.827

Exhibit 5.84: Convergent and Discriminant Validity, and Construct Reliability for the Measurement Models of Entrepreneurial Orientation

5.4.3 Multi-factor CFA─ the combined measurement models

This section presents the results of the confirmatory factor analysis of wine cluster resources, entrepreneurial orientation, market performance and entrepreneurial opportunities. All the latent variables were given scales by fixing their variance to “1”. Parameters are estimated using Maximum Likelihood (ML) method and unbiased covariance to be analysed. The output specifications include:

- Regression Weight including Standardised estimates

- Squared multiple correlations
- Factor Correlations

The output results are used to assess the accuracy of the hypothesised measurement models and ensure there are not cross-loadings among latent variables. Exhibit 5.85 presents the confirmatory factor analysis model for the latent variables of Entrepreneurial Orientation, Market Performance, Industrial Cluster Strategic Resources, and Entrepreneurial Opportunity Perception.

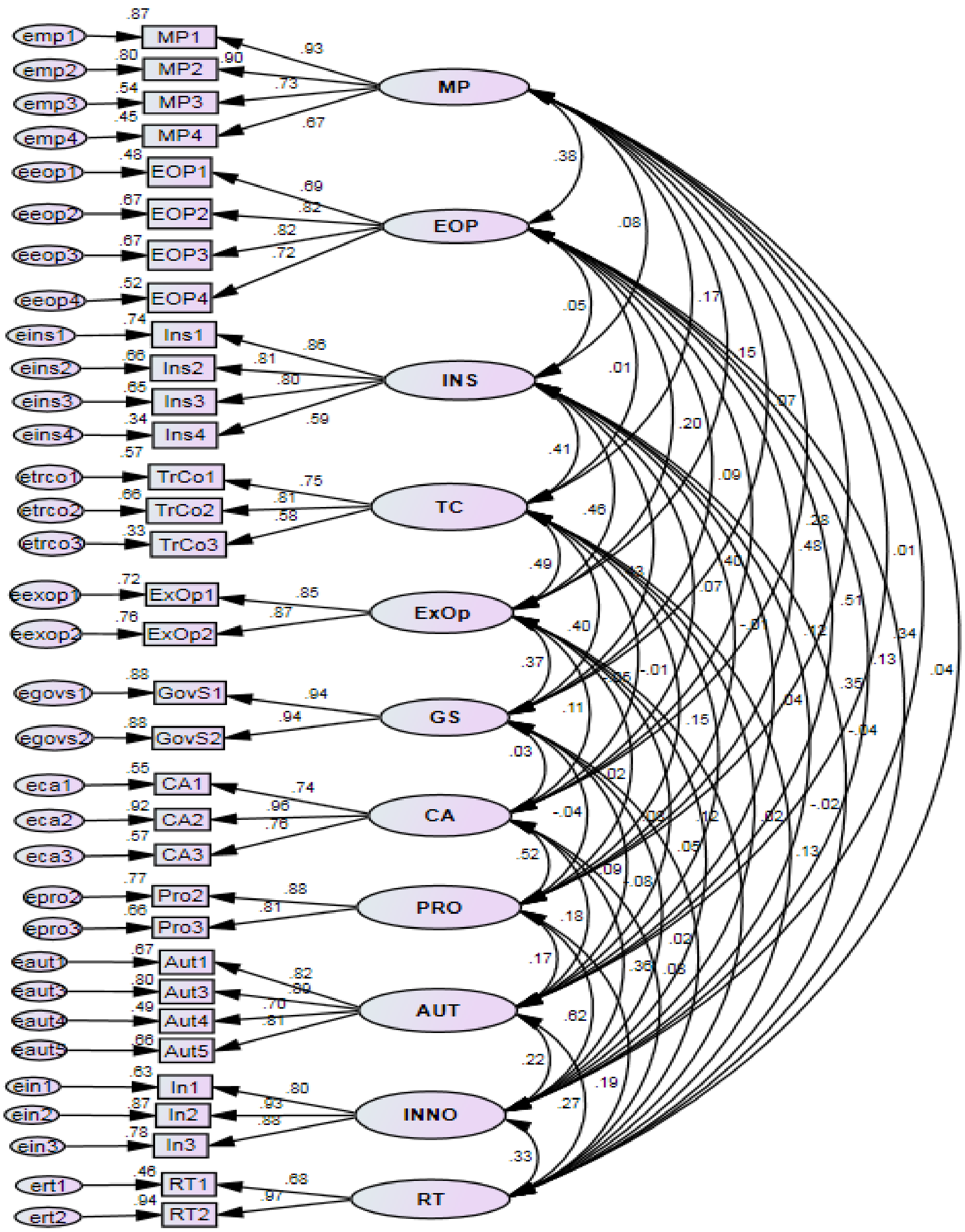


Exhibit 5.85: Multi-factor Confirmatory Factor Analysis for all the Latent Variables

Exhibit 5.86 provides estimation results (Regression weights, Standardised Regression Weights, Correlations, and the Squared Multiple Correlations of the indicator items) for the latent variables of Entrepreneurial Orientation, Market Performance, Industrial Cluster Strategic Resources, and Entrepreneurial Opportunity Perception. As can be seen from the Standardised Regression Weights, almost all the factor pattern coefficients (factor loadings) are near or higher than 0.7 on their associated latent variables, except for Ins4 and TrCo3.

The unconstrained factor loadings are all significant with C.R. all greater than 1.96. The Standardised Regression Weights for the indicator variables on their respective latent variables range from 0.575 to 0.970 indicating these indicators have strong influence on the variation of their respective latent variables. The factor loadings (both standardised and unstandardised) indicate all variables are significantly related to their specific constructs, verifying the posited relationships among indicators and constructs. The values of Squared Multiple Correlations (R^2) show the variance of indicators explained by their respective measurement models. Adjusted R^2 are also provided through related function (Adjusted $R^2 = R^2 - \frac{p(1-R^2)}{N-p-1}$, where p is the number of independent variables and N is the number of responses). It can be seen the discrepancy between R^2 and the Adjusted R^2 is quite small. All the values of adjusted R^2 are greater than 30% indicating all the observed variables are adequate measures of their relevant constructs (Holmes-Smith 2013). The standardised covariances (equal to correlations) of these four factors range from 0.374 to 0.491 indicating reasonably high correlations. The comparatively high correlations among measurements suggest it is necessary to check discriminant validity of the measurement models.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P	Label
Pro3	<---	PRO	1.067	.072	14.722	***	par_4
Pro2	<---	PRO	1.012	.062	16.258	***	par_5
Aut4	<---	AUT	.820	.066	12.417	***	par_6
Aut3	<---	AUT	1.166	.066	17.742	***	par_7
Aut1	<---	AUT	1.071	.069	15.590	***	par_8
Aut5	<---	AUT	1.094	.071	15.373	***	par_10
CA3	<---	CA	1.187	.086	13.773	***	par_11
CA2	<---	CA	1.361	.071	19.228	***	par_12
CA1	<---	CA	1.115	.083	13.490	***	par_13
In3	<---	INNO	1.004	.056	17.781	***	par_14
In2	<---	INNO	1.105	.057	19.361	***	par_15
In1	<---	INNO	.892	.059	15.156	***	par_16
RT1	<---	RT	.971	.107	9.111	***	par_17
RT2	<---	RT	1.295	.115	11.253	***	par_18
Ins1	<---	INS	1.685	.102	16.585	***	par_28
Ins2	<---	INS	1.545	.102	15.164	***	par_29
Ins3	<---	INS	1.588	.106	14.977	***	par_30
Ins4	<---	INS	1.115	.113	9.871	***	par_31
TrCo2	<---	TC	1.158	.085	13.632	***	par_32
TrCo3	<---	TC	.942	.103	9.175	***	par_33
TrCo1	<---	TC	1.090	.087	12.567	***	par_34
GovS2	<---	GS	1.495	.070	21.381	***	re_gs
GovS1	<---	GS	1.495	.070	21.381	***	re_gs
ExOp2	<---	ExOp	1.287	.087	14.814	***	par_38
ExOp1	<---	ExOp	1.320	.092	14.383	***	par_39
EOP3	<---	EOP	1.279	.084	15.149	***	par_43
EOP2	<---	EOP	1.263	.083	15.221	***	par_44
EOP4	<---	EOP	1.166	.092	12.687	***	par_45
EOP1	<---	EOP	1.009	.084	12.087	***	par_46
MP1	<---	MP	1.207	.062	19.428	***	par_47
MP2	<---	MP	1.094	.060	18.199	***	par_48
MP3	<---	MP	.972	.072	13.497	***	par_49
MP4	<---	MP	.782	.065	12.068	***	par_50

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
Pro3	<---	PRO	.813
Pro2	<---	PRO	.878
Aut4	<---	AUT	.697
Aut3	<---	AUT	.893
Aut1	<---	AUT	.819
Aut5	<---	AUT	.811
CA3	<---	CA	.755
CA2	<---	CA	.958
CA1	<---	CA	.743
In3	<---	INNO	.885
In2	<---	INNO	.933
In1	<---	INNO	.795
RT1	<---	RT	.681
RT2	<---	RT	.970
Ins1	<---	INS	.862
Ins2	<---	INS	.810
Ins3	<---	INS	.803
Ins4	<---	INS	.586
TrCo2	<---	TC	.810
TrCo3	<---	TC	.575
TrCo1	<---	TC	.754
GovS2	<---	GS	.936
GovS1	<---	GS	.937
ExOp2	<---	ExOp	.870
ExOp1	<---	ExOp	.847
EOP3	<---	EOP	.818
EOP2	<---	EOP	.820
EOP4	<---	EOP	.719
EOP1	<---	EOP	.693
MP1	<---	MP	.933
MP2	<---	MP	.897
MP3	<---	MP	.732
MP4	<---	MP	.674

Correlations (Congeneric)	Estimate
PRO <--> AUT	0.167
PRO <--> CA	0.519
PRO <--> INNO	0.62
PRO <--> RT	0.187
AUT <--> CA	0.183
AUT <--> INNO	0.217
AUT <--> RT	0.272
CA <--> INNO	0.356
CA <--> RT	0.08
INNO <--> RT	0.332
INS <--> TC	0.414
INS <--> GS	0.43
TC <--> GS	0.403
INS <--> ExOp	0.464
TC <--> ExOp	0.492
GS <--> ExOp	0.373
PRO <--> INS	-0.012
PRO <--> TC	-0.01
PRO <--> GS	-0.044
PRO <--> ExOp	0.023
PRO <--> EOP	0.484
PRO <--> MP	0.508
AUT <--> INS	0.043
AUT <--> TC	0.154
AUT <--> GS	0.088
AUT <--> ExOp	0.081
AUT <--> EOP	0.121
AUT <--> MP	0.011
CA <--> INS	0.067
CA <--> TC	-0.053
CA <--> GS	0.033
CA <--> ExOp	0.108
CA <--> EOP	0.4
CA <--> MP	0.285
INNO <--> INS	-0.022
INNO <--> TC	0.016
INNO <--> GS	-0.079
INNO <--> ExOp	0.055
INNO <--> EOP	0.349
INNO <--> MP	0.335
RT <--> INS	-0.043
RT <--> TC	0.135
RT <--> GS	0.02
RT <--> ExOp	0.121
RT <--> EOP	0.128
INS <--> EOP	0.052
INS <--> MP	0.084
TC <--> EOP	0.01
TC <--> MP	0.173
GS <--> EOP	0.09
GS <--> MP	0.07
ExOp <--> EOP	0.201
ExOp <--> MP	0.146
EOP <--> MP	0.377
RT <--> MP	0.042

Exhibit 5.87: Scalars of confirmatory factor analysis of the combined measurement models (1)

*Covariances Congeneric)			Estimate	S.E.	C.R.	P	Label
PRO	<-->	AUT	.167	.069	2.415	.016	par_9
PRO	<-->	CA	.519	.054	9.608	***	par_19
PRO	<-->	INNO	.620	.047	13.165	***	par_20
PRO	<-->	RT	.187	.068	2.738	.006	par_21
AUT	<-->	CA	.183	.065	2.798	.005	par_22
AUT	<-->	INNO	.217	.065	3.353	***	par_23
AUT	<-->	RT	.272	.065	4.183	***	par_24
CA	<-->	INNO	.356	.059	6.040	***	par_25
CA	<-->	RT	.080	.066	1.218	.223	par_26
INNO	<-->	RT	.332	.063	5.225	***	par_27
INS	<-->	TC	.414	.064	6.472	***	par_35
INS	<-->	GS	.430	.057	7.577	***	par_36
TC	<-->	GS	.403	.062	6.491	***	par_37
INS	<-->	ExOp	.464	.058	7.933	***	par_40
TC	<-->	ExOp	.492	.061	8.035	***	par_41
GS	<-->	ExOp	.373	.061	6.144	***	par_42
PRO	<-->	INS	-.012	.072	-.160	.873	par_51
PRO	<-->	TC	-.010	.076	-.135	.892	par_52
PRO	<-->	GS	-.044	.069	-.636	.525	par_53
PRO	<-->	ExOp	.023	.073	.313	.754	par_54
PRO	<-->	EOP	.484	.059	8.253	***	par_55
PRO	<-->	MP	.508	.054	9.333	***	par_56
AUT	<-->	INS	.043	.069	.614	.539	par_57
AUT	<-->	TC	.154	.072	2.140	.032	par_58
AUT	<-->	GS	.088	.067	1.311	.190	par_59
AUT	<-->	ExOp	.081	.070	1.160	.246	par_60
AUT	<-->	EOP	.121	.069	1.744	.081	par_61
AUT	<-->	MP	.011	.068	.162	.871	par_62

*Covariances Congeneric)			Estimate	S.E.	C.R.	P	Label
CA	<-->	INS	.067	.068	.989	.323	par_63
CA	<-->	TC	-.053	.072	-.744	.457	par_64
CA	<-->	GS	.033	.066	.500	.617	par_65
CA	<-->	ExOp	.108	.069	1.578	.115	par_66
CA	<-->	EOP	.400	.059	6.732	***	par_67
CA	<-->	MP	.285	.061	4.635	***	par_68
INNO	<-->	INS	-.022	.068	-.322	.748	par_69
INNO	<-->	TC	.016	.072	.223	.823	par_70
INNO	<-->	GS	-.079	.066	-1.194	.232	par_71
INNO	<-->	ExOp	.055	.069	.790	.429	par_72
INNO	<-->	EOP	.349	.062	5.642	***	par_73
INNO	<-->	MP	.335	.060	5.606	***	par_74
RT	<-->	INS	-.043	.068	-.629	.529	par_75
RT	<-->	TC	.135	.071	1.897	.058	par_76
RT	<-->	GS	.020	.066	.299	.765	par_77
RT	<-->	ExOp	.121	.068	1.774	.076	par_78
RT	<-->	EOP	.128	.068	1.876	.061	par_79
INS	<-->	EOP	.052	.071	.730	.465	par_80
INS	<-->	MP	.084	.068	1.231	.218	par_81
TC	<-->	EOP	.010	.075	.137	.891	par_82
TC	<-->	MP	.173	.070	2.460	.014	par_83
GS	<-->	EOP	.090	.068	1.311	.190	par_84
GS	<-->	MP	.070	.066	1.060	.289	par_85
ExOp	<-->	EOP	.201	.070	2.886	.004	par_86
ExOp	<-->	MP	.146	.068	2.136	.033	par_87
EOP	<-->	MP	.377	.060	6.235	***	par_88
RT	<-->	MP	.042	.066	.633	.527	par_89

Abbreviations are same as above

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate	Adjusted R
MP4	.454	0.446
MP3	.536	0.529
MP2	.804	0.801
MP1	.871	0.869
EOP1	.480	0.472
EOP4	.517	0.510
EOP2	.673	0.668
EOP3	.668	0.663
ExOp1	.718	0.716
ExOp2	.757	0.755
GovS1	.878	0.877
GovS2	.875	0.874
TrCo1	.569	0.564
TrCo3	.331	0.323
TrCo2	.656	0.652
Ins4	.343	0.333
Ins3	.645	0.640
Ins2	.657	0.652
Ins1	.743	0.739
RT1	.464	0.460
RT2	.941	0.941
In1	.633	0.629
In2	.870	0.869
In3	.783	0.780
CA1	.552	0.547
CA2	.919	0.918
CA3	.570	0.565
Aut5	.658	0.654
Aut1	.671	0.667
Aut3	.797	0.795
Aut4	.485	0.479
Pro2	.772	0.770
Pro3	.660	0.657

Exhibit 5.86: Scalars of confirmatory factor analysis of the combined measurement models (2)

As can be seen from Exhibit 5.87, the model fits well with a chi-square of 642.554, 441 degree of freedom($^{\chi^2}/_{\mathrm{df}} = 1.457$), and Bollen-Stine bootstrap p value of 0.198 (well above the recommended level of 0.05). The model is fit using the Bollen-Stine p value. RMSEA is 0.042 with PCLOSE =0.978 indicating a very good fit. SRMR is 0.0466 indicating a good fit. CFI and TLI are greater than 0.95 indicating a good fit. The good fit statistics show that the indicators are good measures of their respective factors.

Fit Indices	Acceptable levels	fits Results
χ^2 (df, p)	p > 0.05	Chi-square = 642.554 df = 441 P=0.000 Bollen-Stine bootstrap p=0.198
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.042 PCLOSE=0.978 LO 90 = 0.034
RMR SRMR	SRMR < 0.06	SRMR=0.0466
TLI, NNFI or □2	TLI > 0.95	TLI=0.950
CFI	CFI > 0.95	CFI=0.958

Exhibit 5.87: Model Fit Statistics for the Combined Measurement Models of Entrepreneurial Orientation, Market Performance, Industrial Cluster Strategic Resources, and Entrepreneurial Opportunity Perception

Construct Validity: The following criteria including Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and Average Shared Variance (ASV) are used to assess convergent and discriminant validity, and construct reliability (Hair, Black et al. 2010).

Reliability
- CR > 0.7

Convergent Validity
- CR > (AVE)
- AVE > 0.5

Discriminant Validity
- MSV < AVE
- ASV < AVE

Using the correlations between these four factors and the Standardised Regression Weights, Exhibit 5.88 presents the analysis results for convergent and discriminant validity, and construct reliability. All the values for construct reliability exceed the recommended level of 0.7 and all the values for average variance extracted exceed the recommended level of 0.5 (Hair, Black et al. 2010). All the values for maximum shared variance and average shared variance are far below the values of average variance extracted. Thus, it is clear that all these measurement models show convergent and discriminant validity, and construct reliability.

	CR	AVE	MSV	ASV	RT	PRO	AUT	CA	INNO	TC	GS	ExOp	INS	EOP	MP
RT	0.821	0.702	0.110	0.028	0.838										
PRO	0.834	0.716	0.384	0.121	0.187	0.846									
AUT	0.882	0.653	0.074	0.024	0.272	0.167	0.808								
CA	0.863	0.680	0.269	0.070	0.080	0.519	0.183	0.825							
INNO	0.905	0.762	0.384	0.091	0.332	0.620	0.217	0.356	0.873						
TC	0.760	0.518	0.242	0.065	0.135	-0.010	0.154	-0.053	0.016	0.720					
GS	0.934	0.877	0.185	0.052	0.020	-0.044	0.088	0.033	-0.079	0.403	0.937				
ExOp	0.849	0.737	0.242	0.069	0.121	0.023	0.081	0.108	0.055	0.492	0.373	0.859			
INS	0.853	0.597	0.215	0.059	-0.043	-0.012	0.043	0.067	-0.022	0.414	0.430	0.464	0.773		
EOP	0.848	0.585	0.234	0.074	0.128	0.484	0.121	0.400	0.349	0.010	0.090	0.201	0.052	0.765	
MP	0.887	0.666	0.258	0.066	0.042	0.508	0.011	0.285	0.335	0.173	0.070	0.146	0.084	0.377	0.816

Exhibit 5.88: convergent and discriminant validity, and construct reliability for all the measurement models

6 Structural Modeling

6.1 Chapter Introduction

Chapter 6 tests the research hypotheses using mainly structural equation modeling of AMOS software. The chapter begins by creating composite variables to compare the status of cluster shared resources and winery entrepreneurship between SA and other states, and between membership of regional associations and other membership types. This chapter firstly examined the structural equation models of entrepreneurial orientation, entrepreneurial opportunities and market performance and the structural model of cluster resources. It also examined the interaction effects of cluster resources on the triangular relationships between Entrepreneurial Orientation, Entrepreneurial Opportunity and Market performance.

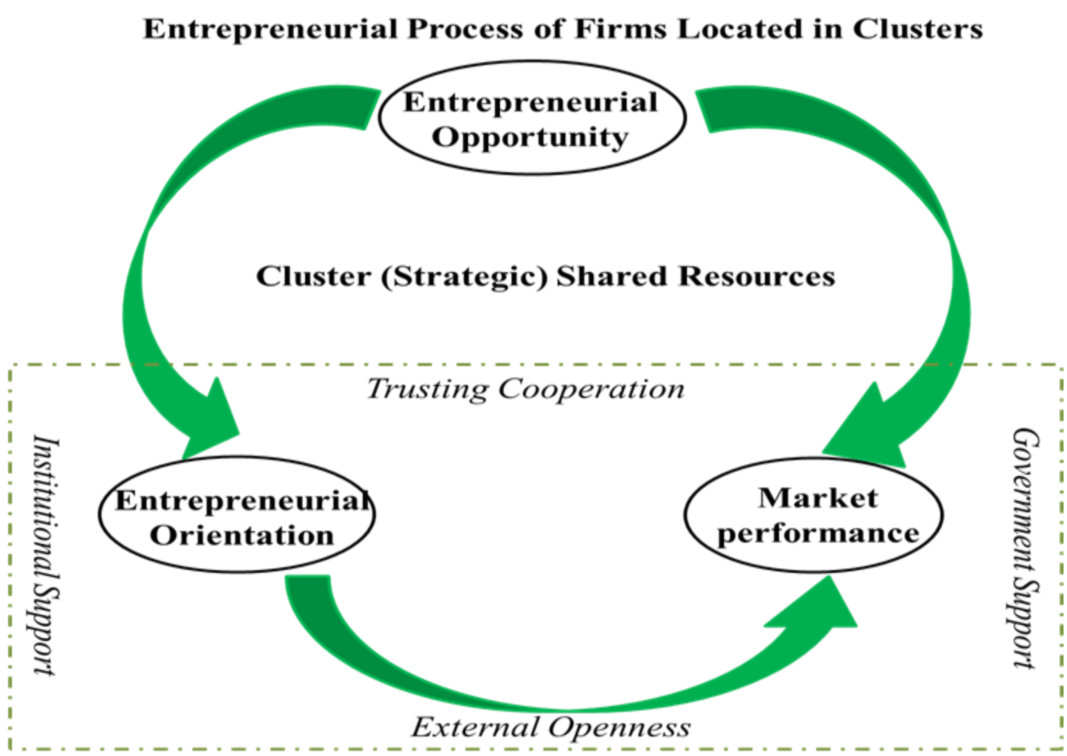


Exhibit 6.1: Conceptual Model of the Research

The thesis Structural model and its associated hypotheses are presented below in Exhibits 6.1and 6.2. As can be seen from Exhibit 6.1, the research hypotheses are the triangular relationships of Entrepreneurial Orientation, Entrepreneurial Opportunity and Market performance, and the moderating roles played by cluster strategic shared resources of cluster firms on these relationships. These strategic shared resources of firms in clusters, institutional support, government support, trusting cooperation and external openness, are cluster based. Exhibit 6.2 presents 20 hypotheses of the research outlining the relationships illustrated in Exhibit 6.1.

H1a	Government Support positively influences Trusting Cooperation of cluster firms
H1b	Government Support positively influences External Openness of cluster firms
H2a	Supportive Institutions positively influences Trusting Cooperation of cluster firms
H2b	Supportive Institutions positively influences External Openness of cluster firms
H3a	Trusting Cooperation of cluster firms mediates the influence of Government Support on External Openness
H3b	Trusting Cooperation of cluster firms mediates the influence of Institutional Support on External Openness
H4	Entrepreneurial Opportunity positively influences Entrepreneurial Orientation
H5	Entrepreneurial Opportunity positively influences firm Market Performance
H6a	Entrepreneurial Orientation positively influences Market Performance
H6b	Entrepreneurial Orientation mediates the influence of Entrepreneurial Opportunity on Market Performance
H7a	External Openness positively moderates the influence of Entrepreneurial Opportunity Entrepreneurial Orientation
H7b	Trusting Cooperation positively moderates the influence of Entrepreneurial Opportunity on Entrepreneurial Orientation
H8a	External Openness positively influences Market Performance
H8b	External Openness positively moderates the influence of Entrepreneurial Opportunity on Market Performance
H9a	Trusting Cooperation positively influences Market Performance
H9b	Trusting Cooperation positively moderates the influence of Entrepreneurial Opportunity on Market Performance
H10a	External Openness positively moderates the influence of Entrepreneurial Orientation on Market Performance
H10b	Trusting Cooperation positively moderates the influence of Entrepreneurial Orientation on Market Performance
H11	Entrepreneurial Orientation mediates the positive influence of Government Support on Market Performance
H12	Entrepreneurial Orientation mediates the positive influence of Institutional Support on Market Performance

Exhibit 6.2: Hypotheses Summary in the Research

6.2 Comparative Analysis

In this research, although the definition of wine cluster is consistent with the wine GI classification of Wine Australia, prior research methods in the wine cluster is used as well. Firstly, the wine industry in South Australia is claimed to be more developed in terms of clustering than the cluster development status of the wine industry in other Australian states (Aylward 2002, 2007). Secondly, regional wine association membership is frequently used as way to define cluster membership (Taylor, McRae-Williams et al. 2007, Dana and Winstone 2008). Thus, two comparative analyses were conducted before the main full structural model of the research. Wine Custer Shared Resources, Entrepreneurial Orientation and other dependent variables are compared, using locations and memberships of different wine associations as comparative variables.

6.2.1 Creating composite variables using factor score weights

In order to do comparative analysis, it is necessary to create composite variables since all the variables of interest in the research are measured using reflective measurements. A composite variable is a composite score of the items making up the construct. It provides an efficient way to analyse reflective measures. For congeneric measurement models, factor score weights of related items are used to calculate composite variables (Holmes-Smith 2013). Jöreskog and Sörbom (1989) suggest that after having fitted and accepted a one-factor congeneric model, it is possible to compute an estimated composite score ($\hat{\xi}$) for each subject by applying the formula:

$$\hat{\xi} = \boldsymbol{\omega}\mathbf{X}$$

where $\boldsymbol{\omega}$ is the factor score weight for each of the indicator variables (or items) that make up the composite and **X** is the subjects' observed indicator variable score (or item score). For a set of n items, the composite score for the i[th] subject ($\hat{\xi}_i$) is computed as follows:

$$\hat{\xi}_i = \omega_1 x_{1i} + \omega_2 x_{2i} + \ldots + \omega_n x_{ni}$$

Although factor score regression weights are proportional they can be re-scaled, so their total amount varies. For convenience sake, factor score regression weights are re-scaled with the total amount equal to 1 in the following studies. Based on the factor score weights from the output, the rescaled factor score weights with total amount 1 are listed in Exhibit 6.3.

Latent Variables			**Latent Variables**		
Institutional Support	Ins4	Ins3	Ins2	Ins1	Total
Factor Score Weights	0.054	0.136	0.144	0.226	0.560
Proportioned to total=1	0.096	0.243	0.257	0.404	1.000
Trusting Cooperation	TrCo1	TrCo3	TrCo2		Total
Factor Score Weights	0.238	0.109	0.369		0.716
Proportioned to Total = 1	0.332	0.152	0.516		1.000
External Openness	ExOp1	ExOp2			Total
Factor Score Weights	0.202	0.444			0.646
Proportioned to Total = 1	0.313	0.687			1.000
Government Support	GovS1	GovS2			Total
Factor Score Weights	0.3	0.32			0.646
Proportioned to Total = 1	0.48	0.52			1.000
Market Performance	MP4	MP3	MP2	MP1	Total
Factor Score Weights	0.075	0.085	0.271	0.406	0.837
Proportioned to Total = 1	0.090	0.102	0.324	0.484	1.000
Entrepreneurial Opportunity	EOP4	EOP3	EOP2	EOP1	Total
Factor Score Weights	0.133	0.202	0.252	0.125	0.712
Proportioned to total=1	0.187	0.284	0.353	0.176	1.000
Competitive Aggressiveness	CA1	CA2	CA3		Total
Factor Score Weights	0.047	0.612	0.049		0.708
Proportioned to total=1	0.066	0.865	0.069		1.000
Autonomy	Aut5	Aut1	Aut3	Aut4	Total
Factor Score Weights	0.183	0.197	0.333	0.12	0.833
Proportioned to total=1	0.220	0.236	0.400	0.144	1.000
Innovativeness	In1	In2	In3		Total
Factor Score Weights	0.153	0.441	0.298		0.892
Proportioned to total=1	0.172	0.494	0.334		1.000
Proactiveness	Pro2	Pro3			Total
Factor Score Weights	0.485	0.240			0.725
Proportioned to total=1	0.669	0.331			1.000
Risk Taking	RT1	RT2			Total
Factor Score Weights	0.120	0.595			0.715
Proportioned to total=1	0.168	0.832			1.000

Exhibit 6.3: Factor score weights of latent variables

The reliability of each composite measure is computed by calculating Hancock and Mueller's (2001) Coefficient H. Coefficient H has several advantages over other reliability measures such as Cronbach's alpha, in factor loading, indicator variable contribution and value inflation (Holmes-Smith 2013). According to Exhibit 6.4, all the values of Coefficient H are greater than the recommended threshold 0.7, which the reliability of each composite measure holds.

Latent Variables	**Coefficient H**
Institutional Support	0.880
Trusting Cooperation	0.792
External Openness	0.867
Government Support	0.934
Marker Performance	0.928
Competitive Aggressiveness	0.954
Autonomy	0.897
Innovativeness	0.921
Proactiveness	0.846
Risk Taking	0.879
Entrepreneurial Opportunity	0.859

Exhibit 6.4: Coefficient H of Latent Variables

6.2.2 Comparison between winery locations

In order to investigate the differences between states in wine cluster shared resources, entrepreneurship and performance, a one way multivariate analysis of variance (One-way MANOVA) between groups is conducted. There are some assumptions under MANOVA such as sample size, normality, outliers, linearity, homogeneity of regression and multicollinearity. Moderate violation to normality is acceptable. We checked outliers of participants by using Mahal-Distance to delete five participants that seriously violated the threshold suggested by Pallant (2010). The assumption of homogeneity of variance-covariance matrices will be tested in the following analysis.

The results of analysis are shown in Exhibit 6.5. There are 91 participants in South Australian and 168 participants in other states. All exceeded 30, thus, violations of normality or equality of variance will not matter (Pallant 2010). In the Box's Test of Equality of Covariance Matrics, the Box's M Sig. value is 0.735 indicating the data does not violate the assumption of homogeneity of variance-covariance matrices. In Levene's Test of Equality of Error Variances, all the values of variables at the Significance column are more than 0.05, indicating equal variances of variables. The value of Wilk's Lamba is 0.812 at 0.000 significant level, indicating differences between South Australia and other states in variables of interest.

The table, Tests of Between-Subjects Effects, gives test results showing where South Australia and other states are significantly different from each other. Bonferroni adjustment is recommended to avoid type 1 error (Keselman, Huberty et al. 1998), and was used by dividing 0.05 by 11 (11 is the number of dependent variables). The adjusted significant level is 0.0045. According to this cut-off point, only wine cluster shared resources of Institutional Support and External Openness are significantly different between South Australia and the other states. The last column of the table, 'Tests of Between-Subjects Effects', is Partical Eta Squared, representing the proportion of the variance of the dependent variables that can be explained by the independent variable (location). For example, 11% of the variance in Institutional Support can be explained by location while 5.9% of the variance in External Openness can be explained by location. According to the last table, Comparing Group Means, all the independent variables of this analysis are higher in South Australia than in other states, which indicate that South Australia is richer in the resource forms being studied than the other states and may also suggest that innovation is irrelevant to the abundance of resources.

Descriptive Statistics

Location		Mean	Std. Deviation	N
COM_INS	1*	5.2028	1.59296	91
	2**	4.0495	1.56204	168
	Total	4.4547	1.66399	259
COM_TC	1	4.9468	1.17504	91
	2	4.7059	1.22021	168
	Total	4.7905	1.20776	259
COM_ExOp	1	5.0757	1.29920	91
	2	4.3583	1.40376	168
	Total	4.6103	1.40786	259
COM_GS	1	3.8475	1.47176	91
	2	3.6376	1.54075	168
	Total	3.7114	1.51733	259
COM_MP	1	4.5493	1.08296	91
	2	4.4942	1.19423	168
	Total	4.5136	1.15454	259
COM_EOP	1	3.4304	1.23485	91
	2	3.0967	1.29265	168
	Total	3.2139	1.28023	259
COM_CA	1	4.0623	1.22296	91
	2	3.7773	1.40105	168
	Total	3.8774	1.34570	259
COM_Aut	1	5.1308	1.17144	91
	2	4.8067	1.06505	168
	Total	4.9206	1.11219	259
COM_Inno	1	5.3237	1.00680	91
	2	5.4331	1.10163	168
	Total	5.3947	1.06858	259
COM_Pro	1	4.5532	1.07771	91
	2	4.4292	1.06337	168
	Total	4.4728	1.06799	259
COM_RT	1	4.9793	1.22211	91
	2	4.6563	1.27143	168
	Total	4.7698	1.26144	259

Box's Test of Equality of Covariance Matrices[a]

Box's M	61.558
F	.885
df1	66
df2	113851.834
Sig.	.735

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

Multivariate Tests[a]

	Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.983	1286.373[b]	11.000	247.000	.000	.983
	Wilks' Lambda	.017	1286.373[b]	11.000	247.000	.000	.983
	Hotelling's Trace	57.288	1286.373[b]	11.000	247.000	.000	.983
	Roy's Largest Root	57.288	1286.373[b]	11.000	247.000	.000	.983
Location	Pillai's Trace	.188	5.211[b]	11.000	247.000	.000	.188
	Wilks' Lambda	.812	5.211[b]	11.000	247.000	.000	.188
	Hotelling's Trace	.232	5.211[b]	11.000	247.000	.000	.188
	Roy's Largest Root	.232	5.211[b]	11.000	247.000	.000	.188

Levene's Test of Equality of Error Variances[a]

	F	df1	df2	Sig.
COM_INS	.122	1	257	.727
COM_TC	.142	1	257	.707
COM_ExOp	.916	1	257	.339
COM_GS	1.400	1	257	.238
COM_MP	.596	1	257	.441
COM_EOP	.709	1	257	.400
COM_CA	4.330	1	257	.038
COM_Aut	1.734	1	257	.189
COM_Inno	.396	1	257	.530
COM_Pro	.169	1	257	.682
COM_RT	.645	1	257	.423

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	COM_INS	78.514[a]	1	78.514	31.734	.000	.110
	COM_TC	3.424[b]	1	3.424	2.360	.126	.009
	COM_ExOp	30.378[c]	1	30.378	16.231	.000	.059
	COM_GS	2.599[d]	1	2.599	1.130	.289	.004
	COM_MP	.179[e]	1	.179	.134	.715	.001
	COM_EOP	6.573[f]	1	6.573	4.058	.045	.016
	COM_CA	4.795[g]	1	4.795	2.665	.104	.010
	COM_Aut	6.201[h]	1	6.201	5.093	.025	.019
	COM_Inno	.707[i]	1	.707	.618	.432	.002
	COM_Pro	.908[j]	1	.908	.796	.373	.003
	COM_RT	6.155[k]	1	6.155	3.912	.049	.015
Intercept	COM_INS	5053.026	1	5053.026	2042.349	.000	.888
	COM_TC	5499.818	1	5499.818	3790.290	.000	.937
	COM_ExOp	5253.371	1	5253.371	2806.940	.000	.916
	COM_GS	3307.083	1	3307.083	1437.163	.000	.848
	COM_MP	4827.543	1	4827.543	3609.520	.000	.934
	COM_EOP	2514.681	1	2514.681	1552.480	.000	.858
	COM_CA	3627.692	1	3627.692	2016.170	.000	.887
	COM_Aut	5829.154	1	5829.154	4787.185	.000	.949
	COM_Inno	6830.016	1	6830.016	5972.558	.000	.959
	COM_Pro	4762.548	1	4762.548	4172.167	.000	.942
	COM_RT	5480.336	1	5480.336	3482.975	.000	.931
Location	COM_INS	78.514	1	78.514	31.734	.000	.110
	COM_TC	3.424	1	3.424	2.360	.126	.009
	COM_ExOp	30.378	1	30.378	16.231	.000	.059
	COM_GS	2.599	1	2.599	1.130	.289	.004
	COM_MP	.179	1	.179	.134	.715	.001
	COM_EOP	6.573	1	6.573	4.058	.045	.016
	COM_CA	4.795	1	4.795	2.665	.104	.010
	COM_Aut	6.201	1	6.201	5.093	.025	.019
	COM_Inno	.707	1	.707	.618	.432	.002
	COM_Pro	.908	1	.908	.796	.373	.003
	COM_RT	6.155	1	6.155	3.912	.049	.015
Corrected Total	COM_INS	714.364	258				
	COM_TC	376.338	258				
	COM_ExOp	511.370	258				
	COM_GS	593.987	258				
	COM_MP	343.903	258				
	COM_EOP	422.857	258				
	COM_CA	467.215	258				
	COM_Aut	319.139	258				
	COM_Inno	294.603	258				
	COM_Pro	294.275	258				
	COM_RT	410.535	258				

a. R Squared = .110 (Adjusted R Squared = .106)
b. R Squared = .009 (Adjusted R Squared = .005)
c. R Squared = .059 (Adjusted R Squared = .056)
d. R Squared = .004 (Adjusted R Squared = .001)
e. R Squared = .001 (Adjusted R Squared = -.003)
f. R Squared = .016 (Adjusted R Squared = .012)
g. R Squared = .010 (Adjusted R Squared = .006)
h. R Squared = .019 (Adjusted R Squared = .016)
i. R Squared = .002 (Adjusted R Squared = -.001)
j. R Squared = .003 (Adjusted R Squared = -.001)
k. R Squared = .015 (Adjusted R Squared = .011)

Estimated Marginal Means (Location)

Dependent Variable	Location	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
COM_INS	1*	5.203	.165	4.878	5.528
	2*	4.050	.121	3.811	4.288
COM_TC	1	4.947	.126	4.698	5.195
	2	4.706	.093	4.523	4.889
COM_ExOp	1	5.076	.143	4.793	5.358
	2	4.358	.106	4.150	4.566
COM_GS	1	3.847	.159	3.534	4.161
	2	3.638	.117	3.407	3.868
COM_MP	1	4.549	.121	4.311	4.788
	2	4.494	.089	4.319	4.670
COM_EOP	1	3.430	.133	3.168	3.693
	2	3.097	.098	2.903	3.290
COM_CA	1	4.062	.141	3.785	4.339
	2	3.777	.103	3.573	3.981
COM_Aut	1	5.131	.116	4.903	5.359
	2	4.807	.085	4.639	4.974
COM_Inno	1	5.324	.112	5.103	5.544
	2	5.433	.083	5.271	5.596
COM_Pro	1	4.553	.112	4.333	4.774
	2	4.429	.082	4.267	4.592
COM_RT	1	4.979	.131	4.720	5.238
	2	4.656	.097	4.466	4.847

1 represents South Australia and number 2*** *represents other states*

Exhibit 6.5: One Way between Groups Multivariate Analysis of Variance

In summary, there was a statistically significant difference between South Australia and the other states on Institutional Support and External Openness, F (11, 259) =5.21, p =0.000; Wilk's Lamba = 0.81; Partial eta squared = 0.11 and 0.059 respectively. An inspection of the mean scores indicated that South Australia reported higher levels of Institutional Support (M = 5.203) than other states (M = 4.05). Meanwhile South Australia also reported higher levels of External Openness (M = 5.076) than other states (M = 4.358). No statistical significance was found in Market Performance and Entrepreneurial Orientation between South Australia and the other states.

6.2.3 Comparison between memberships

A one-way between-groups multivariate analysis of variance (One-way MANOVA) was performed between three groups of wineries. Participants are divided into groups: members of both state and regional associations, members of regional associations only, and those which are not members of either. Composite variables of risk taking and market performance were eliminated from the following analysis since they violated the assumption of equality of variance. The testing results are shown in Exhibit 6.6.

The132 participants are members of their wine regional associations; 90 are members of state wine associations; and 25 participants are not members of either of these two associations (12 participants who are just members of state wine associations were excluded, leaving a total of 247 participants). In the Box's Test of Equality of Covariance Matrix, the Box's M Sig. value is 0.419, indicating the data does not violate the assumption of homogeneity of variance-covariance matrices. In Levene's Test of Equality of Error Variances, all the values of variables at the Significance column are more than 0.05 indicating equal variances of variables. The value of Wilk's Lamba is 0.851 at 0.003 significant level (less than 0.05) indicating differences between these three groups.

It provides test results of the variables that show groups are significantly different from each other in Tests of Between-Subjects Effects. In order to avoid type 1 error, Bonferroni adjustment was used in the post hoc tests. It can be seen from the multiple comparisons of post hoc tests that group 1 and group 2 are significantly different at Trusting Cooperation of wine regional resources.

The last column of Tests of Between-Subjects Effects is Partial Eta Squared representing the proportion of the variance in the dependent variable that can be explained by the independent variable (association membership). For example, the greatest values 0.33 indicating 3.3% of the variance in trusting cooperation can be explained by membership differences. According to the Descriptive statistics table, with the exception of Innovativeness and Institutional Support, all the values of other independent variables of this analysis decrease from group 1 to group 3.

Between-Subjects Factors		Box's Test of Equality of Covariance Matrices[a]	
ClusterRO	N	Box's M	101.715
1	132	F	1.023
2	90	df1	90
3	25	df2	14975.252
		Sig.	.419

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.972	898.072[b]	9.000	236.000	.000	.972
	Wilks' Lambda	.028	898.072[b]	9.000	236.000	.000	.972
	Hotelling's Trace	34.249	898.072[b]	9.000	236.000	.000	.972
	Roy's Largest Root	34.249	898.072[b]	9.000	236.000	.000	.972
ClusterRO	Pillai's Trace	.153	2.175	18.000	474.000	.004	.076
	Wilks' Lambda	.851	2.195[b]	18.000	472.000	.003	.077
	Hotelling's Trace	.170	2.215	18.000	470.000	.003	.078
	Roy's Largest Root	.134	3.521[c]	9.000	237.000	.000	.118

Levene's Test of Equality of Error Variances[a]

	F	df1	df2	Sig.
COM_INS	1.314	2	244	.271
COM_TS	1.010	2	244	.366
COM_ExOp	.521	2	244	.595
COM_GS	.382	2	244	.683
COM_EOP	.062	2	244	.940
COM_CA	.072	2	244	.930
COM_Aut	2.299	2	244	.103
COM_Inno	2.722	2	244	.068
COM_Pro	.919	2	244	.400

Descriptive Statistics

	Cluster RO	Mean	Std. Deviation	N
COM_INS	1	4.3271	1.72341	132
	2	4.6183	1.55932	90
	3	4.7445	1.73997	25
	Total	4.4754	1.66834	247
COM_TC	1	5.0324	1.18074	132
	2	4.6181	1.10738	90
	3	4.5486	1.31546	25
	Total	4.8325	1.18378	247
COM_ExOp	1	4.7202	1.37930	132
	2	4.5306	1.38418	90
	3	4.2852	1.64014	25
	Total	4.6071	1.41006	247
COM_GS	1	3.8082	1.48949	132
	2	3.7084	1.58413	90
	3	3.2944	1.44683	25
	Total	3.7198	1.52191	247
COM_EOP	1	3.3645	1.24494	132
	2	3.0326	1.25589	90
	3	2.7581	1.27590	25
	Total	3.1822	1.26455	247
COM_CA	1	3.9807	1.33799	132
	2	3.7766	1.37621	90
	3	3.5350	1.19273	25
	Total	3.8612	1.34106	247
COM_Aut	1	4.9956	1.02298	132
	2	4.8164	1.21368	90
	3	4.8101	1.29739	25
	Total	4.9115	1.12364	247
COM_Inno	1	5.3948	.99749	132
	2	5.2588	1.19253	90
	3	5.7791	.86257	25
	Total	5.3841	1.06705	247
COM_Pro	1	4.5204	1.03880	132
	2	4.4376	1.11906	90
	3	4.2544	.98676	25
	Total	4.4633	1.06261	247

Tests of Between-Subjects Effects

Source	Dependent	Type III	Mean	F	Sig.	Partial
Corrected Model (df=2)	COM_INS	6.551[a]	3.275	1.178	.309	.010
	COM_TC	11.426[b]	5.713	4.182	.016	.033
	COM_ExOp	4.806[c]	2.403	1.211	.300	.010
	COM_GS	5.567[d]	2.783	1.204	.302	.010
	COM_EOP	10.898[e]	5.449	3.476	.032	.028
	COM_CA	5.189[f]	2.595	1.448	.237	.012
	COM_Aut	2.006[g]	1.003	.793	.454	.006
	COM_Inno	5.329[h]	2.664	2.366	.096	.019
	COM_Pro	1.582[i]	.791	.699	.498	.006
Intercept (df=1)	COM_INS	3193.439	3193.439	1149.004	.000	.825
	COM_TC	3435.474	3435.474	2514.985	.000	.912
	COM_ExOp	3122.069	3122.069	1572.939	.000	.866
	COM_GS	1991.558	1991.558	861.264	.000	.779
	COM_EOP	1428.232	1428.232	911.132	.000	.789
	COM_CA	2172.836	2172.836	1212.586	.000	.832
	COM_Aut	3643.134	3643.134	2880.636	.000	.922
	COM_Inno	4601.270	4601.270	4086.038	.000	.944
	COM_Pro	2974.535	2974.535	2627.888	.000	.915
ClusterRO (df=2)	COM_INS	6.551	3.275	1.178	.309	.010
	COM_TC	11.426	5.713	4.182	.016	.033
	COM_ExOp	4.806	2.403	1.211	.300	.010
	COM_GS	5.567	2.783	1.204	.302	.010
	COM_EOP	10.898	5.449	3.476	.032	.028
	COM_CA	5.189	2.595	1.448	.237	.012
	COM_Aut	2.006	1.003	.793	.454	.006
	COM_Inno	5.329	2.664	2.366	.096	.019
	COM_Pro	1.582	.791	.699	.498	.006
Corrected Total (df=246)	COM_INS	684.703				
	COM_TC	344.731				
	COM_ExOp	489.113				
	COM_GS	569.784				
	COM_EOP	393.377				
	COM_CA	442.413				
	COM_Aut	310.592				
	COM_Inno	280.096				
	COM_Pro	277.768				

a. R Squared = .010 (Adjusted R Squared = .001)
b. R Squared = .033 (Adjusted R Squared = .025)
c. R Squared = .010 (Adjusted R Squared = .002)
d. R Squared = .010 (Adjusted R Squared = .002)
e. R Squared = .028 (Adjusted R Squared = .020)
f. R Squared = .012 (Adjusted R Squared = .004)
g. R Squared = .006 (Adjusted R Squared = -.002)
h. R Squared = .019 (Adjusted R Squared = .011)

Post Hoc Tests

Multiple Comparisons

Bonferroni

Dependent Variable	Cluster RO(I)	Cluster RO(J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
COM_INS	1*	2*	-.2912	.22790	.608	-.8405	.2582
		3*	-.4174	.36363	.756	-1.2940	.4591
	2	1	.2912	.22790	.608	-.2582	.8405
		3	-.1263	.37690	1.000	-1.0348	.7823
	3	1	.4174	.36363	.756	-.4591	1.2940
		2	.1263	.37690	1.000	-.7823	1.0348
COM_TC	1	2	.4143*	.15977	.030	.0292	.7994
		3	.4838	.25493	.177	-.1307	1.0983
	2	1	-.4143*	.15977	.030	-.7994	-.0292
		3	.0695	.26423	1.000	-.5675	.7064
	3	1	-.4838	.25493	.177	-1.0983	.1307
		2	-.0695	.26423	1.000	-.7064	.5675
COM_ExOp	1	2	.1896	.19259	.978	-.2747	.6539
		3	.4350	.30730	.474	-.3057	1.1758
	2	1	-.1896	.19259	.978	-.6539	.2747
		3	.2454	.31851	1.000	-.5224	1.0132
	3	1	-.4350	.30730	.474	-1.1758	.3057
		2	-.2454	.31851	1.000	-1.0132	.5224
COM_GS	1	2	.0997	.20787	1.000	-.4014	.6008
		3	.5138	.33168	.368	-.2858	1.3133
	2	1	-.0997	.20787	1.000	-.6008	.4014
		3	.4140	.34378	.689	-.4147	1.2428
	3	1	-.5138	.33168	.368	-1.3133	.2858
		2	-.4140	.34378	.689	-1.2428	.4147
COM_EOP	1	2	.3319	.17115	.161	-.0807	.7445
		3	.6064	.27309	.082	-.0519	1.2647
	2	1	-.3319	.17115	.161	-.7445	.0807
		3	.2745	.28305	.999	-.4078	.9568
	3	1	-.6064	.27309	.082	-1.2647	.0519
		2	-.2745	.28305	.999	-.9568	.4078

Post Hoc Tests

Multiple Comparisons

Bonferroni

Dependent Variable	Cluster RO(I)	Cluster RO(J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
COM_CA	1	2	.2041	.18299	.797	-.2370	.6452
		3	.4457	.29198	.385	-.2582	1.1495
	2	1	-.2041	.18299	.797	-.6452	.2370
		3	.2415	.30263	1.000	-.4880	.9711
	3	1	-.4457	.29198	.385	-1.1495	.2582
		2	-.2415	.30263	1.000	-.9711	.4880
COM_Aut	1	2	.1793	.15373	.734	-.1913	.5498
		3	.1855	.24529	1.000	-.4058	.7768
	2	1	-.1793	.15373	.734	-.5498	.1913
		3	.0063	.25424	1.000	-.6066	.6192
	3	1	-.1855	.24529	1.000	-.7768	.4058
		2	-.0063	.25424	1.000	-.6192	.6066
COM_Inno	1	2	.1360	.14506	1.000	-.2137	.4856
		3	-.3843	.23146	.294	-.9423	.1736
	2	1	-.1360	.14506	1.000	-.4856	.2137
		3	-.5203	.23991	.093	-1.0986	.0580
	3	1	.3843	.23146	.294	-.1736	.9423
		2	.5203	.23991	.093	-.0580	1.0986
COM_Pro	1	2	.0829	.14544	1.000	-.2677	.4335
		3	.2661	.23206	.758	-.2933	.8255
	2	1	-.0829	.14544	1.000	-.4335	.2677
		3	.1832	.24053	1.000	-.3966	.7630
	3	1	-.2661	.23206	.758	-.8255	.2933
		2	-.1832	.24053	1.000	-.7630	.3966

**. The mean difference is significant at the .05 level.*

** 1 represents membership of regional associations and state wine associations;*

2 represents membership in only wine regional associations;

3 represents having no membership in either of the two types of associations.

Exhibit 6.6: One Way between Groups Multivariate Analysis of Variance

In summary, there was statistically a significant difference at Trusting Cooperation between the three groups examined, F (9, 247) =2.195, p =0.003; Wilk's Lamba = 0.851; Partial eta squared = 0.033. An inspection of the mean scores indicated that members of wine regional associations reported higher levels of Trusting Cooperation (M = 5.03) than other wineries with state membership (M = 4.62). No statistical significance was found in other variables of interest.

Before moving to the main structural model of the thesis, it is necessary to look at the correlations among variables of interest. It can be seen from Exhibit 6.7 that Market Performance significantly correlates with Trusting Cooperation, External Openness, Entrepreneurial Opportunity, Competitive Aggressiveness, Innovativeness and Proactiveness. Entrepreneurial Opportunity is significantly correlated with Market Performance as well as External Openness, Competitive Aggressiveness, Innovation and Proactiveness. These correlations indicate that cluster resources, firm entrepreneurship and market performance are closely related factors. However, the correlation table also suggests the low relationships between the four types of cluster resources and firm entrepreneurial orientation.

	COM_INS	COM_TC	COM_ExOp	COM_GS	COM_MP	COM_EOP	COM_CA	COM_Aut	COM_Inno	COM_Pro	COM_RT
COM_INS	1										
COM_TC	.342**	1									
COM_ExOp	.400**	.398**	1								
COM_GS	.387**	.342**	.335**	1							
COM_MP	.075	.147*	.132*	.065	1						
COM_EOP	.049	.007	.172**	.083	.335**	1					
COM_CA	.061	-.046	.095	.029	.265**	.352**	1				
COM_Aut	.038	.129*	.074	.082	.011	.103	.168**	1			
COM_Inno	-.017	.015	.043	-.072	.307**	.308**	.329**	.199**	1		
COM_Pro	-.010	-.011	.016	-.038	.448**	.407**	.461**	.146*	.545**	1	
COM_RT	-.038	.111	.092	.018	.032	.110	.072	.252**	.311**	.167**	1

Pearson Correlation, Sig. (2-tailed)

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

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

Exhibit 6.7: Correlation of Variables of Interest

6.3 Hierachical Relationships among Cluster Resouces

As stated before, four types of cluster shared resources are investigated in the thesis: Government Support, Institutional Support, Trusting Cooperation and External Openness. Six hypotheses from H1a to H3b are shown in Exhibit 6.8.

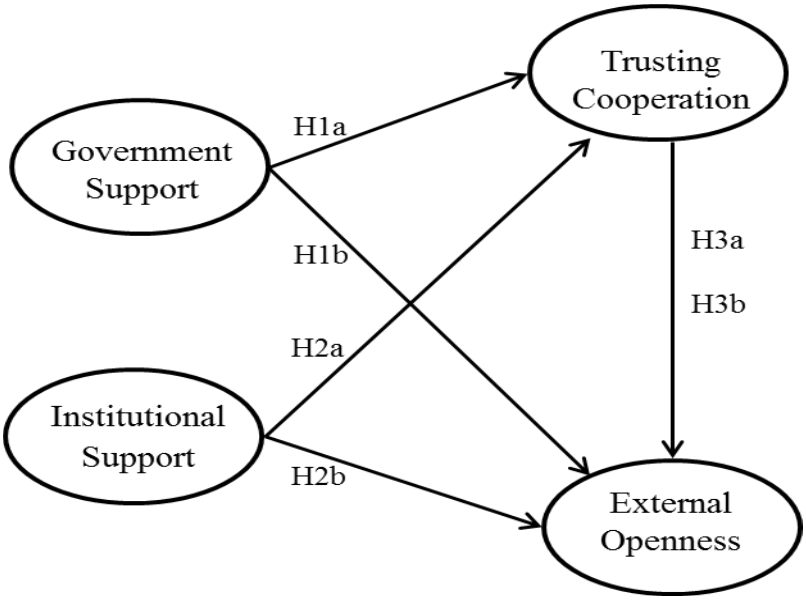


Exhibit 6.8 The Interactive Dynamic Process of Relational Based Resources in Cluster

The Structural Equation Model (SEM) regarding hierarchical relations among cluster-shared resources is shown in Exhibit 6.9Exhibit 6.8. The model uses 11 observable variables to measure 2 unobservable endogenous variables and 15 unobservable exogenous variables. As shown in Exhibit 6.8, there are four latent variables of interest representing variables of shared resources of industrial clusters: Government Support, Institutional Support, Trusting Cooperation and External Openness.

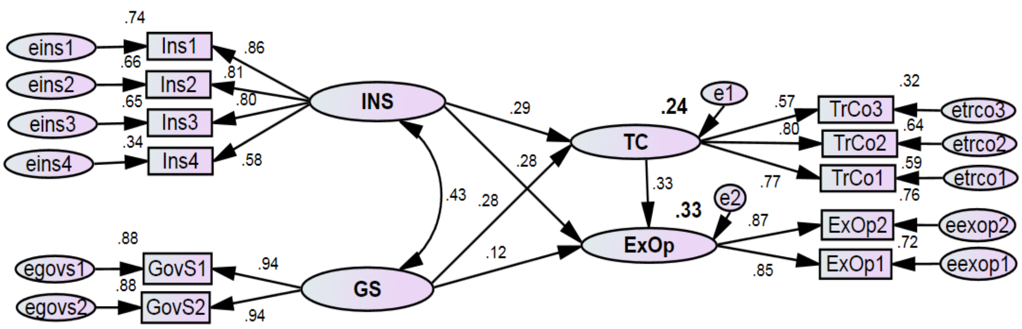


Exhibit 6.9: SEM of Industrial Cluster Shared Resources

6.3.1 External Openness as Dependent Variable

Exhibit 6.10 presents the Regression Weights, Standardised Regression Weights, and squared multiple correlations. According to the values of squared multiple correlations, 33.4% variance of External Openness and 23.7% variance of Trusting Cooperation are explained in the model. The measurement model includes all indicators for industrial cluster shared resources. According to the regression weights table, all the arrows except the influence of Government Support on External Openness, are significantly different from zero with CR values greater than 1.96 and p values significant at 0.001 level (two tailed). It is shown in the tables for standardised regression weights and standardised total effects, that the regression weights of Institutional Support and Trusting Cooperation on External Openness are the highest two, indicating the importance of these variables. Although the regression weight of Government Support on External Openness is not significant in the model, the total standardised effect between them is 0.214 suggesting when Government Support goes up for one standardised deviation, External Openness goes up by 0.214 of a standard deviation. The non-significant regression weight is probably due to the mediating effects of Trusting Cooperation, which will be examined in the next section.

Regression Weights			Estimate	S.E.	C.R.	P
TC	<---	INS	.326	.087	3.727	***
TC	<---	GS	.311	.085	3.669	***
ExOp	<---	GS	.161	.095	1.691	.091
ExOp	<---	INS	.364	.101	3.610	***
ExOp	<---	TC	.390	.098	3.978	***
Ins1	<---	INS	1.685	.102	16.574	***
Ins2	<---	INS	1.546	.102	15.173	***
Ins3	<---	INS	1.589	.106	14.978	***
Ins4	<---	INS	1.113	.113	9.847	***
TrCo2	<---	TC	1.035	.104	9.957	***
TrCo3	<---	TC	.839	.103	8.134	***
TrCo1	<---	TC	1.000			
GovS2	<---	GS	1.495	.070	21.381	***
GovS1	<---	GS	1.495	.070	21.381	***
ExOp2	<---	ExOp	.973	.092	10.522	***
ExOp1	<---	ExOp	1.000			

Standardised Regression Weights			Estimate
TC	<---	INS	.294
TC	<---	GS	.281
ExOp	<---	GS	.122
ExOp	<---	INS	.276
ExOp	<---	TC	.327
Ins1	<---	INS	.862
Ins2	<---	INS	.811
Ins3	<---	INS	.803
Ins4	<---	INS	.585
TrCo2	<---	TC	.802
TrCo3	<---	TC	.568
TrCo1	<---	TC	.767
GovS2	<---	GS	.937
GovS1	<---	GS	.936
ExOp2	<---	ExOp	.870
ExOp1	<---	ExOp	.848

Standardised Total Effects

	Government Support	Institutional Support	Trusting Cooperation	External Openness
TC	.281	.294	.000	.000
ExOp	.214	.372	.327	.000
ExOp1	.181	.315	.277	.848
ExOp2	.186	.323	.285	.870
GovS1	.936	.000	.000	.000
GovS2	.937	.000	.000	.000
TrCo1	.216	.225	.767	.000
TrCo3	.160	.167	.568	.000
TrCo2	.225	.236	.802	.000
Ins4	.000	.585	.000	.000
Ins3	.000	.803	.000	.000
Ins2	.000	.811	.000	.000
Ins1	.000	.862	.000	.000

Squared Multiple Correlations

	Estimate
TC	.237
ExOp	.334
ExOp1	.719
ExOp2	.756
GovS1	.876
GovS2	.878
TrCo1	.588
TrCo3	.323
TrCo2	.643
Ins4	.342
Ins3	.645
Ins2	.657
Ins1	.742

Exhibit 6.10: Regression Weights, Standardised Regression Weights, Standardised Total Effects and Squared Multiple Correlations

To evaluate both the structural model fit, the following fit indices are introduced. A Bollen-Stine bootstrap P value is used because of the non-normal distribution of the data. It is suggested by Hair et al. (2010) to use AGFI and the normed Chi-square (χ^2/df) to assess the parsimony of the model fit. According to Exhibit 6.11, with a chi-square of 49.313, 39 degrees of freedom and p-value of 0.841, the model is a good fit construct model. RMSEA is 0.032 with PCLOSE of 0.879 indicating a good fit of the model in relation to the degrees of freedom (Browne, Cudeck et al. 1993). SRMR is 0.0384 indicating a good fit. CFI and TLI are more than 0.95 indicating a good model fit. As shown in Exhibit 6.10, all the fit indices are well within the recommended threshold indicating the model is a good fitting model. Thus, the model is acceptable.

Fit Indices	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2$/df <2	Chi-square = 49.313 df = 39 x^2/df =1.264 Bollen-Stine P=0.841 (p=0.125)
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.032 PCLOSE=0.879 LO 90 = 0.000
RMR,SRMR	SRMR < 0.06	SRMR=0.0384
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.990
CFI	CFI > 0.95	CFI=0.993
AGFI	AGFI>0.8	AGFI=0.945

Exhibit 6.11: Model Fit Statistics of the Full Model

6.3.2 Examining the Mediating Effect of Trusting Cooperation

Mediators are variables that explain the association between an independent variable and a dependent variable. In order to test the mediating effects of trusting cooperation on the relationships between

- Government support and external openness
- Institutional support and external openness

The following model shown Exhibit 6.12 is developed with removing the variable of trusting cooperation from the original model. This method is consistent with previous research on examining mediation effects (Edelman, Brush et al. 2005, Zhao, Li et al. 2011, Veidal and Korneliussen 2013). There are three possible results that could come out of the following analysis: 1) full mediation 2) partial mediation 3) no mediation (Little, Card et al. 2007).

As illustrated in Exhibit 6.12, Trusting Cooperation probably plays a mediating effect on the relationships between Government Support and Institutional Support on firm External Openness since the regression weight of Government Support is not significant. Though the regression weight of Institutional Support on External Openness is significant, it is still necessary to check the mediation effects of External Openness. In order to examine the mediating effects of Trusting Cooperation, the following model is developed shown in Exhibit 6.12.

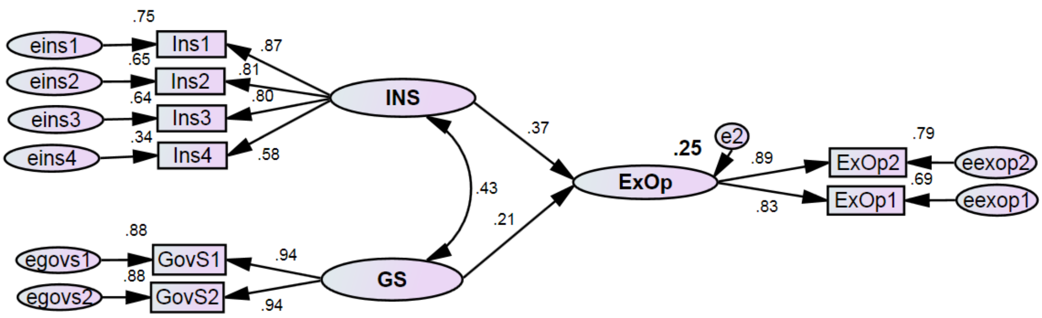


Exhibit 6.12: Examining the Mediation Effects of Trusting Cooperation

According to Exhibit 6.12, the squared multiple correlation (R^2) of External Openness is 0.251 indicating 25.1% variance of External Openness can be explained by the proposed model. Compared with 33.4% variance of External Openness explained in Exhibit 6.5, only 8.3% variance of External Openness is explained by Trusting Cooperation. All the regression weights on the Regression Weights table in Exhibit 6.12 are significantly different from zero, among which the regression weight of Government Support on External Openness is at 0.05 significant levels. Compared with 0.122 in Exhibit 6.9, the standardised regression weight of Government Support on External Openness of 0.215 in Exhibit 6.12 is enhanced significantly. The standardised regression weight of Institutional Support on External Openness increased 0.094 compared with 0.276 in Exhibit 6.9.

Regression Weights			Estimate	S.E.	C.R.	P
ExOp	<---	GS	.277	.093	2.985	.003
ExOp	<---	INS	.477	.100	4.763	***
Ins1	<---	INS	1.693	.102	16.679	***
Ins2	<---	INS	1.540	.102	15.091	***
Ins3	<---	INS	1.586	.106	14.936	***
Ins4	<---	INS	1.111	.113	9.832	***
GovS2	<---	GS	1.495	.070	21.381	***
GovS1	<---	GS	1.495	.070	21.381	***
ExOp2	<---	ExOp	1.019	.111	9.192	***
ExOp1	<---	ExOp	1.000			

Standardised Regression Weights			Estimate
ExOp	<---	GS	.215
ExOp	<---	INS	.370
Ins1	<---	INS	.866
Ins2	<---	INS	.808
Ins3	<---	INS	.802
Ins4	<---	INS	.584
GovS2	<---	GS	.936
GovS1	<---	GS	.936
ExOp2	<---	ExOp	.890
ExOp1	<---	ExOp	.828

Squared Multiple Correlations	Estimate
External Openness	.251
ExOp1	.686
ExOp2	.792
GovS1	.876
GovS2	.877
Ins4	.341
Ins3	.643
Ins2	.653
Ins1	.749

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

Exhibit 6.14 shows the model fit indices. According to Exhibit 6.10, with a chi-square of 24.346, 18 degrees of freedom and p-value of 0.746, the model is a good fit construct for the proposed model. RMSEA is 0.037 with PCLOSE of 0.706

indicating a good fit of the model in relation to the degrees of freedom (Browne, Cudeck et al. 1993). SRMR is 0.0336 indicating a good fit. CFI and TLI are all more than 0.95 indicating a good model fit. As shown in Exhibit 6.13, all the fit indices are well within the recommended threshold indicating the model is a good fit model. Thus, the model is acceptable.

Fit Indices	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2$/df <2	Chi-square = 24.346 df = 18 x^2/df =1.353 Bollen-Stine P=0.746 (p=0.144)
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.037 PCLOSE=0.706 LO 90 =0.000
RMR, SRMR	SRMR < 0.06	SRMR=0.0336
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.991
CFI	CFI > 0.95	CFI=0.995
AGFI	AGFI>0.8	AGFI=0.956

Exhibit 6.14: Model Fit Statistics of the SEM Model

In summary, there exist mediation effects of Trusting Cooperation on the relationships between Government Support, Trusting Cooperation and External Openness. By proposing a secondary model based on the initial model, it is shown that both the regression weights of Government Support and Trusting Cooperation on External Openness are significantly different from zero as shown in Exhibit 6.13. Thus, it can be concluded that there exists a partial mediating effect of Trusting Cooperation on the regression between Institutional Supports on External Openness. The influence of Government Support on External Openness is fully mediated by Trusting Cooperation.

6.4 Entrepreneurial Orientation, Entrepreneurial Opportunity and Market Performance

In this section, the interactions (see Exhibit 6.15) among entrepreneurial orientation, entrepreneurial opportunity and market performance are examined by presenting two models: one higher order model and the other model with compositing five dimensions of EO. The intention for doing this is to avoid a single method bias on the regression weights of interest since there is no consensus on which method is more feasible. Instead of modelling single dimensions of EO with entrepreneurial opportunity and market performance, the construct of EO is used due to the research questions of this thesis and the fact that single dimensions of EO could not be called entrepreneurial orientation. However, it is acknowledged in the research that certain dimensions are more important than others in the context of the wine industry are.

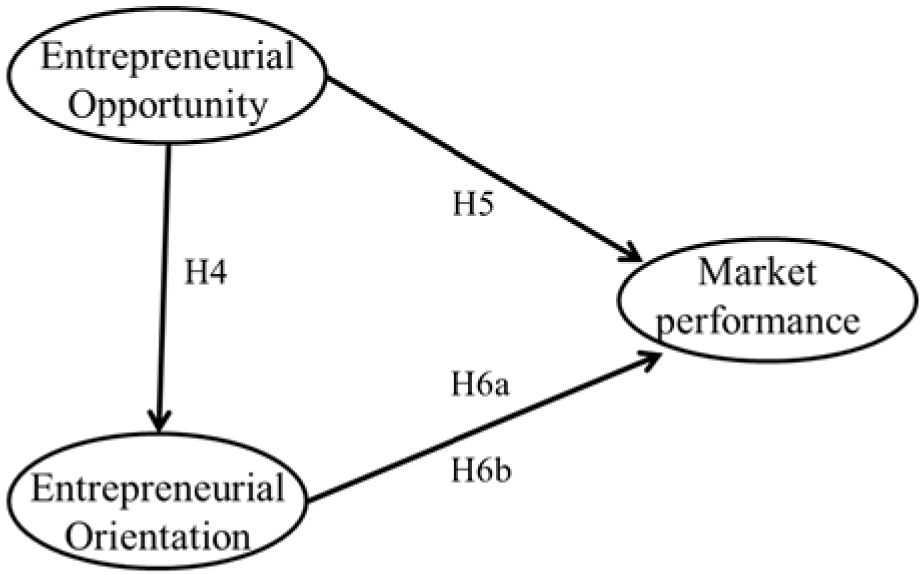


Exhibit 6.15: The Entrepreneurial Process of Firms in Clusters

6.4.1 SEM with Higher Order Factor

6.4.1.1 Testing model fit

As shown in Exhibit 6.16, there are 59 variables in total in the model, with 22 observable variables, 7 unobservable endogenous variables and 30 unobservable exogenous variables. The two unobservable endogenous dependent variables are Entrepreneurial Opportunity and Market Performance. The unobservable exogenous variable EO is a higher order factor of Competitive Aggressiveness, Proactiveness, Autonomy, Innovativeness and Risk Taking. There are three regression weights: EO on Entrepreneurial Opportunity, EO on Market performance, and Entrepreneurial opportunity on Market Performance.

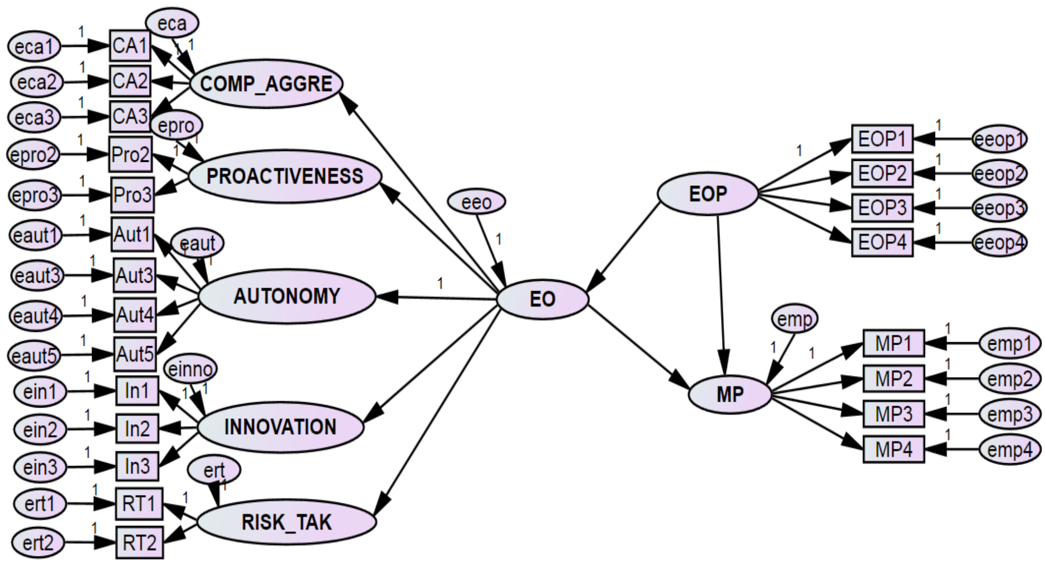


Exhibit 6.16: SEM with Higher Order Factor

The SEM outputs of the proposed model are shown in Exhibit 6.17. It can be seen that Entrepreneurial Opportunity positively and significantly affects EO at significance level of 0.05. There is an insignificant regression weight from entrepreneurial opportunity to market performance. This may be due to the mediating effect of EO, which will be tested in the next section. According to values in the Squared Multiple Correlations, 28.6% variance of Market Performance can be explained by the proposed model while more than 30 percent variance of Entrepreneurial Orientation could be explained.

According to the Standardised Regression Weight table, when EO goes up by 1 standardised deviation, the standardised deviation of Market Performance goes up by 0.454. By contrast, the standardised regression of Entrepreneurial Opportunity on Market Performance is only 0.128. The highest regression weight is the influences of Entrepreneurial opportunity on Entrepreneurial Orientation, which is 0.55. The table of Standardised Regression Weights also provides information regarding the higher order construct of EO. It is shown in the table that Autonomy has the lowest standardised regression weight when compared with other dimensions of EO indicating its lower contribution to the higher order construct.

Regression Weights			**Estimate**	**S.E.**	**C.R.**	**P**
EO	<---	EOP	.134	.046	2.923	.003
CA	<---	EO	2.555	.862	2.965	.003
PRO	<---	EO	3.711	1.193	3.112	.002
INNO	<---	EO	2.489	.815	3.055	.002
RT	<---	EO	1.002	.504	1.988	.047
AUT	<---	EO	1.000			
MP	<---	EO	2.245	.813	2.760	.006
MP	<---	EOP	.154	.097	1.580	.114
Pro2	<---	PRO	1.000			
Aut4	<---	AUT	.771	.063	12.168	***
Aut3	<---	AUT	1.086	.067	16.211	***
Aut1	<---	AUT	1.000			
Aut5	<---	AUT	1.022	.070	14.700	***
CA2	<---	CA	1.246	.091	13.705	***
CA1	<---	CA	1.000			
In3	<---	INNO	1.127	.069	16.297	***
In2	<---	INNO	1.249	.073	17.097	***
In1	<---	INNO	1.000			
RT1	<---	RT	1.000			
RT2	<---	RT	1.357	.407	3.333	***
Pro3	<---	PRO	1.060	.080	13.215	***
EOP1	<---	EOP	1.000			
EOP2	<---	EOP	1.259	.110	11.463	***
EOP3	<---	EOP	1.276	.111	11.445	***
EOP4	<---	EOP	1.148	.112	10.212	***
MP1	<---	MP	1.000			
MP2	<---	MP	.900	.041	21.744	***
MP3	<---	MP	.797	.054	14.903	***
MP4	<---	MP	.642	.049	13.053	***
CA3	<---	CA	1.066	.087	12.306	***

Standardised Regression Weights			Estimate
EO	<---	EOP	.550
CA	<---	EO	.567
PRO	<---	EO	.901
INNO	<---	EO	.687
RT	<---	EO	.255
AUT	<---	EO	.229
MP	<---	EO	.454
MP	<---	EOP	.128

Squared Multiple Correlations	Estimate
EO	.302
MP	.286
RT	.065
INNO	.472
CA	.322
AUT	.052
PRO	.812

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

According to Exhibit 6.18, the fit indices of chi-square of 328.034, 201 degrees of freedom and p-value of 0.068 suggest a model fit. RMSEA is 0.049 with PCLOSE of 0.556 indicating a good fit of the model. CFI and TLI are all more than 0.95 with AGFI more than 0.8 indicating a good model fit. SRMR is 0.0694 higher than the recommended threshold of less than 0.06. However, some other scholars have used SRMR less than 0.08 as a model fit cut-off point (Hu and Bentler 1999, Hallak, Brown et al. 2012). Thus, SRMR of 0.0694 is not a matter of concern. Therefore, the model is acceptable.

Fit Indices	Acceptable levels	Model fits Results
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2$/df <2	Chi-square = 328.034 df = 201 x^2/df =1.632 Bollen-Stine p=0.068
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.049 PCLOSE=0.556 LO 90 =0.039
SRMR	SRMR < 0.06	SRMR=0.0694
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.956
CFI	CFI > 0.95	CFI=0.961
AGFI	AGFI>0.8	AGFI=0.867

Exhibit 6.18: Model Fit Statistics of the Proposed Model

6.4.1.2 Examining the Mediating Effect of Entrepreneurial Orientation

In order to examine the moderating effect of Entrepreneurial Opportunity on the relationship between Entrepreneurial Orientation and Market Performance, the following model is proposed as shown in Exhibit 6.19. It can be seen that, unlike the initial model, this model eliminates the regression arrow from Entrepreneurial Orientation to Entrepreneurial Opportunity. If the regression weight of Entrepreneurial Opportunity on Market Performance is not significant in this model, then it can be declared that there is no relationship between Entrepreneurial Opportunity and Market Performance. In contrast, if the regression weight is significant in the model, it suggests that there is no mediating effect of Entrepreneurial Orientation.

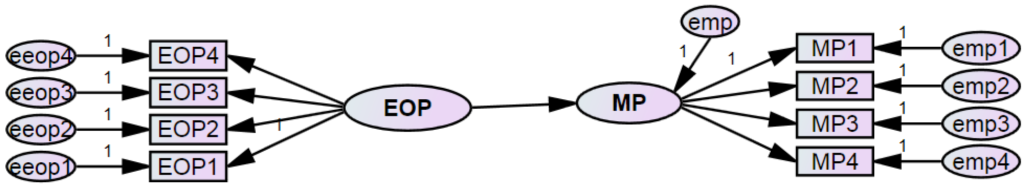


Exhibit 6.19: Examining the Mediation Effect on Entrepreneurial Orientation

The outputs of the proposed SEM are shown in Exhibit 6.20. As shown in the Regression Weights table, Entrepreneurial Opportunity significantly influences on Market Performance with regression weight of 0.454. The standardised regression weight of Entrepreneurial Opportunity on Market Performance is only 0.376 much higher than the previous 0.128 in Exhibit 6.12. According to Squared Multiple Correlations, the R^2 value of Market Performance dropped from 0.302 in the initial model to 0.140 in the current proposed model, which indicates around 0.162 of the R^2 of Market Performance, and is explained by the mediating effect of Entrepreneurial Opportunity and direct effect of Entrepreneurial Orientation.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P
EOP	<---	EOP	.454	.085	5.364	***
EOP1	<---	EOP	1.000			
EOP2	<---	EOP	1.279	.112	11.459	***
EOP3	<---	EOP	1.253	.112	11.212	***
EOP4	<---	EOP	1.161	.113	10.244	***
MP1	<---	MP	1.000			
MP2	<---	MP	.900	.042	21.417	***
MP3	<---	MP	.800	.054	14.920	***
MP4	<---	MP	.643	.049	13.014	***

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
MP	<---	EOP	.376
EOP1	<---	EOP	.690
EOP2	<---	EOP	.835
EOP3	<---	EOP	.805
EOP4	<---	EOP	.719
MP1	<---	MP	.937
MP2	<---	MP	.894
MP3	<---	MP	.731
MP4	<---	MP	.671

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
MP	.142
MP4	.451
MP3	.534
MP2	.799
MP1	.878
EOP4	.517
EOP3	.648
EOP2	.697
EOP1	.476

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

The model fit results are shown Exhibit 6.21. According to Exhibit 6.21, fit indices of chi-square of 19.454, 19 degrees of freedom and Bollen-Stine p-value of 0.966 suggest the proposed model is a good fit. RMSEA is 0.010 with PCLOSE of 0.916 indicating a good fit of the model. CFI and TLI are all more than 0.95 with high AGFI more than 0.9 indicating a good model fit. SRMR is 0.0357, well above the recommended cut-off point of 0.06. Therefore, the model is acceptable.

Fit Indices	Acceptable levels	Model fits Results
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2$/df <2	Chi-square = 19.454 df = 19 x^2/df =1.024 Bollen-Stine p= 0.966 P=0.428
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.010 PCLOSE=0.916 LO 90 = 0.000
SRMR	SRMR < 0.06	SRMR=0.0357
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.999
CFI	CFI > 0.95	CFI=1.000
AGFI	AGFI>0.8	AGFI=0.966

Exhibit 6.21: Model Fit Statistics of the Full Model

In summary, this section confirms the significant regression weights of Entrepreneurial Orientation on Market Performance as well as Entrepreneurial Opportunity on Entrepreneurial Orientation in the proposed models. In order to examine the mediating effect of Entrepreneurial Orientation on the relationship between Entrepreneurial Opportunity and Market Performance, a secondary model was developed. According to model fit indices, both models are acceptable. Judging from the outputs of the secondary model, there is a direct influence from Entrepreneurial Opportunity on Market Performance. The significant effect becomes not significant when Entrepreneurial Orientation is presented in the model. Therefore, Entrepreneurial Orientation has a fully mediating effect on the relationship between Entrepreneurial Opportunity and Market Performance.

6.4.2 SEM with Composite Factor

An alternative approach to examine the proposed conceptual model between EO, Entrepreneurial Opportunity and Market Performance is employed in this section. The (model fitting) results as well as processes are compared with the previous higher order method at the end of this section. The better method will be continually used in subsequent analysis.

6.4.2.1 Creating Composite Factors

A major limitation of the full structural equation model approach is that the results are not robust if there are many parameters to be estimated. This is due to the fact that every model approximates the true model in the population and contains some misfits a large and complex model which does not fit may be simply because the total increase in misfits is large. The Holmes-Smith and Rowe (2013) seven-step approach based on some earlier works of Munck (1979) is regarded as one of the most efficient ways to deal with many latent variables in one model. According to the Holmes-Smith and Rowe (2013) method, composite variables were calculated in the previous chapter; coefficient H and factor loadings are covered in the following sections. The reason that coefficient H is used instead of Cronbach's alpha, is because the variables are calculated using congeneric measures. Coefficient H also has several advantages over other reliability measures in negative factor loadings, item contribution and single indicator variables (Holmes-Smith 2013). Coefficient H was calculated using standardised regression weights of each unobservable variable. The values of coefficient H of the variables concerned are shown in Exhibit 6.22.

Variables	Coefficient H
Proactiveness	0.842
Innovativeness	0.923
Risk Taking	0.944
Autonomy	0.898
Competitive Aggressiveness	0.932
Entrepreneurial Opportunity	0.859
Market Performance	0.928

Exhibit 6.22: Coefficient H of Variables

As shown in Exhibit 6.22, all the values of coefficient H are within the range of 0.84 to 0.95. Munck (1979) showed that it is possible to fix both the regression coefficients and the measurement error variances associated with each composite variable. The regression coefficients (λ_i's) formula is shown as:

$$\lambda = \sigma(x)\sqrt{r}$$

where **σ(x)** is the standard deviation of the composite variable, and r is the reliability of the composite variable (Coefficient H). Furthermore, the measurement error variances (θ_i's) are given by the formula:

$$\theta = \sigma^2(x)(1-r)$$

where **σ^2(x)** is the variance of the composite variable, and r is the reliability of the composite variable (Coefficient H). The Munck's (1979) method was used to calculate the factor loadings in the regression of each construct on its respective composite measure together with its associated error variance. The results of factor loadings and error variances are shown in Exhibit 6.23.

Latent Variables	Std. of Composite	Factor Loading	Error Variance
Proactiveness	1.12307	1.0305	0.1993

Innovativeness	1.07705	1.0348	0.0893
Risk Taking	1.28147	1.2451	0.0920
Autonomy	1.13711	1.0776	0.1319
Competitive Aggressiveness	1.3815	1.3337	0.1298
Entrepreneurial Opportunity	1.30121	1.2060	0.2387
Market Performance	1.1503	1.1081	0.0953

Exhibit 6.23: Factor Loadings and Error Variances for Composite Variables

6.4.2.2 Composite Model Specification and Parameter Estimation

Using the factor loadings and error variances of composite variables, the structured model is specified in Exhibit 6.24. There are seven observable endogenous variables measuring seven unobservable endogenous variables and fifteen unobservable exogenous variables.

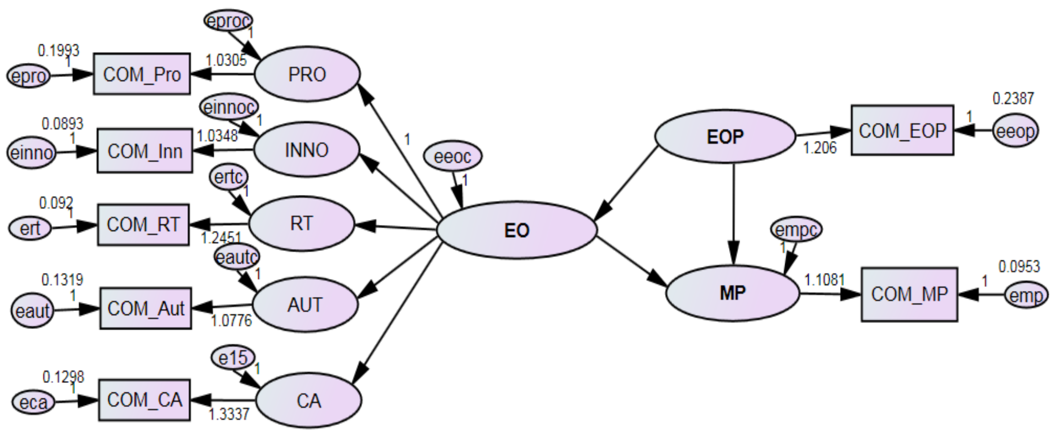


Exhibit 6.24: Model Specification of Composite Variables

Tables of Regression Weights, Standardised Regression Weights and Squared Multiple Correlations are shown in Exhibit 6.25. It can be seen, as with the outputs in the previous model, that the influence of Entrepreneurial Opportunity on Market Performance is still insignificant with a standardised regression weight of 0.130, slightly higher than the previous 0.128. The R^2 of Market Performance dropped 0.02 from 0.286 to 0.284 indicating the explanation power of this model with composite variables is less than the previous one. The standardised regression of Entrepreneurial Orientation on Market Performance is dropped from 0.454 to 0.451 and the standardised regression of Entrepreneurial Opportunity on Entrepreneurial Orientation dropped from 0.550 to 0.544. Overall, except some tiny changes on (standardised) regression weights and squared multiple correlations, the AMOS outputs are the same as previous model outputs.

Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P

			Estimate	S.E.	C.R.	P
EO	<---	EOP	.490	.064	7.676	***
MP	<---	EO	.501	.099	5.043	***
MP	<---	EOP	.130	.080	1.627	.104
PRO	<---	EO	1.000			
INNO	<---	EO	.759	.084	9.082	***
RT	<---	EO	.283	.079	3.597	***
AUT	<---	EO	.256	.081	3.169	.002
CA	<---	EO	.636	.081	7.876	***

Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
EO	<---	EOP	.544
MP	<---	EO	.451
MP	<---	EOP	.130
PRO	<---	EO	.902
INNO	<---	EO	.684
RT	<---	EO	.255
AUT	<---	EO	.230
CA	<---	EO	.573
COM_CA	<---	CA	.965
COM_Aut	<---	AUT	.947
COM_Inno	<---	INNO	.961
COM_Pro	<---	PRO	.917
COM_RT	<---	RT	.971
COM_MP	<---	MP	.963
COM_EOP	<---	EOP	.927

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
EO	.296
MP	.284
RT	.065
PRO	.813
INNO	.468
AUT	.053
CA	.328
COM_EOP	.858
COM_MP	.928
COM_RT	.944
COM_Pro	.841
COM_Inno	.923
COM_Aut	.898
COM_CA	.932

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

Exhibit 6.26 shows the model fits indices compared with the previous non-composite variable model fit indices. Although Chi-square dropped dramatically in the present model compared to the previous model, the Bollen-Stine p value is only 0.001, much lower than the cut-off point of 0.05. The value of SRMR is much lower than the previous model. Some indices like TLI, CFI, SMSEA, and PCLOSE, although above the recommended threshold, are lower than the values in the previous model. Thus, it can be concluded that this model specification is worse than the previous one and the model fit indices indicate the model is unacceptable. Although the composition can simplify complicated models, (especially second order models like EO in this research), the procedures lead to a potential loss of information in the measurement part of the model (Holmes-Smith 2013). The drawbacks of composite models are shown through comparison with the original measurement model in the research. Therefore, in order to ensure the correctness of the following path analysis, the previous model is used in the following analysis.

Fit Indices	**Acceptable levels**	**Composite Model fits Results**	**Non-composite Model fits Results**
χ^2 (df, p)	Bollen-Stine bootstrap $p > 0.05$ $1 < x^2/\text{df} < 2$	Chi-square = 38.806 df = 13 $x^2/\text{df} = 1.457$ Bollen-Stine P=0.001	Chi-square = 328.034 df = 201 $x^2/\text{df} = 1.632$ Bollen-Stine p=0.068
RMSEA	RMSEA < 0.05 PCLOSE > 0.05 LO 90 = 0	RMSEA=0.042 PCLOSE=0.978 LO 90 = 0.034	RMSEA=0.049 PCLOSE=0.556 LO 90 =0.039
RMR,SRMR	SRMR < 0.06	SRMR=0.0600	SRMR=0.0694
TLI,NNFI or ρ2	TLI > 0.95	TLI=0.950	TLI=0.956
CFI	CFI > 0.95	CFI=0.958	CFI=0.961
AGFI[3]	AGFI>0.8	AGFI=0.841	AGFI=0.867

Exhibit 6.26: Model Fit Statistics of the Full Model

A moderator variable is a variable that alters the relationship strength between independent variables and dependent variables. A moderator can amplify, weaken or even reverse a causal relationship. Many assumptions are required such as normality, large sample size, and nonlinear constraints when a model contains latent variables (Kenny and Judd 1984). Under the condition of a multiple indicator approach controlling for measurement errors, neither multiple regression nor ANOVA can analyse the moderating effects of unobservable variables. Moderating effects are also called interaction effects in SEM and it is possible to analyse an

[3] Some researchers do not recommend using AGFI to evaluate model fit (Hu and Bentler 1998). Therefore, AGFI was used caucioulу in this research in evaluating model fit.

interactive effect of a continuous (scale) variable without categorising the moderator by creating product variables (Kline 2011). The regression coefficient for the product variable estimates the magnitude of the interactions between the estimator and the moderator. The regression coefficients of the estimator and the moderator, estimate their linear relations to the dependent variable. A significant regression coefficient for the moderator indicates the relationship of the independent variable to dependent variable changes as a function of the moderator.

Methods of estimating nonlinear and interactive effects of latent variables were first proposed by Kenny and Judd (1984) and Busemeyer and Jones (1983) and were continuously improved by following researchers. The approaches include Jöreskog and Yang's (1996) single product indicator approach, multiple product indicators approach of Jaccard and Wan (1995) and two-step multiple product indicators approach of Ping (1996). The first two of the aforementioned methods require software programs allowing nonlinear constraints. For Ping's (1996) method, this is not required (Li, Harmer et al. 1998). AMOS does not allow nonlinear constrains, thus, Ping's (1996) two-step multiple product indicators approach is used for interaction analysis in this research.

The first step of Ping's (1996) method in AMOS is to run the measurement model to obtain estimates of factor loadings and error variances for the indicators of linear latent variables. Non-linear indicators of interaction latent variables with factor loadings and error variances derived from the measurement models are created as products of the indicators of linear latent variables.

In the second step, a full structural model is built including latent variables, of moderators and predictors. Ping's (1996) method requires centring of the raw scores and multivariate normality. Moderated mediation refers to the moderation effects that are mediated by another variable in the same model (Baron and Kenny 1986), which is examined in the following sections.

6.5 Examining the Moderating Effects of Strategic CSR on the EO − Performance Relationship

In this section, the strategic resources shared in clusters including Trusting Cooperation and External Openness are examined. Eight Hypotheses from H7a to

H10b are used to illustrate the relationships among these variables, as shown in Exhibit 6.27.

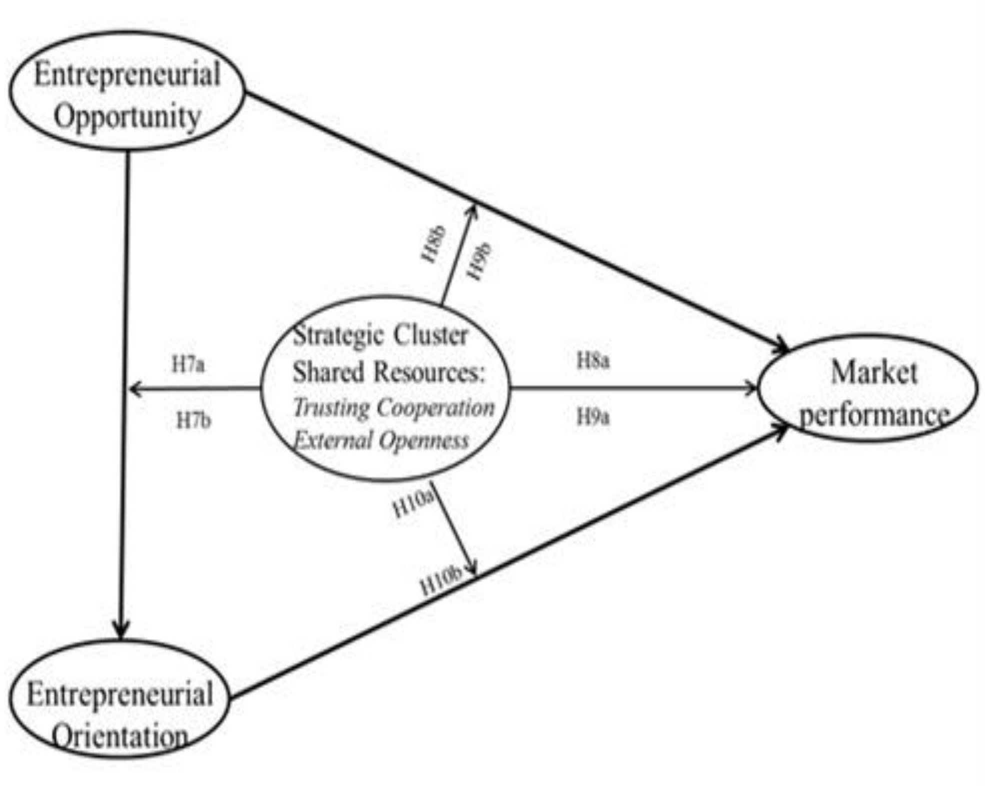
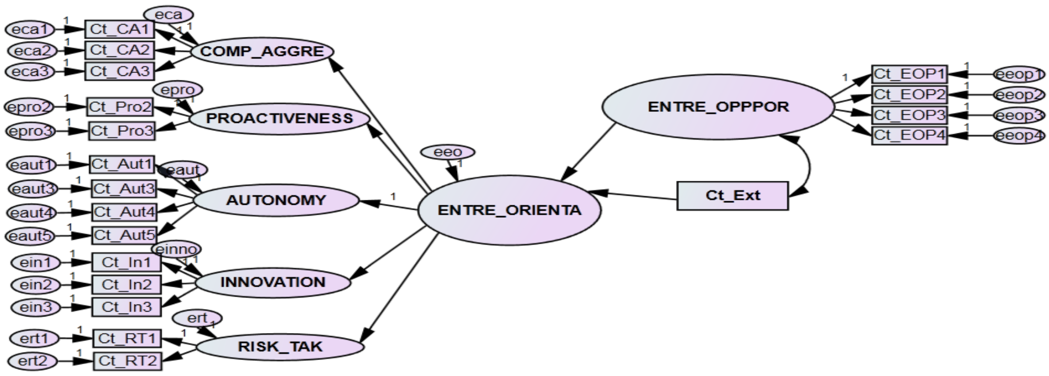


Exhibit 6.27: The Moderating Effects of Cluster Shared Strategic Resources

6.5.1 Interaction Effects of External Openness

6.5.1.1 Interaction effects between entrepreneurial opportunity and entrepreneurial orientation

Ping's (1996) two-step method was used to assess the moderation effects. Exhibit 6.28 shows the structural model. Latent variable of External Openness with two indicator variables was also tested before this model is adopted. The output results show no model fit and a serious multicollinearity issue due to scale data attitudes (Ping 1996). Thus, the centred composite variable of External Openness is used in the model. This centred composite variable of External Openness decreased the 'discretization' and multicollinearity of original data. This method has been used in previous research as well (Song, Droge et al. 2005, Fernet, Gagné et al. 2010, Sanchez-Franco 2010, Sisodiya, Johnson et al. 2013).



[4]

Exhibit 6.28: Measurement Model (step 1)

The measurement model was run to obtain estimates of factor loadings and error variances of the indicators of linear latent variables. Non-linear indicators of interaction latent variables with factor loadings and error variances derived from the measurement models are created as products of the indicators of linear latent variables. Exhibit 6.29 shows the interaction model of External Openness on the relationship between Entrepreneurial Opportunity and Entrepreneurial Orientation.

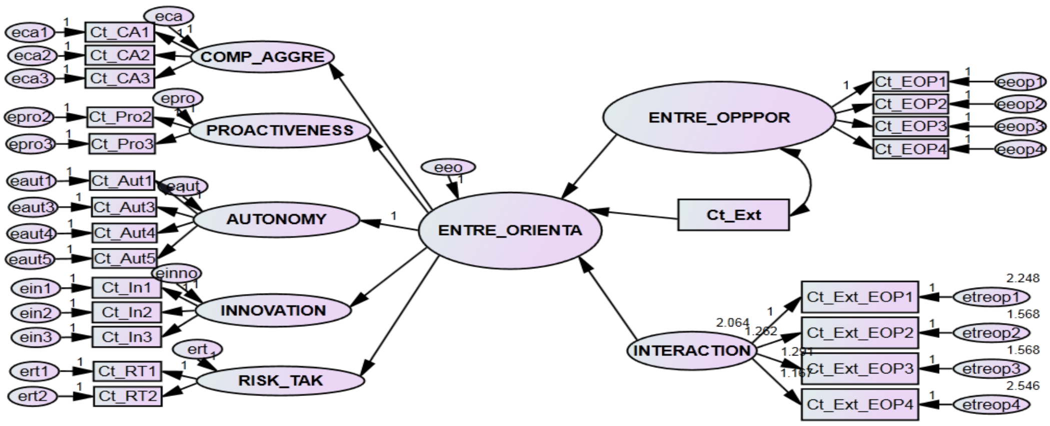


Exhibit 6.29: Interaction Effects Model (Step 2)

All the raw data are mean centred before analysis. Following the two steps of Ping's (1996) method, a measurement model containing latent variables of Entrepreneurial Orientation, External Openness and Entrepreneurial Opportunity was tested. The unstandardised regression weights, covariance as well as variances estimated for the measurement model of the non-product indicators are reported in Exhibit 6.30.

[4] 'Ct_Ext' is the composite variable of External Openness; ENTRE_ORIENTA' is' the higher order factor of 'EO'; ENTRE_OPPPOR' is the mean centred reflective measurement of 'EOP'

Unstandardized Regression Weights			Estimate
EO	<---	EOP	0.157
EO	<---	Ct_Ext	-0.007
Ct_EOP1	<---	EOP	1
Ct_EOP2	<---	EOP	1.262
Ct_EOP3	<---	EOP	1.291
Ct_EOP4	<---	EOP	1.167

Variances	Estimate
EOP	0.997
Ct_Ext	2
eeop1	1.124
eeop2	0.784
eeop3	0.784
eeop4	1.273

Covariance			Estimate
EOP	<-->	Ct_Ext	0.265

Exhibit 6.30: Unstandardized Estimates

The factor loadings and error variances for the product latent variable using Ping's approach were derived and shown in Exhibit 6.31. To minimize the threat of multicollinearity, the interaction terms were computed by multiplying their corresponding mean-centred components (Aiken and Stephen 1991, De Clercq, Dimov et al. 2013).

Variable	Parameters	value
INTERACTION	Variance of Product Factor	2.064
Covariance	Covariance of Product factor and estimator	0
	Covariance of Product factor and moderator	0
Ct_Ext_EOP1	Loading of product indicator	1
	Measurement error variance of product indicator	2.248
Ct_Ext_EOP2	Loading of product indicator	1.262
	Measurement error variance of product indicator	1.568
Ct_Ext_EOP3	Loading of product indicator	1.291
	Measurement error variance of product indicator	1.568
Ct_Ext_EOP4	Loading of product indicator	1.167
	Measurement error variance of product indicator	2.546

Exhibit 6.31: Unstandardized Parameter Estimates of Measurement Model of Product Variables

Exhibit 6.32 shows that Entrepreneurial Opportunity positively and significantly influences Entrepreneurial Orientation with standardized regression weight of 0.481. The negative influence of External Openness on Entrepreneurial Orientation is not significant. With a standardised regression weight of 0.172, the negative regression weight and the interaction effect of External Openness and Entrepreneurial Opportunity on Entrepreneurial Orientation is significant at a level of 0.05. According to the value of the Squared Multiple Correlations of Entrepreneurial Orientation, the proposed model could explain around 26% of the variance of Entrepreneurial Orientation.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P
EO	<---	EOP	.130	.044	2.923	.003
EO	<---	INTERACTION	-.031	.016	-1.966	.049
EO	<---	Ct_Ext	-.006	.013	-.459	.646
PRO	<---	EO	3.285	1.018	3.229	.001
RT	<---	EO	1.077	.494	2.181	.029
AUT	<---	EO	1.000			
CA	<---	EO	2.198	.697	3.153	.002
INNO	<---	EO	2.623	.814	3.222	.001
Ct_Pro2	<---	PRO	1.000			
Ct_Aut4	<---	AUT	.771	.064	12.144	***
Ct_Aut3	<---	AUT	1.088	.067	16.202	***
Ct_Aut1	<---	AUT	1.000			
Ct_Aut5	<---	AUT	1.022	.070	14.676	***
Ct_RT1	<---	RT	1.000			
Ct_RT2	<---	RT	1.317	.352	3.744	***
Ct_Pro3	<---	PRO	1.058	.087	12.165	***
Ct_EOP1	<---	EOP	1.000			
Ct_EOP2	<---	EOP	1.323	.135	9.795	***
Ct_EOP4	<---	EOP	1.221	.127	9.593	***

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
EO	<---	EOP	.481
EO	<---	INTERACTION	-.172
EO	<---	Ct_Ext	-.031
PRO	<---	EO	.863
RT	<---	EO	.290
AUT	<---	EO	.246
CA	<---	EO	.580
INNO	<---	EO	.694

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
EO	.257
INNO	.481
CA	.336
RT	.084
AUT	.060
PRO	.744
Ct_Inn	.922
Ct_CA	.931

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

Variance inflation factor (VIF) was calculated for the interaction model with a value of 1.07, well below the commonly used threshold of 10, suggesting that multicollinearity was not a concern in the model (Hair, Black et al. 2010, Verwaal, Bruining et al. 2010, Anderson and Eshima 2013). Exhibit 6.33 shows the model fit indices. With Chi-square of 212.146 and 119 degrees of freedom, the proposed model shows model parsimony. The Bollen-Stine p value is 0.234, well above the recommended threshold, suggesting a model fit. PCLOSE of 0.256 is well above the cut-off point of 0.05 with RMSEA slightly out of the recommended range but still acceptable (Williams and McGuire 2010). AGFI of 0.867 is above the recommended level of 0.8. Although the values of TLI, CFI and SRMR are slightly lower than the recommended level, these values are still within the acceptable range in other research (Prodan and Drnovsek 2010, Nguyen and Nguyen 2011). Therefore, the proposed model fits data and is acceptable.

Fit Indices	Acceptable levels	Model fits Results
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2$/df <2	Chi-square = 212.146 df = 119 x^2/df = 1.783 Bollen-Stine p=0.234
RMSEA	RMSEA < 0.05 PCLOSE > 0.05	RMSEA=0.055 PCLOSE=0.256
SRMR	SRMR < 0.06	SRMR=0.0779
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.939
CFI	CFI > 0.95	CFI=0.947
AGFI	AGFI>0.8	AGFI=0.867

Exhibit 6.33: Model Fit Statistics of the Full Model

In summary, the moderating effect of External Openness on the relationship between Entrepreneurial Opportunity and Entrepreneurial Orientation was tested by proposing an interacted structural equation model. The results of the model showed that External Openness negatively and significantly moderated the relationship between Entrepreneurial Opportunity and Entrepreneurial Orientation. The moderation effect of External Openness is shown in Exhibit 6.34.

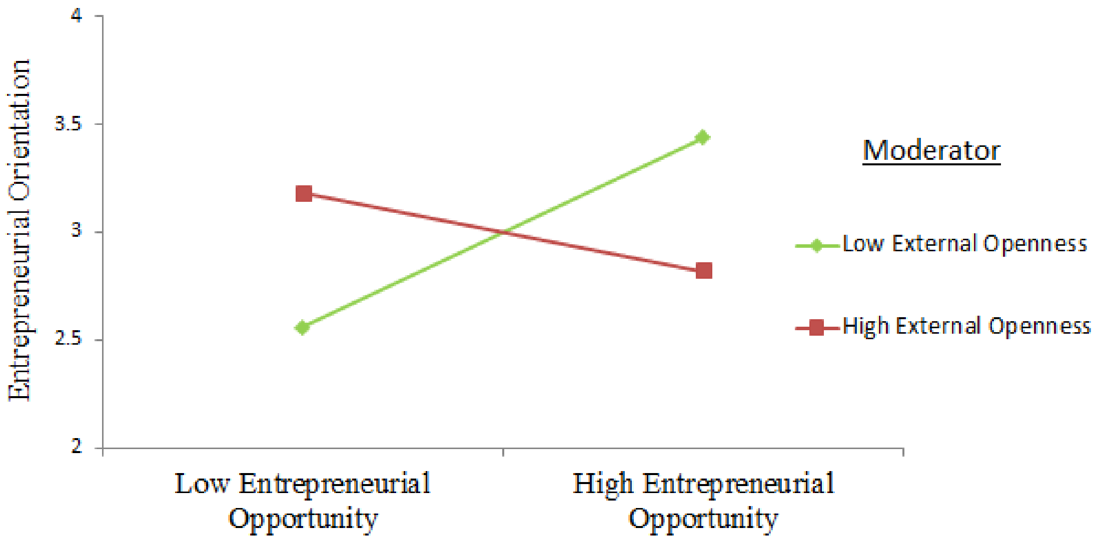


Exhibit 6.34: Moderation Effects of External Openness

6.5.1.2 Interaction effect between entrepreneurial opportunity and market performance

Exhibit 6.35 presents the measurement model of Entrepreneurial Opportunity, Market Performance and External Openness. All the raw scores of the indicators have been centred to reduce model multicollinearity. Instead of using predictors for latent variable External Openness, its centred composite variable is used in the model.

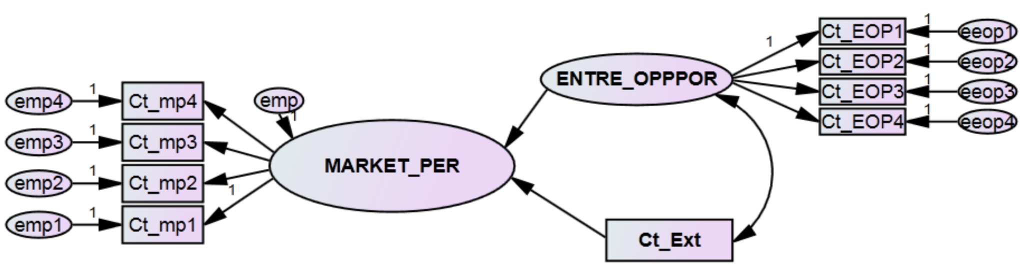


Exhibit 6.35: Measurement Model (step 1)

The measurement model was run to obtain estimates of factor loadings and error variances for the indicators of linear latent variables. Exhibit 6.36 shows the unstandardised estimates of the measurement model including unstandardised regression weights, variances (of predictors) of External Openness and Entrepreneurial Opportunity and their covariance.

Regression Weights	**Estimate**
MP<---EOP	0.439
MP<---Ct_Ext	0.06
Ct_EOP1<---EOP	1
Ct_EOP2<---EOP	1.279
Ct_EOP3<---EOP	1.259
Ct_EOP4<---EOP	1.171
Variances	
EOP	1.004
ExOp	2
eeop1	1.117
eeop2	0.729
eeop3	0.856
eeop4	1.256
Covariances	
EOP <--> Ct_Ext	0.263

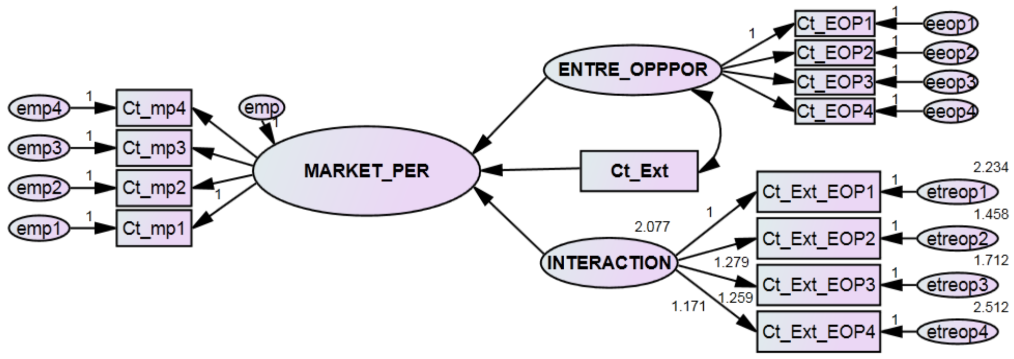
Exhibit 6.36: Parameters of the Product Variables

Based on the results in Exhibit 6.36, non-linear indicators of interaction latent variables with factor loadings and error variances derived from the measurement models are created as products of the indicators of linear latent variables. Exhibit 6.37 shows the variance of the product variable, its item unstandardised regression weights and error variances.

Variable	Unstandardised Parameters	Value
Interaction	Variance	2.077
	Covariance	0
	Covariance	0
Ct_Ext_Eop1	Loading of product indicator	1
	Measurement error variance of product indicator	2.234
Ct_Ext_Eop2	Loading of product indicator	1.279
	Measurement error variance of product indicator	1.458
Ct_Ext_Eop3	Loading of product indicator	1.259
	Measurement error variance of product indicator	1.712
Ct_Ext_Eop4	Loading of product indicator	1.171
	Measurement error variance of product indicator	2.512

Exhibit 6.37: Unstandardised Parameters

Based on the parameters in Exhibit 6.37, Exhibit 6.38 presents the proposed model of the interaction effect of External Openness on the relationship between Entrepreneurial Opportunity and Market Performance. As can be seen in the model, Entrepreneurial Opportunity and External Openness is correlated, the interaction latent variable which is the product variable of External Openness and Entrepreneurial Orientation is not covariated with other exogenous variables.



[5]

Exhibit 6.38: Interaction Effects Model (Step 2)

Exhibit 6.39 shows the results of the interaction model including unstandardised (standardised) regression weights and squared multiple correlations. It is shown in the model that only Entrepreneurial Opportunity positively and significantly influences Market Performance with standardised regression weights of 0.35. Both the regression weights of External Openness and its interaction with Entrepreneurial Opportunities on Market Performance are not significant, indicating no direct and moderating effects. The R^2 of Market Performance is 0.142 indicating the proposed model explains only 14.2% of the variance of Market Performance.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P
MP	<---	EOP	.420	.085	4.933	***
MP	<---	Ct_ExOp	.056	.052	1.068	.286
MP	<---	INTERACTION	-.074	.055	-1.356	.175
Ct_EOP1	<---	EOP	1.000			
Ct_EOP2	<---	EOP	1.281	.112	11.387	***
Ct_EOP3	<---	EOP	1.260	.113	11.168	***
Ct_EOP4	<---	EOP	1.173	.114	10.258	***
Ct_Ext_EOP1	<---	INTERACTION	1.000			
Ct_Ext_EOP2	<---	INTERACTION	1.279			
Ct_mp1	<---	MP	1.000			
Ct_mp2	<---	MP	.901	.042	21.252	***
Ct_mp3	<---	MP	.802	.054	14.828	***
Ct_mp4	<---	MP	.643	.050	12.928	***
Ct_Ext_EOP3	<---	INTERACTION	1.259			

[5] 'INTERACTION' is the product variable of External Openness and Entrepreneurial Opportunity.

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
MP	<---	EOP	.349
MP	<---	Ct_ExOp	.066
MP	<---	INTERACTION	-.089
Ct_EOP1	<---	EOP	.687
Ct_EOP2	<---	EOP	.832
Ct_EOP3	<---	EOP	.806
Ct_EOP4	<---	EOP	.724
Ct_Ext_EOP1	<---	INTERACTION	.694
Ct_Ext_EOP2	<---	INTERACTION	.836
Ct_mp1	<---	MP	.935
Ct_mp2	<---	MP	.893
Ct_mp3	<---	MP	.729
Ct_mp4	<---	MP	.669
Ct_Ext_EOP3	<---	INTERACTION	.811

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
EOP	.143
Ct_mp4	.448
Ct_mp3	.532
Ct_mp2	.798
Ct_mp1	.875
Ct_Ext_EOP3	.658
Ct_Ext_EOP2	.700
Ct_Ext_EOP1	.482
Ct_MP4	.524
Ct_MP3	.650
Ct_MP2	.693
Ct_MP1	.472

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

Variance inflation factor (VIF) was calculated for the interaction model with a value of 1.02, well below the generally established threshold of 10, suggesting that multicollinearity is not a concern in the model (Hair, Black et al. 2010, Verwaal, Bruining et al. 2010, Anderson and Eshima 2013). Exhibit 6.40 shows the model fits indices. With Chi-square of 91.267 and 57 degrees of freedom, the proposed model shows model parsimony with x^2/df of 1.601. The Bollen-stine p value is 0.778

well above the recommended threshold suggesting model fit. PCLOSE of 0.558 with RMSEA of 0.048 is well above the cut-off point of 0.05. AGFI of 0.926 is well above the recommended level of 0.8. CFI of 0.976 and TLI of 0.972 are above 0.95 indicating a good model fit. Although the value of SRMR is slightly lower than the recommended level, these values are regarded as acceptable in the literature (Prodan and Drnovsek 2010, Nguyen and Nguyen 2011). Therefore, the proposed model fits data and is acceptable.

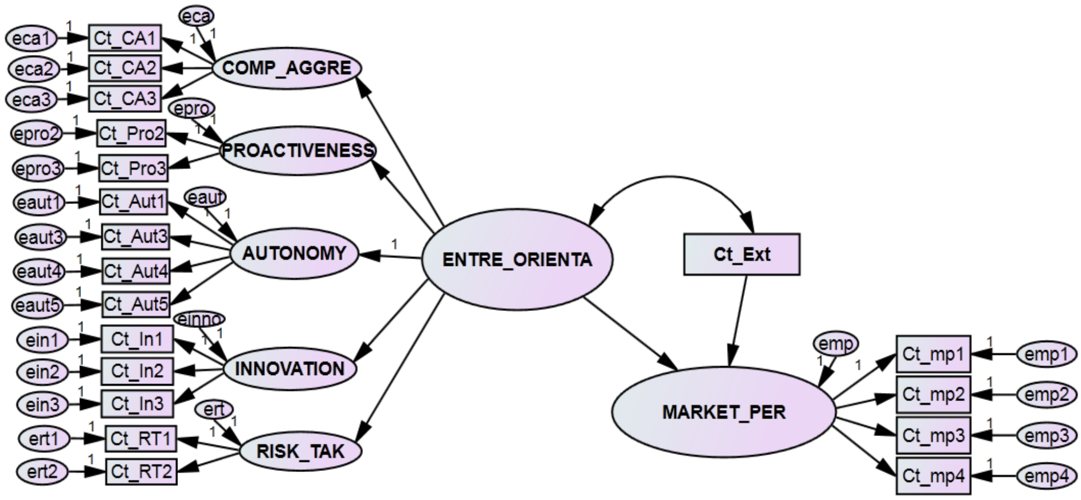
Fit Indices	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2$/df <2	Chi-square = 91.267 df =57 x^2/df = 1.601 Bollen-Stine p=0.778
SRMR	SRMR < 0.06	SRMR=0.0700
TLI, NNFI	TLI > 0.95	TLI=0.972
CFI	CFI > 0.95	CFI=0.976
AGFI	AGFI>0.8	AGFI=0.926

Exhibit 6.40: Model Fit Statistics of the Full Model

In summary, the moderating effect of External Openness on the relationship between Entrepreneurial Opportunity and Market Performance was tested by proposing an interaction structural equation model using Ping’s (1996) method. The results of the model showed that External Openness does not moderate the relationship between Entrepreneurial Opportunity and Market Performance and there is no direct influence of External Openness on Market Performance.

6.5.1.3 Interaction effect between entrepreneurial orientation and market performance

Exhibit 6.41 presents the measurement model of Entrepreneurial Orientation, External Openness and Market Performance. All the raw scores of the indicators have been centred to reduce model multicollinearity. It can be seen from the model that there are one observable exogenous variable, 18 observable endogenous variables, 6 unobservable endogenous variables and 25 unobservable exogenous variables.



6

Exhibit 6.41: Measurement Model (step 1)

In order to obtain estimates of factor loadings and error variances for the indicators of linear latent variables, the measurement model in Exhibit 6.38 was run. With Bollen-Stine bootstrap p value of 0.124 and all other model fit indices within the recommended threshold, the measurement model is an acceptable model. According to Ping's (1996) method, Exhibit 6.42 shows the unstandardised estimates of the measurement model including unstandardised regression weights, variances (of predictors) of External Openness and Entrepreneurial Opportunity and their covariance.

Regression Weights	Estimate
AUT<---EO	1
PRO<---EO	3.863
INNO<---EO	2.544
RT<---EO	1.032
CA<---EO	2.31
Variances	
EO	0.057
Ct_Ext	2
epro	0.167
einno	0.414
eaut	1.089
ert	0.884
emp	1.048
eca	0.694
Covariance	
EO<-->Ct_Ext	0.02

Exhibit 6.42: Measurement Model Outputs

[6] 'MARKET_PER' is the mean centred reflective measurement of Market Performance

The factor loadings as well as error variances for the product latent variable using Ping's approach were derived and shown in Exhibit 6.43. To minimise the threat of multicollinearity, the interaction terms were computed by multiplying their corresponding mean-centred components (Aiken and Stephen 1991, De Clercq, Dimov et al. 2013).

Variables	**Parameters**	**Value**
Interaction	Variance	0.1144
	Covariance	0
	Covariance	0
Ct_Ext_Aut	Loading of product indicator	1
	Measurement error variance of product indicator	2.178
Ct_Ext_Pro	Loading of product indicator	3.863
	Measurement error variance of product indicator	0.334
Ct_Ext_Inno	Loading of product indicator	2.544
	Measurement error variance of product indicator	0.828
Ct_Ext_RT	Loading of product indicator	1.032
	Measurement error variance of product indicator	1.768
Ct_Ext_CA	Loading of product indicator	2.31
	Measurement error variance of product indicator	1.388

Exhibit 6.43: Parameters of the Product Variable

Based on the parameters in Exhibit 6.43, Exhibit 6.44 presents the proposed model of the interaction effect of External Openness on the relationship between Entrepreneurial Orientation and Market Performance. As required, Entrepreneurial Orientation and External Openness are correlated; the interaction latent variable, which is the product variable of External Openness and Entrepreneurial Orientation, is not covariated with other exogenous variables.

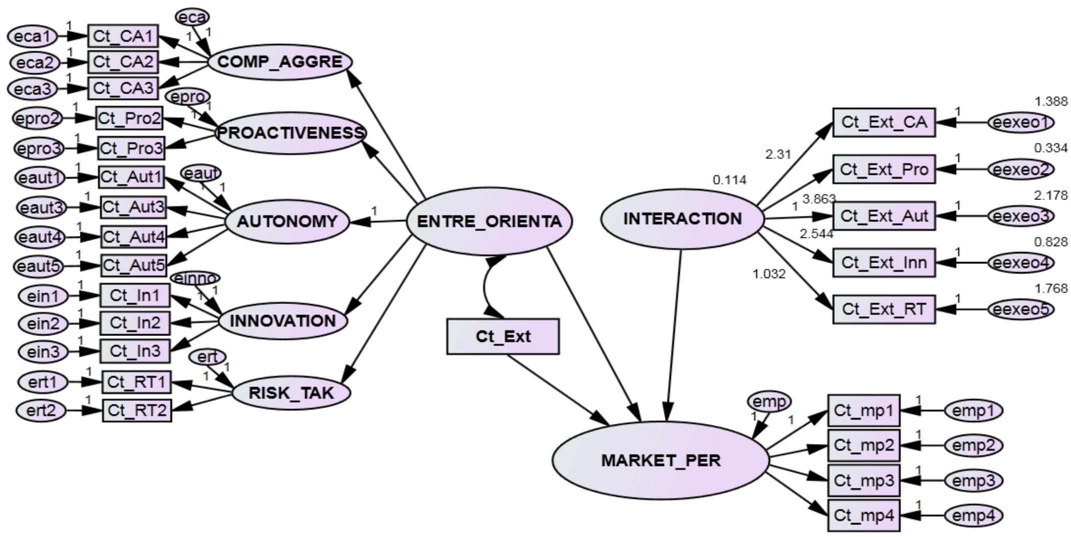


Exhibit 6.44: Interaction Model (step 2)

The interaction model was run to obtain moderation effect of External Openness on the relationship between Entrepreneurial Orientation and Market Performance. With Chi – square of 764.122, 254 degrees of freedom and Bollen-Stine bootstrap of 0.002, the model is not acceptable. Modification indices show that manifest variables of the product variable regress on the product variable and on error variances of predictors' covariances. As suggested (Holmes-Smith 2013), composite variables of the product variable were calculated based on its regression weight score, shown in Exhibit 6.45.

	Ct_Ext_RT	Ct_Ext_Inn	Ct_Ext_Aut	Ct_Ext_Pro	Ct_Ext_CA	Total
INTERACTION	0.009	0.046	0.007	0.175	0.025	0.262
Factor Score Weights	0.034	0.176	0.027	0.668	0.095	1.000

Exhibit 6.45: Factor Score Weight of Interaction Variable

The new interaction model is proposed shown in Exhibit 6.46 with the composite product variable. The composite variable of competitive aggressiveness is used in the model as it is one of its predict CA1 covariate with interaction predictors. It can be seen in Exhibit 6.46 that there are two observable exogenous variables in the model and 14 left observable endogenous variables in the model. Five unobservable endogenous variables together with 20 unobservable exogenous variables are in the proposed model as well.

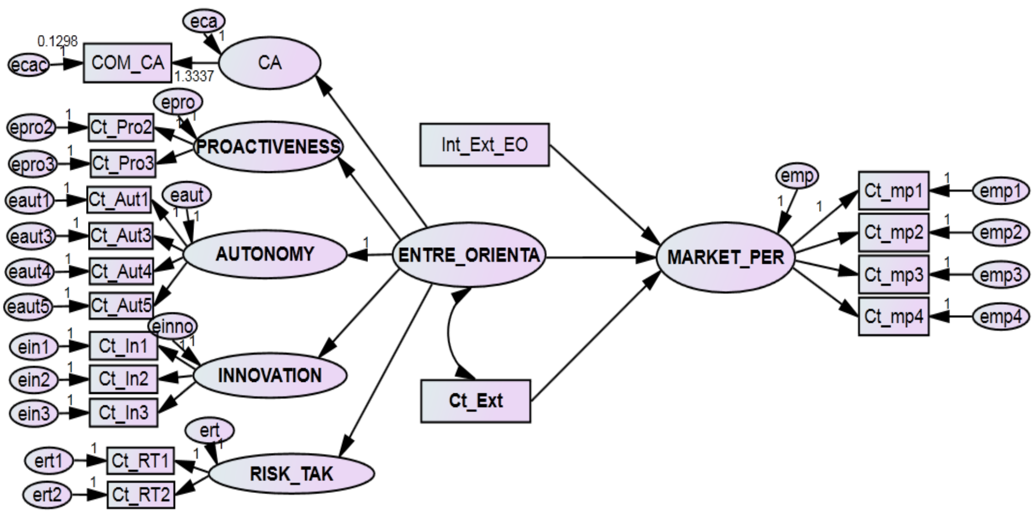


Exhibit 6.46: Interaction Model with Composite Product Variable (step 2)

Exhibit 6.47 shows the results of interaction model including unstandardised (standardised) regression weights and squared multiple correlations. It is shown in the model that Entrepreneurial Orientation positively and significantly influences Market Performance with standardised regression weights of 0.514. The regression weight of External Openness on Market Performance is not significant but its interaction with Entrepreneurial Orientation on Market Performance is positive at 0.05, a significant level indicating moderating effects. The R^2 of Market Performance is 0.29 indicating 29% variance of Market Performance could be explained by the proposed model.

Regression Weights (Congeneric)			Estimate	S.E.	C.R.	P
AUT	<---	EO	1.000			
PRO	<---	EO	4.493	1.639	2.741	.006
INNO	<---	EO	2.704	.997	2.712	.007
MP	<---	EO	2.885	1.083	2.665	.008
CA	<---	EO	2.555	.951	2.687	.007
MP	<---	Int_Ext_EO	.097	.049	2.006	.045
MP	<---	Ct_Ext	-.073	.047	-1.555	.120
Ct_Pro2	<---	PRO	1.000			
Ct_Aut4	<---	AUT	.771	.063	12.158	***
Ct_Aut3	<---	AUT	1.086	.067	16.204	***
Ct_Aut1	<---	AUT	1.000			
Ct_Aut5	<---	AUT	1.023	.070	14.711	***
Ct_In3	<---	INNO	1.129	.070	16.172	***
Ct_In2	<---	INNO	1.258	.074	17.000	***
Ct_In1	<---	INNO	1.000			
Ct_Pro3	<---	PRO	1.047	.080	13.091	***
Ct_mp1	<---	MP	1.000			
Ct_mp2	<---	MP	.907	.042	21.684	***
Ct_mp3	<---	MP	.801	.054	14.829	***
Ct_mp4	<---	MP	.644	.050	12.983	***
COM_CA	<---	CA	1.334			

Standardised Regression Weights (Congeneric) (Congeneric)			Estimate
AUT	<---	EO	.200
PRO	<---	EO	.949
INNO	<---	EO	.655
MP	<---	EO	.514
CA	<---	EO	.548
MP	<---	Int_Ext_EO	.114
MP	<---	Ct_Ext	-.088
Ct_Pro2	<---	PRO	.882
Ct_Aut4	<---	AUT	.701
Ct_Aut3	<---	AUT	.890
Ct_Aut1	<---	AUT	.819
Ct_Aut5	<---	AUT	.812
Ct_In3	<---	INNO	.881
Ct_In2	<---	INNO	.940
Ct_In1	<---	INNO	.789
Ct_Pro3	<---	PRO	.810
Ct_mp1	<---	MP	.934
Ct_mp2	<---	MP	.897
Ct_mp3	<---	MP	.728
Ct_mp4	<---	MP	.670
COM_CA	<---	CA	.965

squared Multiple Correlations: Congeneric)	Estimate
CA	.300
MP	.290
INNO	.429
AUT	.040
PRO	.900
COM_CA	.932
Ct_mp4	.449
Ct_mp3	.530
Ct_mp2	.805
Ct_mp1	.872
Ct_Pro3	.655
Ct_In1	.622
Ct_In2	.884
Ct_In3	.776
Ct_Aut5	.660
Ct_Aut1	.671
Ct_Aut3	.792
Ct_Aut4	.491
Ct_Pro2	.778

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

Variance inflation factor (VIF) was calculated for the interaction model with value of 1.09, well below the generally established threshold of 10, suggesting that multicollinearity is not a concern in the model (Hair, Black et al. 2010, Verwaal, Bruining et al. 2010, Anderson and Eshima 2013). Exhibit 6.48 shows the model fits indices. With Chi-square of 148.504 and 99 degrees of freedom, the proposed model shows model parsimony (x^2/df = 1.500). The Bollen-Stine p value is 0.279, well above the recommended threshold, suggesting a model fit. PCLOSE of 0.761 and RMSEA of 0.044 are well above the cut-off points. TLI, CFI and CFI are above the recommended level of 0.95, indicating a model fit. SRMR of 0.0537 and AGFI of 0.910 suggest a model fit. Therefore, the proposed model fits the data and is acceptable.

Fit Indices	Acceptable levels	Model fits Results
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2/df < 2$	Chi-square = 148.504 df = 99 $x^2/df = 1.500$ Bollen-Stine p=0.279
RMSEA	RMSEA < 0.05 PCLOSE > 0.05	RMSEA=0.044 PCLOSE=0.761
RMR, SRMR	SRMR < 0.06	SRMR=0.0537
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.973
CFI	CFI > 0.95	CFI=0.977
AGFI	AGFI>0.8	AGFI=0.910

Exhibit 6.48: Model Fit Statistics of the Full Model

In summary, the moderating effect of External Openness on the relationship between Entrepreneurial Orientation and Market Performance was tested by proposing an interaction structural equation model using Ping's (1996) method. The results of the model showed that External Openness did not directly influence Market Performance but its interaction regression weight is significant, indicating the moderating effect of External Openness on the relationship between Entrepreneurial Orientation and Market Performance. The moderation effect of External Openness is shown in Exhibit 6.49.

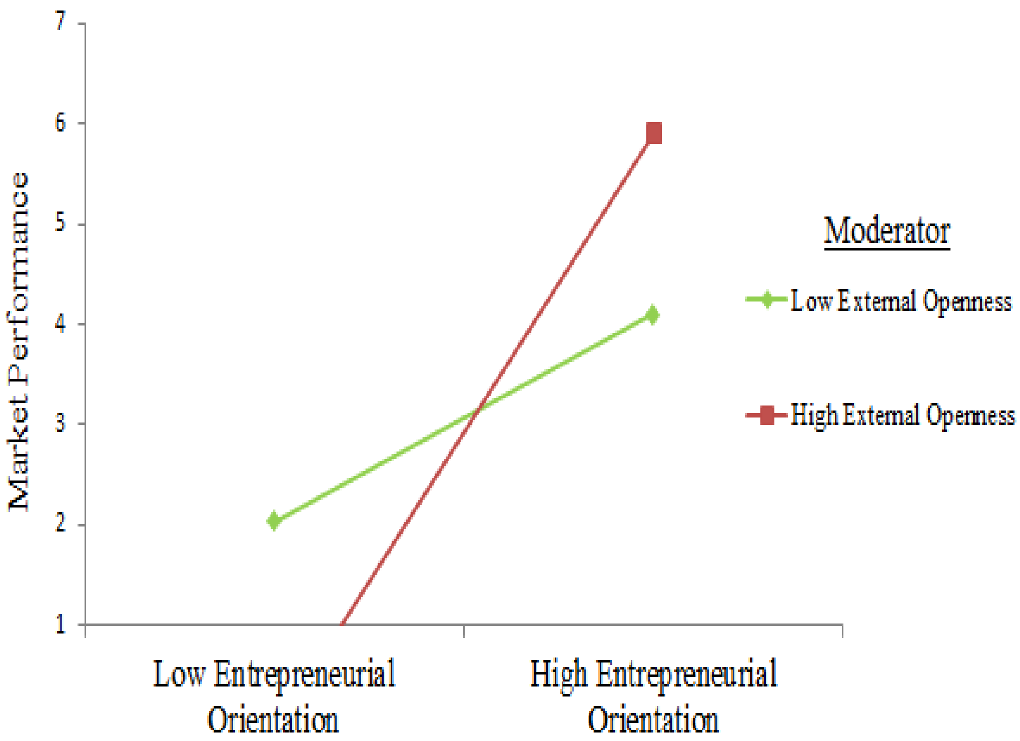
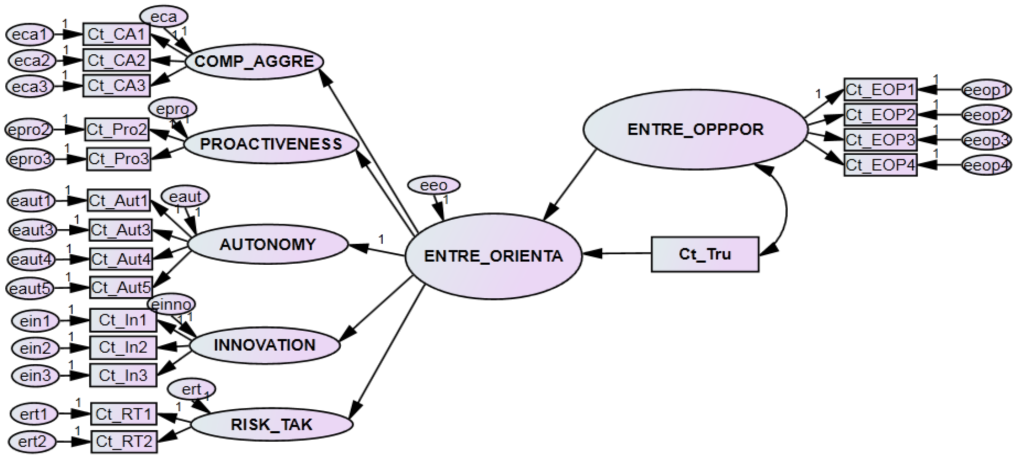


Exhibit 6.49: External Openness Strengthens the Positive Relationship between EO and Maker Performance

6.5.2 Interaction Effects of Trusting Cooperation

6.5.2.1 Moderation Effect on the Influence of entrepreneurial opportunity on entrepreneurial orientation

Exhibit 6.50 presents the measurement model of Entrepreneurial Opportunity, Entrepreneurial Orientation and Trusting Cooperation. All the raw scores of the indicators have been centred to reduce model multicollinearity. Similar to the treatment of External Openness, the centred composite variable of Trust Cooperation is used in the model.



[7]

Exhibit 6.50: Measurement Model (Step 1)

The measurement model was run to obtain estimates of factor loadings and error variances for the indicators of linear latent variables. Exhibit 6.51 shows the unstandardised estimates of the measurement model including unstandardised regression weights, variances (of predictors) of Trusting Cooperation and Entrepreneurial Opportunity and their covariance.

Variances	Estimate	**Regression Weights**	Estimate
EOP	1.005	EO<---EOP	0.154
Ct_Tru	1.544	EO<---Ct_Tru	0.001
eeop1	1.116	Ct_EOP1<---EOP	1
eeop2	0.773	Ct_EOP2<---EOP	1.261
eeop3	0.79	Ct_EOP3<---EOP	1.284
eeop4	1.288	Ct_EOP4<---EOP	1.156
Covariance			
EOP<-->Ct_Tru	0.011		

Exhibit 6.51: Parameters of the Product Variable

[7] 'Ct_Tru' is the compsite variable of Trusting Cooperation; 'ENTRE_ORIENTA' is' the higher order factor of 'EO'; ENTRE_OPPPOR' is the mean centred reflective measurement of 'EOP'

The factor loadings as well as error variances for the product latent variable using Ping's (1996) approach were derived and shown in Exhibit 6.52. To minimise the threat of multicollinearity, the interaction items were computed by multiplying their corresponding mean-centred components (Aiken and Stephen 1991, De Clercq, Dimov et al. 2013).

Variables	Parameters	Value
Interaction	Variance	0.000
	Covariance	0.000
	Covariance	0.000
Ct_Tru_Eop1	Loading of product indicator	1.000
	Measurement error variance of product indicator	1.723
Ct_Tru_Eop2	Loading of product indicator	1.261
	Measurement error variance of product indicator	1.194
Ct_Tru_Eop3	Loading of product indicator	1.284
	Measurement error variance of product indicator	1.220
Ct_Tru_Eop4	Loading of product indicator	1.156
	Measurement error variance of product indicator	1.989

Exhibit 6.52: Measurement Model Outputs

Based on the parameters in Exhibit 6.52, Exhibit 6.52presents the proposed model of the interaction effect of Trusting Cooperation on the relationship between Entrepreneurial Opportunity and Market Performance. It can be seen in the model that Entrepreneurial Opportunity and External Openness are correlated; the interaction latent variable which is the product variable of External Openness and Entrepreneurial Orientation is not covariated with other exogenous variables.

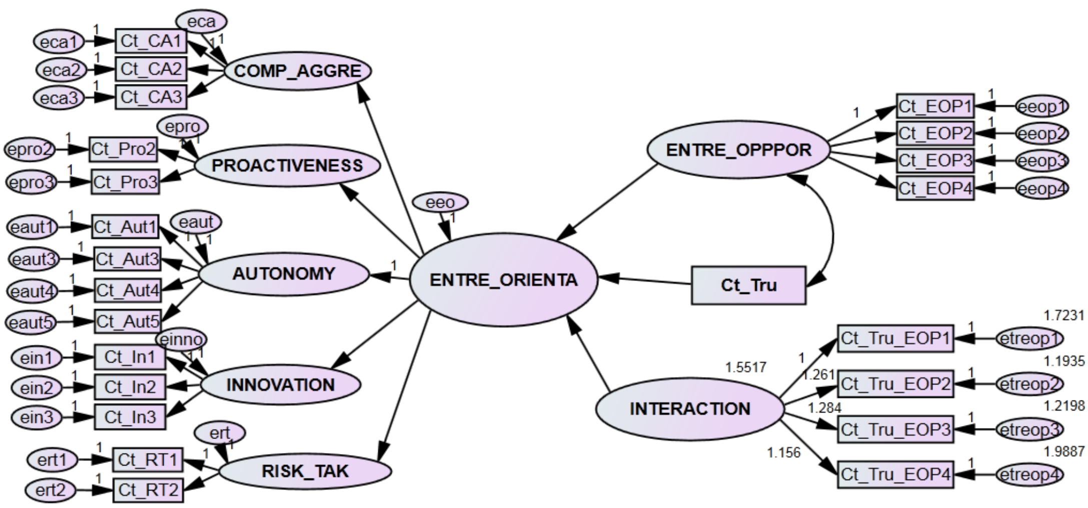


Exhibit 6.53: Interaction Model (step 2)

Exhibit 6.54 shows the results of interaction models including unstandardised/standardised regression weights and squared multiple correlations.

It is shown in the model that only Entrepreneurial Opportunity positively and significantly influences Entrepreneurial Orientation with standardised regression weights of 0.549. Neither the regression weights of Trusting Cooperation nor its interaction with Entrepreneurial Opportunities on Entrepreneurial Orientation is significant, indicating no direct or moderating effects. The R^2 of Entrepreneurial Orientation is 0.314 indicating 31.4% variance of Entrepreneurial Orientation could be explained by the proposed model.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P
EO	<---	EOP	.149	.047	3.148	.002
EO	<---	Ct_Tru	.002	.014	.129	.897
EO	<---	INTERACTION	-.024	.017	-1.437	.151
AUT	<---	EO	1.000			
PRO	<---	EO	3.190	.947	3.368	***
INNO	<---	EO	2.280	.688	3.314	***
RT	<---	EO	1.029	.465	2.212	.027
CA	<---	EO	2.136	.652	3.277	.001
Ct_Pro2	<---	PRO	1.000			
Ct_Aut4	<---	AUT	.771	.063	12.156	***
Ct_Aut3	<---	AUT	1.087	.067	16.214	***
Ct_Aut1	<---	AUT	1.000			
Ct_Aut5	<---	AUT	1.022	.070	14.685	***
Ct_In3	<---	INNO	1.130	.069	16.337	***
Ct_In2	<---	INNO	1.242	.073	17.034	***
Ct_In1	<---	INNO	1.000			
Ct_RT1	<---	RT	1.000			
Ct_RT2	<---	RT	1.328	.356	3.728	***
Ct_Pro3	<---	PRO	1.052	.085	12.392	***
Ct_EOP1	<---	EOP	1.000			
Ct_EOP2	<---	EOP	1.263	.111	11.361	***
Ct_EOP3	<---	EOP	1.285	.113	11.373	***
Ct_EOP4	<---	EOP	1.158	.114	10.183	***
Ct_Tru_EOP3	<---	INTERACTION	1.284			
Ct_Tru_EOP2	<---	INTERACTION	1.261			
Ct_CA	<---	CA	1.334			

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
EO	<---	EOP	.549
EO	<---	Ct_Tru	.008
EO	<---	INTERACTION	-.111
AUT	<---	EO	.255
PRO	<---	EO	.861
INNO	<---	EO	.700
RT	<---	EO	.288
CA	<---	EO	.583
Ct_Pro2	<---	PRO	.879
Ct_Aut4	<---	AUT	.701
Ct_Aut3	<---	AUT	.891
Ct_Aut1	<---	AUT	.819
Ct_Aut5	<---	AUT	.811
Ct_In3	<---	INNO	.885
Ct_In2	<---	INNO	.933
Ct_In1	<---	INNO	.792
Ct_RT1	<---	RT	.683
Ct_RT2	<---	RT	.968
Ct_Pro3	<---	PRO	.811
Ct_EOP1	<---	EOP	.688
Ct_EOP2	<---	EOP	.821
Ct_EOP3	<---	EOP	.823
Ct_EOP4	<---	EOP	.715
Ct_Tru_EOP3	<---	INTERACTION	.823
Ct_Tru_EOP2	<---	INTERACTION	.821
Ct_CA	<---	CA	.965

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
EO	.314
CA	.340
RT	.083
INNO	.490
AUT	.065
PRO	.741
Ct_CA	.932
Ct_Tru_EOP3	.677
Ct_Tru_EOP2	.674
Ct_EOP4	.511
Ct_EOP3	.677
Ct_EOP2	.675
Ct_EOP1	.473
Ct_Pro3	.657
Ct_RT1	.466
Ct_RT2	.937
Ct_In1	.628
Ct_In2	.870
Ct_In3	.784
Ct_Aut5	.658

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
Ct_Aut3	.794
Ct_Aut4	.491
Ct_Pro2	.773
Ct_Aut1	.670

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

Variance inflation factor (VIF) was calculated for the interaction model with a value of 1.1, well below the generally established threshold of 10, suggesting that multicollinearity is not a concern in this model (Hair, Black et al. 2010, Verwaal, Bruining et al. 2010, Anderson and Eshima 2013). Exhibit 6.55 shows the model fit indices. With Chi-square of 252.429 and 149 degrees of freedom, the proposed model shows model parsimony (x^2/df = 1.694). The Bollen-Stine p value is 0.132, well above the recommended threshold, suggesting model fit. PCLOSE of 0.406 is well above the cut-off point of 0.05 with RMSEA slightly out of the recommended range but still acceptable (Williams and McGuire 2010). AGFI of 0.880 and CFI of 0.956 are above the recommended level of 0.8 and 0.95 respectively. Although the values of TLI, CFI and SRMR are slightly lower than in the literature (Prodan and Drnovsek 2010, Nguyen and Nguyen 2011). Therefore, the proposed model fits the data and is acceptable.

Abbreviation	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2$/df <2	Chi-square = 252.429 df = 149 x^2/df = 1.694 Bollen-Stine p=0.132
RMSEA	RMSEA < 0.05 PCLOSE > 0.05	RMSEA=0.051 PCLOSE=0.406
RMR, SRMR	SRMR < 0.06	SRMR=0.0669
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.949
CFI	CFI > 0.95	CFI=0.956
AGFI	AGFI>0.8	AGFI=0.880

Exhibit 6.55: Model Fit Statistics of the Full Model

In summary, the moderating effect of Trusting Cooperation on the relationship between Entrepreneurial Opportunity and Entrepreneurial Orientation was tested by proposing an interactive structural equation model using Ping's (1996) method. The results of the model showed that Trusting Cooperation does not moderate the relationship between Entrepreneurial Opportunity and

Entrepreneurial Orientation and there is no direct influence of Trusting Cooperation on Entrepreneurial Orientation.

6.5.2.2 *Moderation Effect on the Influence of entrepreneurial opportunity on market performance*

Exhibit 6.56 presents the measurement model of Entrepreneurial Opportunity, Market Performance and Trusting Cooperation. All the raw scores of the indicators have been centred to reduce model multicollinearity. As with the treatment of External Openness, the centred composite variable of Trust Cooperation is used in the model.

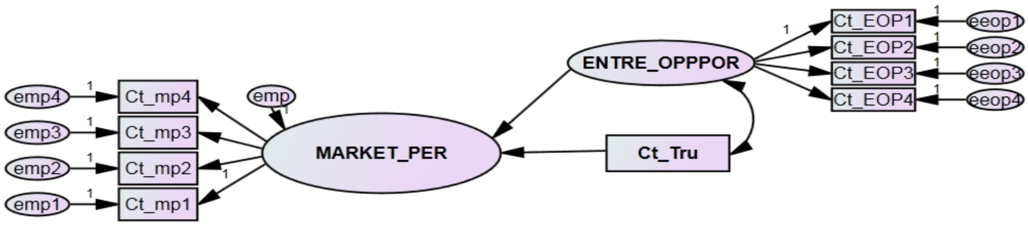


Exhibit 6.56: Measurement Model (Step 1)

The measurement model was run to obtain estimates of factor loadings and error variances for the indicators of linear latent variables. Exhibit 6.57 shows the unstandardised estimates of the measurement model including unstandardised regression weights, variances (of predictors) of Trusting Cooperation and Entrepreneurial Opportunity and their covariance.

Regression Weights			**Estimate**
MP	<---	EOP	0.45
MP	<---	Ct_Tru	0.146
Ct_EOP1	<---	EOP	1
Ct_EOP2	<---	EOP	1.277
Ct_EOP3	<---	EOP	1.25
Ct_EOP4	<---	EOP	1.157
Variances			1.014
EOP			1.544
Ct_Tru			1.107
eeop1			0.718
eeop2			0.863
eeop3			1.274
eeop4			
Covariance			
EOP<-->Ct_Tru			0.009

Exhibit 6.57: Measurement Model Outputs

The factor loadings and error variances for the product latent variable using Ping's (1996) approach were derived and shown in Exhibit 6.58. To minimise the threat of multicollinearity, the interaction terms were computed by multiplying their corresponding mean-centred components (Aiken and Stephen 1991, De Clercq, Dimov et al. 2013).

Variables	Parameters	Values
Interaction	Variance	1.5657
	Covariance	0
	Covariance	0
Ct_Tru_Eop1	Loading of product indicator	1
	Measurement error variance of product indicator	1.7092
Ct_Tru_Eop2	Loading of product indicator	1.2770
	Measurement error variance of product indicator	1.1086
Ct_Tru_Eop3	Loading of product indicator	1.2500
	Measurement error variance of product indicator	1.3325
Ct_Tru_Eop4	Loading of product indicator	1.1570
	Measurement error variance of product indicator	1.9671

Exhibit 6.58: Parameters of the Product Variables

Based on the parameters in Exhibit 6.58, Exhibit 6.59 presents the proposed model of the interaction effect of Trusting Cooperation on the relationship between Entrepreneurial Orientation and Market Performance. It can be seen in the model that Entrepreneurial Orientation and Trusting Cooperation is correlated; the interaction latent variable which is the product variable of Trusting Cooperation and Entrepreneurial Orientation, is not covariated with other exogenous variables.

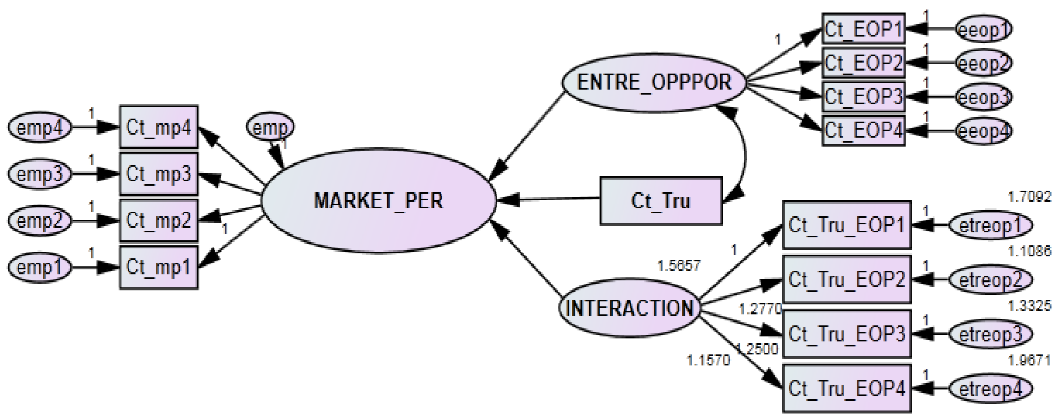


Exhibit 6.59: Interaction Model (step 2)

Exhibit 6.60 shows the results of the interaction model, including unstandardised /standardised regression weights and squared multiple correlations. It is shown in the model that Entrepreneurial Opportunity positively and significantly influences Market Performance with standardised regression weights of 0.370. The regression weights of Trusting Cooperation are also positive and significant at a level of 0.05, with a standardised regression weight of 0.151. However its interaction with Entrepreneurial Opportunities on Market Performance is not significant, indicating there is no moderating effect. The R^2 of Market Performance is 0.164 indicating 16.4% variance of Market Performance could be explained by the proposed model.

Unstandardised Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P
MP	<---	EOP	.444	.083	5.342	***
MP	<---	Ct_Tru	.147	.058	2.531	.011
MP	<---	INTERACTION	-.057	.064	-.886	.376
Ct_EOP1	<---	EOP	1.000			
Ct_EOP2	<---	EOP	1.278	.111	11.480	***
Ct_EOP3	<---	EOP	1.250	.111	11.224	***
Ct_EOP4	<---	EOP	1.157	.113	10.245	***
Ct_Tru_EOP2	<---	INTERACTION	1.277			
Ct_mp1	<---	MP	1.000			
Ct_mp2	<---	MP	.903	.042	21.359	***
Ct_mp3	<---	MP	.805	.054	14.959	***
Ct_mp4	<---	MP	.646	.050	13.020	***
Ct_Tru_EOP3	<---	INTERACTION	1.250			

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
MP	<---	EOP	.370
MP	<---	Ct_Tru	.151
MP	<---	INTERACTION	-.059
Ct_EOP1	<---	EOP	.691
Ct_EOP2	<---	EOP	.835
Ct_EOP3	<---	EOP	.805
Ct_EOP4	<---	EOP	.718
Ct_Tru_EOP2	<---	INTERACTION	.835
Ct_mp1	<---	MP	.934
Ct_mp2	<---	MP	.895
Ct_mp3	<---	MP	.733
Ct_mp4	<---	MP	.672
Ct_Tru_EOP3	<---	INTERACTION	.805

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
MP	.164
Ct_mp4	.452
Ct_mp3	.537
Ct_mp2	.800
Ct_mp1	.873
Ct_Tru_EOP3	.647
Ct_Tru_EOP2	.697
Ct_EOP4	.516
Ct_EOP3	.647
Ct_EOP2	.698
Ct_EOP1	.478

Exhibit 6.60: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Variance inflation factor (VIF) was calculated for the interaction model with a value of 1.02, well below the generally established threshold of 10, suggesting that multicollinearity is not a concern in the model (Hair, Black et al. 2010, Verwaal, Bruining et al. 2010, Anderson and Eshima 2013). Exhibit 6.61 shows the model fits indices. With Chi-square of 85.057 and 45 degrees of freedom, the proposed model shows model parsimony (x^2/df = 1.890). The Bollen-Stine p value is 0.132, well above the recommended threshold, suggesting a model fit. PCLOSE of 0.132 is well above the cut-off point of 0.05 with RMSEA slightly out of the recommended range but still acceptable (Williams and McGuire 2010). Values of AGFI of 0.917 and CFI of 0.969 are above the recommended level of 0.8 and 0.95 respectively, which indicates a good model fit. TLI of 0.962 indicates a model fit as well. SRMR, which is very hard to fall in the acceptable range, is 0.051 indicating a very good model fit. Therefore, the proposed model fits the data and is acceptable.

Abbreviation	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2$/df <2	Chi-square = 85.057 df = 45 x^2/df = 1.890 Bollen-Stine p=0.132
RMSEA	RMSEA < 0.05 PCLOSE > 0.05	RMSEA=0.058 PCLOSE=0.225
SRMR	SRMR < 0.06	SRMR=0.051
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.962
CFI	CFI > 0.95	CFI=0.969
AGFI	AGFI>0.8	AGFI=0.917

Exhibit 6.61: Model Fit Statistics of the Full Model

In summary, the moderating effect of Trusting Cooperation on the relationship between Entrepreneurial Opportunity and Market Performance was tested by proposing an interacted structural equation model using Ping's (1996) method. The results of the model showed that Trusting Cooperation does not moderate the relationship between Entrepreneurial Opportunity and Market Performance. In contrast, Trusting Cooperation positively and significantly influences on Market Performance.

6.5.2.3 Moderation Effect on the Influence of entrepreneurial orientation on market performance

Exhibit 6.62 presents the measurement model of Entrepreneurial Orientation, Market Performance and Trusting Cooperation. All the raw scores of the indicators have been centred to reduce model multicollinearity. The centred composite variable of Trust Cooperation is used in the model. There is one observable exogenous variable and 18 observable endogenous variables to measure 31 unobservable variables in total, presented in the measurement model.

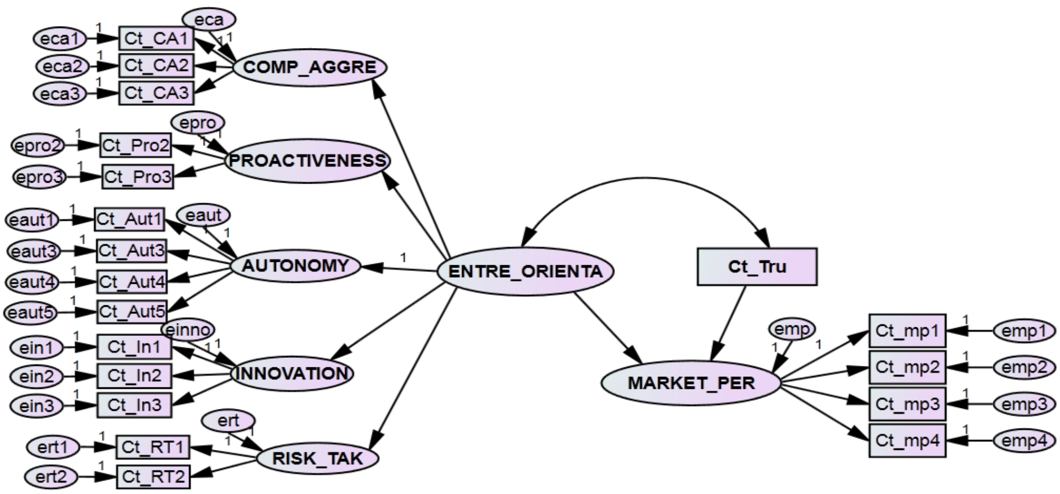


Exhibit 6.62: Measurement Model (step 1)

The measurement model was run to obtain estimates of factor loadings and error variances for the indicators of linear latent variables. Exhibit 6.63 shows the unstandardised estimates of the measurement model including unstandardised regression weights, variances (of predictors) of trusting cooperation and entrepreneurial opportunity and their covariance.

Regression Weights			**Estimate**
AUT	<---	EO	1
PRO	<---	EO	3.976
INNO	<---	EO	2.586
RT	<---	EO	1.04
COM_CA	<---	EO	2.367
Variances			
EO			0.055
Ct_Tru			1.544
Epro			0.16
Einno			0.418
Eaut			1.092
Ert			0.894
Eca			0.693
Covariance			
EO<-->Ct_Tru			0.001

Exhibit 6.63: Parameters of the Product Variables

The factor loadings as well as error variances for the product latent variable using Ping's (1996) approach are derived and shown in Exhibit 6.64. To minimise the threat of multicollinearity, the interaction terms were computed by multiplying their corresponding mean-centred components (Aiken and Stephen 1991, De Clercq, Dimov et al. 2013).

Variables	**Parameters**	**Value**
Interaction	Variance	0.085
	Covariance	0
	Covariance	0
Ct_Tru_Aut	Loading of product indicator	1.000
	Measurement error variance of product indicator	1.686
Ct_Tru_Pro	Loading of product indicator	3.976
	Measurement error variance of product indicator	0.247
Ct_Tru_Inno	Loading of product indicator	2.586
	Measurement error variance of product indicator	0.645
Ct_Tru_RT	Loading of product indicator	1.040
	Measurement error variance of product indicator	1.380
Ct_Tru_CA	Loading of product indicator	2.367
	Measurement error variance of product indicator	1.070

Exhibit 6.64: Measurement Model Outputs

Based on the parameters in Exhibit 6.64, Exhibit 6.65 presents the proposed model of the interaction effect of Trusting Cooperation on the relationship between Entrepreneurial Orientation and Market Performance. It can be seen in the model that Entrepreneurial Orientation and Trusting Cooperation is correlated; the interaction latent variable which is the product variable of Trusting Cooperation and Entrepreneurial Orientation is not covariated with other exogenous variables.

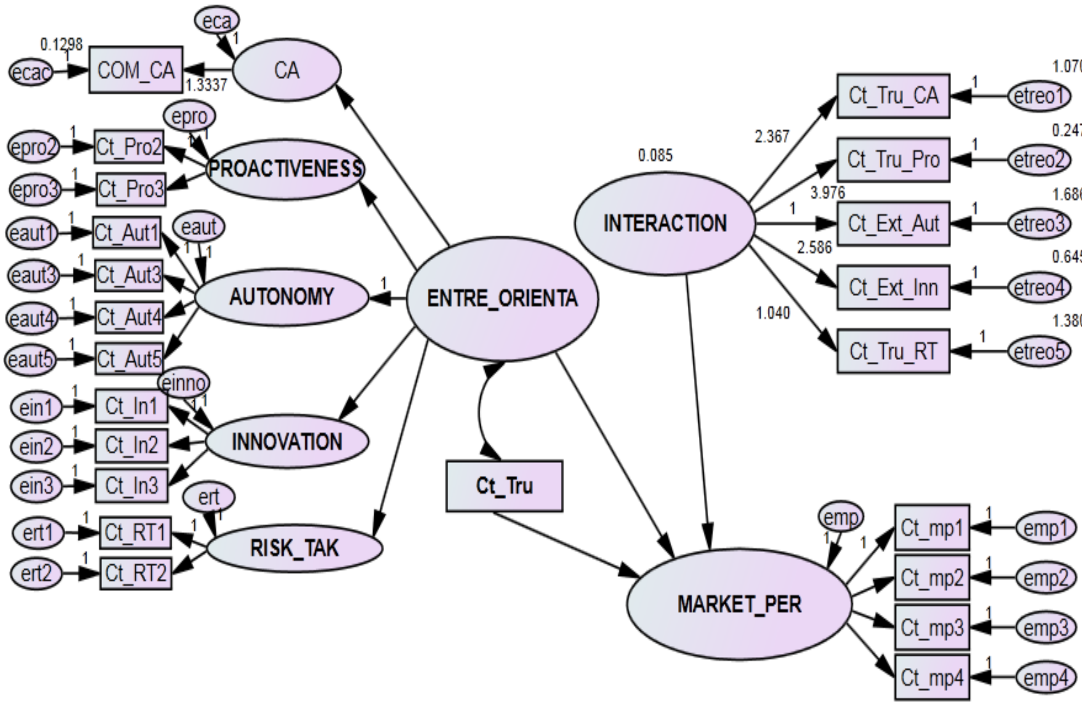


Exhibit 6.65: Interaction Model (step 2)

The interaction model was run to obtain moderation effect of Trusting Cooperation on the relationship between Entrepreneurial Orientation and Market Performance. With Chi-square of 724.294, 212 degrees of freedom and Bollen-Stine bootstrap of 0.002, the model is not acceptable. Modification indices show that predictors of the product variable regressed on the product variable and on the error variances of predictors' covariances. As suggested (Holmes-Smith 2013), composite variables of the product variable were calculated based on its regression weight score, shown in Exhibit 6.66.

	Ct_Tru_RT	**Ct_Tru_Inn**	**Ct_Tru_Aut**	**Ct_Tru_Pro**	**Ct_Tru_CA**	**Total**
INTERACTION	0.008	0.043	0.006	0.174	0.024	0.255
Factor Score Weights	0.031	0.169	0.024	0.682	0.094	1.000

Exhibit 6.66: Factor Score Weights of the Product Variable

The new interaction model is proposed, shown in Exhibit 6.67, with the composite product variable. The composite variable of Competitive Aggressiveness is used in the model since one of its manifest variables, CA1, covariates with interactive predictors. It can be seen in Exhibit 6.67 that there are two observable exogenous variables and 16 observable endogenous variables in the model. Six unobservable endogenous variables together with 23 unobservable exogenous variables are in the proposed model as well.

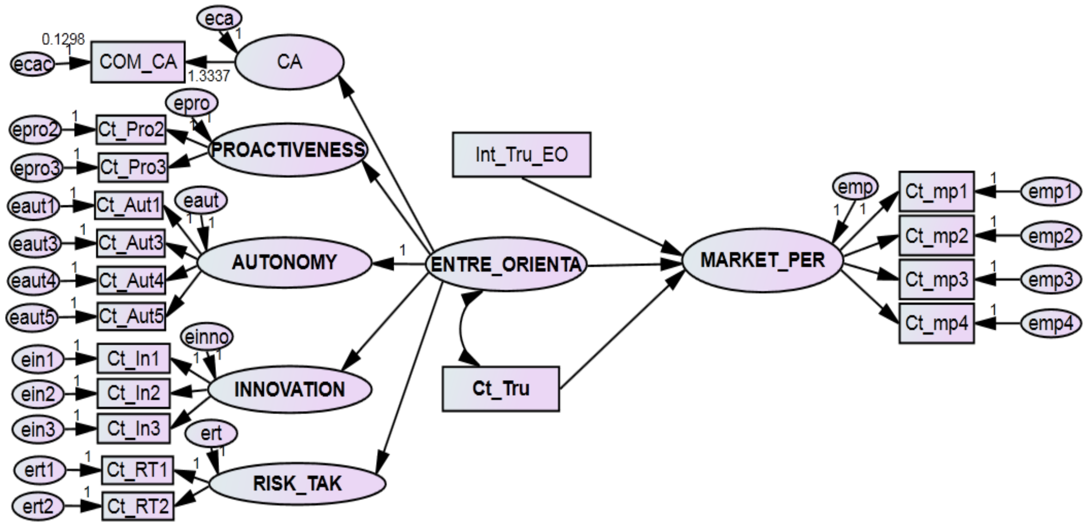


Exhibit 6.67: Interaction Model with Composite Variable (Step 2)

Exhibit 6.68 shows the results of interaction model including unstandardised/ standardised regression weights and squared multiple correlations. It is shown in the model that Entrepreneurial Orientation positively and significantly influences Market Performance with standardised regression weights of 0.526. The regression weights of Trusting Cooperation on Market Performance is also positive and significant at significant level of 0.05 with a standardised regression weight of 0.146, but its interaction with Entrepreneurial Orientation on Market Performance is not significant indicating there is no moderating effect. The R^2 of Market Performance is 0.300 indicating that the 30.0% variance of Market Performance could be explained by the proposed model.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P
AUT	<---	EO	1.000			
PRO	<---	EO	3.989	1.349	2.957	.003
INNO	<---	EO	2.590	.888	2.917	.004
RT	<---	EO	1.041	.537	1.937	.053
CA	<---	EO	2.373	.824	2.880	.004
MP	<---	Int_Tru_EO	.028	.050	.560	.575
MP	<---	Ct_Tru	.142	.055	2.563	.010
MP	<---	EO	2.721	.952	2.858	.004
Ct_Pro2	<---	PRO	1.000			
Ct_Aut4	<---	AUT	.771	.063	12.163	***
Ct_Aut3	<---	AUT	1.086	.067	16.209	***
Ct_Aut1	<---	AUT	1.000			
Ct_Aut5	<---	AUT	1.022	.070	14.709	***
Ct_In3	<---	INNO	1.128	.070	16.196	***
Ct_In2	<---	INNO	1.257	.074	17.049	***
Ct_In1	<---	INNO	1.000			
Ct_RT1	<---	RT	1.000			
Ct_RT2	<---	RT	1.318	.400	3.295	***
Ct_Pro3	<---	PRO	1.051	.081	13.029	***
Ct_mp1	<---	MP	1.000			
Ct_mp2	<---	MP	.907	.042	21.757	***
Ct_mp3	<---	MP	.804	.054	14.969	***
Ct_mp4	<---	MP	.644	.049	13.028	***
COM_CA	<---	CA	1.334			

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
AUT	<---	EO	.218
PRO	<---	EO	.919
INNO	<---	EO	.683
RT	<---	EO	.249
CA	<---	EO	.554
MP	<---	Int_Tru_EO	.032
MP	<---	Ct_Tru	.146
MP	<---	EO	.526
Ct_Pro2	<---	PRO	.880
Ct_Aut4	<---	AUT	.701
Ct_Aut3	<---	AUT	.890
Ct_Aut1	<---	AUT	.819
Ct_Aut5	<---	AUT	.812

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
Ct_In3	<---	INNO	.880
Ct_In2	<---	INNO	.940
Ct_In1	<---	INNO	.789
Ct_RT1	<---	RT	.686
Ct_RT2	<---	RT	.964
Ct_Pro3	<---	PRO	.811
Ct_mp1	<---	MP	.934
Ct_mp2	<---	MP	.897
Ct_mp3	<---	MP	.732
Ct_mp4	<---	MP	.671
COM_CA	<---	CA	.965

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
CA	.307
MP	.300
RT	.062
INNO	.467
AUT	.048
PRO	.845
COM_CA	.932
Ct_mp4	.451
Ct_mp3	.535
Ct_mp2	.805
Ct_mp1	.872
Ct_Pro3	.658
Ct_RT1	.470
Ct_RT2	.929
Ct_In1	.623
Ct_In2	.883
Ct_In3	.775
Ct_Aut5	.659
Ct_Aut1	.671
Ct_Aut3	.793
Ct_Aut4	.492
Ct_Pro2	.774

Exhibit 6.68: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

Variance inflation factor (VIF) was calculated for the interaction model with a value of 1.09, well below the commonly used threshold of 10, suggesting that multicollinearity is not a concern in the model (Hair, Black et al. 2010, Verwaal, Bruining et al. 2010, Anderson and Eshima 2013). Exhibit 6.69 shows the model fits indices. With Chi-square of 217.208 and 129 degrees of freedom, the proposed model shows model parsimony (x^2/df = 1.684). The Bollen-Stine p value is 0.116, well above the recommended threshold, suggesting a model fit. PCLOSE of 0.431 is well above the cut-off point of 0.05 with RMSEA slightly out of the recommended range but still acceptable (Williams and McGuire 2010). AGFI of 0.886, TLI of 0.956 and CFI of 0.963 are above the recommended thresholds indicating a model fit. SRMR of 0.0711 is slightly higher than the recommended level, but it is still acceptable in the literature (Prodan and Drnovsek 2010, Nguyen and Nguyen 2011). Therefore, the proposed model fits the data and is acceptable.

Abbreviation	**Acceptable levels**	**Model fits Results**
χ^2 (df, p)	Bollen-Stine bootstrap p > 0.05 $1 < x^2$/df <2	Chi-square = 217.208 df = 129 x^2/df = 1.684 Bollen-Stine p=0.116
RMSEA	RMSEA < 0.05 PCLOSE > 0.05	RMSEA=0.051 PCLOSE=0.431
SRMR	SRMR < 0.06	SRMR=0.0711
TLI, NNFI or ρ2	TLI > 0.95	TLI=0.956
CFI	CFI > 0.95	CFI=0.963
AGFI	AGFI>0.8	AGFI=0.886

Exhibit 6.69: Model Fit Statistics of the Full Model

In summary, the moderating effect of Trusting Cooperation on the relationship between Entrepreneurial Orientation and Market Performance was tested by proposing an interaction structural equation model using Ping's (1996) method. The results of the model showed that Trusting Cooperation does not moderate the relationship between Entrepreneurial Orientation and Market Performance. In contrast, Trusting Cooperation directly positively and significantly influences Market Performance.

6.6 Examining the Mediating Effects of Common CSR on the EO and Performance Relationship

In this section, the mediating effects of two variables of common shared resources in clusters including Government support and Institutional Support are invettigated. Hypotheses H11 and H12 are proposed to illustrated the relationships among these variables of interest in this section, which is shwon in Exhibit 6.70.

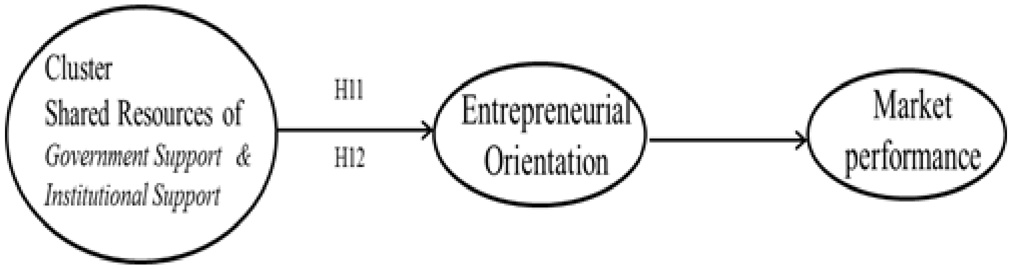


Exhibit 6.70: Mediating Effects of Common Resources Shared in Clusters

6.6.1 Step one of examining the mediation effects

Exhibit 6.71 shows the full model of testing the mediation effects of entrepreneurial orientation on the relationships between government support, institutional support and market performance. It can be seen that there are 33 exogenous variables and 31 endogenous variables including six unobservable endogenous variables and 25 observable endogenous variables. Exhibit 6.67 shows the first step of mediation effect examinations, thus labelled as M1.

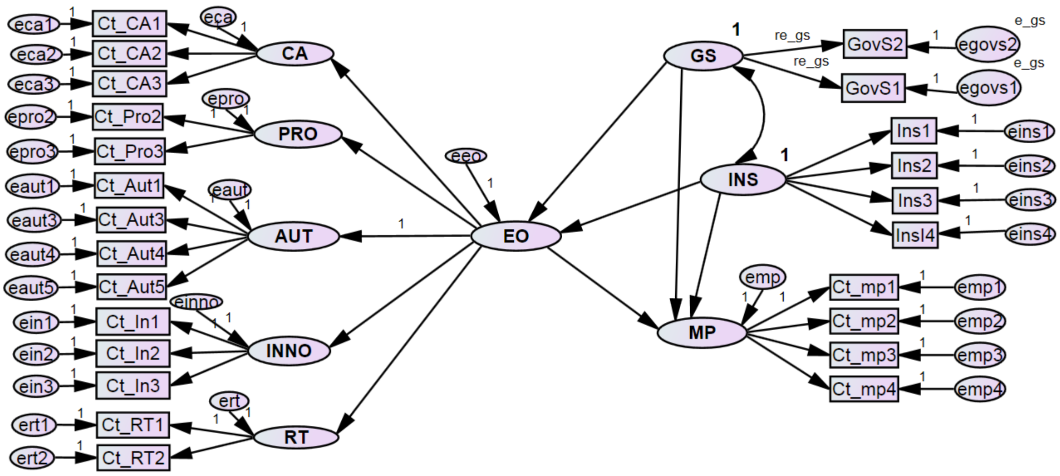


Exhibit 6.71: Examining the Mediation Effects of EO (M1)

Exhibit 6.72 shows the outputs of Model 1 of Exhibit 6.71 (above) including regression weights, standardised regression weights and squared multiple correlations. According to the results shown in the regression weight table, Government Support is negatively associated with Entrepreneurial Orientation and Institutional Support is positively associated with Entrepreneurial Orientation. However, neither of the relationships is significant. The direct effects of Government Support and Institutional Support on Market Performance are positive but still not significant, indicating that no mediation effects of Entrepreneurial Orientation exists.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P
EO	<---	GS	-.012	.020	-.614	.539
EO	<---	INS	.005	.020	.227	.820
CA	<---	EO	2.526	.887	2.849	.004
AUT	<---	EO	1.000			
PRO	<---	EO	3.913	1.310	2.987	.003
INNO	<---	EO	2.580	.875	2.948	.003
RT	<---	EO	1.042	.532	1.959	.050
MP	<---	EO	2.695	.935	2.882	.004
MP	<---	INS	.068	.084	.810	.418
MP	<---	GS	.082	.082	1.005	.315
Ct_Pro2	<---	PRO	1.000			
Ct_Aut4	<---	AUT	.771	.063	12.164	***
Ct_Aut3	<---	AUT	1.085	.067	16.209	***
Ct_Aut1	<---	AUT	1.000			
Ct_Aut5	<---	AUT	1.022	.070	14.710	***
Ct_CA2	<---	CA	1.261	.093	13.531	***
Ct_CA1	<---	CA	1.000			
Ct_In3	<---	INNO	1.128	.070	16.195	***
Ct_In2	<---	INNO	1.257	.074	17.052	***
Ct_In1	<---	INNO	1.000			
Ct_RT1	<---	RT	1.000			
Ct_RT2	<---	RT	1.330	.399	3.335	***
Ct_Pro3	<---	PRO	1.057	.081	13.007	***
Ct_CA3	<---	CA	1.069	.087	12.233	***
Ct_mp1	<---	MP	1.000			
Ct_mp2	<---	MP	.903	.042	21.750	***
Ct_mp3	<---	MP	.799	.054	14.894	***
Ct_mp4	<---	MP	.642	.049	12.999	***
Ins1	<---	INS	1.687	.102	16.535	***
Ins3	<---	INS	1.592	.106	14.986	***
Ins4	<---	INS	1.099	.113	9.686	***
GovS1	<---	GS	1.495	.070	21.381	***
GovS2	<---	GS	1.495	.070	21.381	***
Ins2	<---	INS	1.548	.102	15.162	***

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
EO	<---	GS	-.051
EO	<---	INS	.019
CA	<---	EO	.545
AUT	<---	EO	.221
PRO	<---	EO	.915
INNO	<---	EO	.689
RT	<---	EO	.253
MP	<---	EO	.527
MP	<---	INS	.056
MP	<---	GS	.068
Ct_Pro2	<---	PRO	.878
Ct_Aut4	<---	AUT	.701
Ct_Aut3	<---	AUT	.890
Ct_Aut1	<---	AUT	.819
Ct_Aut5	<---	AUT	.812
Ct_CA2	<---	CA	.974
Ct_CA1	<---	CA	.731
Ct_In3	<---	INNO	.880
Ct_In2	<---	INNO	.940
Ct_In1	<---	INNO	.789
Ct_RT1	<---	RT	.682
Ct_RT2	<---	RT	.969
Ct_Pro3	<---	PRO	.814
Ct_CA3	<---	CA	.746
Ct_mp1	<---	MP	.936
Ct_mp2	<---	MP	.896
Ct_mp3	<---	MP	.729
Ct_mp4	<---	MP	.670
Ins1	<---	INS	.862
Ins3	<---	INS	.805
Ins4	<---	INS	.578
GovS1	<---	GS	.936
GovS2	<---	GS	.936
Ins2	<---	INS	.812

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
EO	.002
MP	.285
RT	.064
INNO	.474
CA	.297
AUT	.049
PRO	.838
Ins2	.659
GovS2	.877
GovS1	.877
Ins4	.334
Ins3	.648
Ins1	.744
Ct_mp4	.449
Ct_mp3	.531
Ct_mp2	.803
Ct_mp1	.876
Ct_CA3	.556
Ct_Pro3	.662
Ct_RT1	.466
Ct_RT2	.938
Ct_In1	.623
Ct_In2	.883
Ct_In3	.775
Ct_CA1	.535
Ct_CA2	.949
Ct_Aut5	.659
Ct_Aut1	.671
Ct_Aut3	.792
Ct_Aut4	.492
Ct_Pro2	.770

Exhibit 6.72: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

With Chi-square of 367.969, 243 degrees of freedom and a Bollen-Stine p value of 0.128, the proposed model shown in Exhibit 6.71 is a fitting model. Other model fit indices such as CFI of 0.966, TLI of 0.962, AGFI of 0.870, RMSEA of 0.044 and PCLOSE of 0.851 all suggest this model fits the data. Thus, the above SEM outputs are reliable.

6.6.2 Step two of examining mediating effects

In order to investigate whether there existing full mediation of Entrepreneurial Orientation on the relationships between Government Support, Institutional Support and Market Performance, the following model, shown in Exhibit 6.73, has been developed. The arrows from Government Support and Institutional Support to Market Performance were eliminated. There are 33 exogenous variables and 31 endogenous variables including seven unobservable and 24 observable endogenous variables.

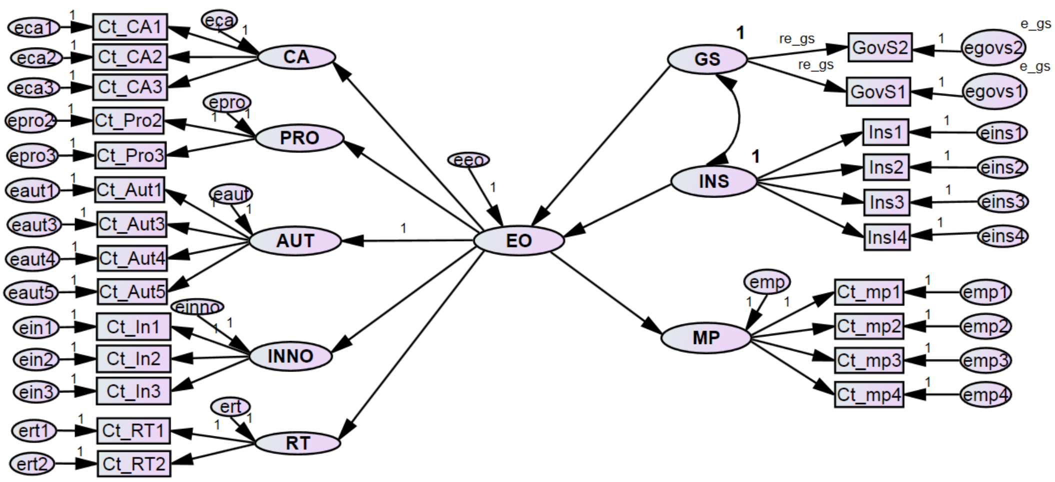


Exhibit 6.73: Examining the Mediation Effects of EO (M2)

Exhibit 6.74 shows the outputs of the proposed model in Exhibit 6.73 (above). It can be seen that the effect of Government Support on Entrepreneurial Orientation is negative and the effect of Institutional Support on Entrepreneurial Orientation is positive. However, both the effects are insignificant indicating no mediation effects.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P
EO	<---	GS	-.010	.020	-.488	.626
EO	<---	INS	.007	.020	.339	.734
CA	<---	EO	2.508	.872	2.878	.004
AUT	<---	EO	1.000			
PRO	<---	EO	3.862	1.280	3.017	.003
INNO	<---	EO	2.549	.856	2.977	.003
RT	<---	EO	1.033	.524	1.970	.049
MP	<---	EO	2.648	.911	2.905	.004
Ct_Pro2	<---	PRO	1.000			
Ct_Aut4	<---	AUT	.771	.063	12.164	***
Ct_Aut3	<---	AUT	1.085	.067	16.210	***
Ct_Aut1	<---	AUT	1.000			
Ct_Aut5	<---	AUT	1.022	.069	14.710	***
Ct_CA2	<---	CA	1.261	.093	13.540	***
Ct_CA1	<---	CA	1.000			
Ct_In3	<---	INNO	1.128	.070	16.201	***
Ct_In2	<---	INNO	1.256	.074	17.053	***
Ct_In1	<---	INNO	1.000			
Ct_RT1	<---	RT	1.000			
Ct_RT2	<---	RT	1.330	.398	3.341	***
Ct_Pro3	<---	PRO	1.057	.081	12.980	***
Ct_CA3	<---	CA	1.069	.087	12.236	***
Ct_mp1	<---	MP	1.000			
Ct_mp2	<---	MP	.903	.042	21.724	***
Ct_mp3	<---	MP	.799	.054	14.886	***
Ct_mp4	<---	MP	.642	.049	13.000	***
Ins1	<---	INS	1.687	.102	16.543	***
Ins3	<---	INS	1.592	.106	14.982	***
Ins4	<---	INS	1.098	.113	9.675	***
GovS1	<---	GS	1.495	.070	21.381	***
GovS2	<---	GS	1.495	.070	21.381	***
Ins2	<---	INS	1.548	.102	15.163	***

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
EO	<---	GS	-.040
EO	<---	INS	.028
CA	<---	EO	.547
AUT	<---	EO	.223
PRO	<---	EO	.914
INNO	<---	EO	.688
RT	<---	EO	.254
MP	<---	EO	.523
Ct_Pro2	<---	PRO	.877
Ct_Aut4	<---	AUT	.701
Ct_Aut3	<---	AUT	.890
Ct_Aut1	<---	AUT	.819
Ct_Aut5	<---	AUT	.812
Ct_CA2	<---	CA	.974
Ct_CA1	<---	CA	.731
Ct_In3	<---	INNO	.881
Ct_In2	<---	INNO	.940
Ct_In1	<---	INNO	.790
Ct_RT1	<---	RT	.682
Ct_RT2	<---	RT	.969
Ct_Pro3	<---	PRO	.814
Ct_CA3	<---	CA	.746
Ct_mp1	<---	MP	.936
Ct_mp2	<---	MP	.896
Ct_mp3	<---	MP	.729
Ct_mp4	<---	MP	.670
Ins1	<---	INS	.863
Ins3	<---	INS	.805
Ins4	<---	INS	.577
GovS1	<---	GS	.936
GovS2	<---	GS	.936
Ins2	<---	INS	.812

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
EO	.001
MP	.274
RT	.065
INNO	.474
CA	.299
AUT	.050
PRO	.836
Ins2	.659
GovS2	.877
GovS1	.877
Ins4	.333
Ins3	.648
Ins1	.744
Ct_mp4	.449
Ct_mp3	.531
Ct_mp2	.803
Ct_mp1	.876
Ct_CA3	.556
Ct_Pro3	.662
Ct_RT1	.466
Ct_RT2	.938
Ct_In1	.623
Ct_In2	.883
Ct_In3	.775
Ct_CA1	.535
Ct_CA2	.948
Ct_Aut5	.659
Ct_Aut1	.671
Ct_Aut3	.792
Ct_Aut4	.492
Ct_Pro2	.770

Exhibit 6.74: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

With Chi-square of 371.07, 245 degrees of freedom and a Bollen-Stine p value of 0.126, the proposed model shown in Exhibit 6.69 is a good fit. Other model fit indices such as CFI of 0.966, TLI of 0.962, AGFI of 0.871, RMSEA of 0.044 and PCLOSE of 0.851 all suggest this model fits the data. Thus, the above SEM outputs are reliable.

6.6.3 Step three of examining mediating effects

In order to investigate whether there is a direct effect of Government Support and Institutional Support, the following model shown in Exhibit 6.75 is developed. The construct measuring EO was eliminated from M2 of Exhibit 6.69. There are 13 exogenous variables and 11 endogenous variables including one unobservable endogenous variable and ten observable endogenous variables.

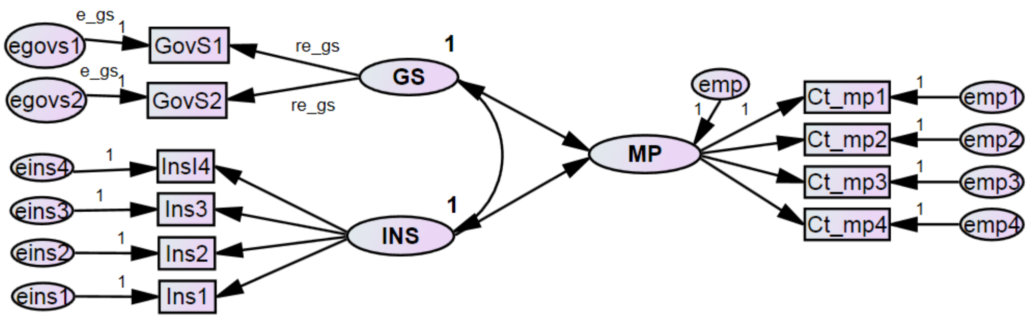


Exhibit 6.75: Examining the Mediation Effects of EO (M3)

Exhibit 6.76 shows the outputs of the proposed model shown in Exhibit 6.71. According to the regression weights table of Exhibit 6.72, the effects of Government and Institution Supports on Market Performance is positive but not significant suggesting no direct effects.

Regression Weights: (Group number 1 - Congeneric)

			Estimate	S.E.	C.R.	P	Label
MP	<---	INS	.079	.093	.851	.395	par_11
MP	<---	GS	.050	.090	.557	.577	par_12
Ct_mp1	<---	MP	1.000				
Ct_mp2	<---	MP	.906	.043	21.248	***	par_3
Ct_mp3	<---	MP	.804	.054	14.895	***	par_4
Ct_mp4	<---	MP	.642	.050	12.892	***	par_5
Ins1	<---	INS	1.687	.102	16.536	***	par_6
Ins3	<---	INS	1.592	.106	14.987	***	par_7
Ins4	<---	INS	1.099	.113	9.686	***	par_8
GovS1	<---	GS	1.495	.070	21.381	***	re_gs
GovS2	<---	GS	1.495	.070	21.381	***	re_gs
Ins2	<---	INS	1.548	.102	15.159	***	par_9

Standardised Regression Weights: (Group number 1 - Congeneric)

			Estimate
MP	<---	INS	.066
MP	<---	GS	.042
Ct_mp1	<---	MP	.934
t_mp2	<---	MP	.897
Ct_mp3	<---	MP	.732
Ct_mp4	<---	MP	.669
Ins1	<---	INS	.862
Ins3	<---	INS	.805
Ins4	<---	INS	.578
GovS1	<---	GS	.936
GovS2	<---	GS	.936
Ins2	<---	INS	.812

Squared Multiple Correlations: (Group number 1 - Congeneric)

	Estimate
MP	.008
Ins2	.659
GovS2	.877
GovS1	.877
Ins4	.334
Ins3	.648
Ins1	.744
Ct_mp4	.447
Ct_mp3	.536
Ct_mp2	.805
Ct_mp1	.873

Exhibit 6.76: Regression Weights, Standardised Regression Weights, and Squared Multiple Correlations

With Chi-square of 31.408, 34 degrees of freedom and a Bollen-Stine p value of 0.984, the proposed model showed in Exhibit 6.71 fits data. Other model fit indices such as CFI of 1.000, TLI of 1.002, AGFI of 0.963, RMSEA of 0.000 and PCLOSE of 0.989 all suggest this model fits the data. Thus, the above SEM outputs are reliable.

In summary, the mediation effects of Entrepreneurial Orientation on the relationships between Government Support and Institutional Support on Market Performance is examined with three structural equation models proposed. The results suggest that there are no mediation effects of Entrepreneurial Orientation on the relationship between Government Support and Institutional Support on Market

Performance. The outcomes did not evidence direct influence of Government Support and Institutional Support on Market Performance.

6.7 Hypothesis Testing Results

Hypotheses 1a – 2b predict the positive relationships between Government Support, Institutional Support, External Openness and Trusting Cooperation. To test these hypotheses, models of Exhibit 6.9 and Exhibit 6.12 were built. Exhibit 6.49 reveals a positive effect of Government Support on Trusting Cooperation (γ=0.311, $p<0.001$). The positive effects of Institutional Support on Trusting Cooperation (γ=0.326, $p<0.001$) and External Openness (γ=0.364, $p<0.001$) are also evidenced in Exhibits 6.10 and 6.11. Exhibit 6.10 also reveals a positive relationship between Government Support and Trusting Cooperation, but the p value is bigger than the significance level of 0.05. Thus, hypotheses 1b, 2a and 2b are supported by the SEM outputs while hypothesis 1a is not supported in the research.

Hypotheses 3a and 3b predict positive mediation effects of Trusting Cooperation on the relationships between Government Support, Institutional Support and External Openness. Exhibit 6.12 was built to test the hypothesis. Exhibit 6.13 reveals the positive and significant effects of Government Support and Institutional Support on External Openness ((γ=0.277, $p<0.003$; γ=0.477, $p<0.001$ respectively). Thus, it can be concluded that Trusting Cooperation partially mediates the relationship between Institutional Support and External Openness with full mediation effect on the effect of Government Support on External Openness. Thus, it can be concluded that H3a and H3b are supported in the research.

Hypotheses 4 - 6 predict positive relationships between Entrepreneurial Opportunity, Entrepreneurial Orientation and Market Performance as well as the mediating effect of Entrepreneurial Orientation on the relationship between Entrepreneurial Opportunity and Market Performance. In order to test the hypotheses regarding the positive relationships between the three afore-mentioned variables, the model of Exhibit 6.15 was built. Exhibit 6.17 reveals the positive effects of Entrepreneurial Orientation on Market Performance (γ=2.245, $p<0.05$) and the positive effect of Entrepreneurial Opportunity on Entrepreneurial

Orientation (γ=0.134, p<0.03). However, relationship between Entrepreneurial Opportunity and Market Performance ((γ=0.128, p>0.05) is not evidenced in the model. In order to test the mediation effect of Entrepreneurial Orientation on the relationship between Entrepreneurial Opportunity and Market Performance, the model was built in Exhibit 6.19. Exhibit 6.20 reveals there exists a positive effect of Entrepreneurial Opportunity on Market Performance (γ=0.454, p<0.001). Thus, except hypothesis 5, hypotheses 4, 6a and 6b are supported.

In order to test the moderation effects of External Openness on the Entrepreneurial Opportunity - Entrepreneurial Orientation relationship, using Ping's (1996) method, models were built as shown in Exhibit 6.28 and Exhibit 6.29. Exhibit 6.32 reveals a significant moderating effect of External Openness on the relationship between Entrepreneurial Opportunity and Entrepreneurial Orientation (γ= - 0.031, p<0.05). However, the moderation effect of External Openness seems negtive. That is to say, entrepreneurial opportunities seems to have more impact on the entrepreueial behaviours of firms in less external opend situations than in more external opend environments. The structural models of Exhibit 6.35 and Exhibit 6.38 were built to test the moderation effect of External Openness on the relationship between Entrepreneurial Opportunity and Market Performance. As shown in Exhibit 6.39 the moderation effect (γ= - 0.089, p>0.05) is not significant.

In order to test the moderating effect of External Openness on the relationship between Entrepreneurial Orientation and Market Performance, models were built as shown in Exhibit 6.41, Exhibit 6.44 and Exhibit 6.46. Exhibit 6.49 reveals the positive moderating effect of External Openness on the relationship between Entrepreneurial Orientation and Market Performance. No direct effect of External Openness was found on Market Performance from Exhibit 6.39 andExhibit 6.40. Therefore, hypotheses H7a and H10a are supported while hypotheses H8a and H8b are not supported in the research.

In order to test the moderation effect of Trusting Cooperation on the relationship between Entrepreneurial Opportunity and Entrepreneurial Orientation, I built structural models of Exhibit 6.50 and Exhibit 6.53. Exhibit 6.54 shows the moderating effect is not significant. Structural models of Exhibit 6.56 and Exhibit 6.59 were built to examine the moderating effect of Trusting Cooperation on the relationship between Entrepreneurial Opportunity and Market Performance. Exhibit 6.60 reveals the direct effect of Trusting Cooperation on Market

Performance (γ=0.147, p<0.05) but the moderating effect is not significant. Models of Exhibit 6.62 and Exhibit 6.65 were built to test the moderating effect of Trusting Cooperation on the relationship between Entrepreneurial Orientation and Market Performance. Similar to Exhibit 6.60, Exhibit 6.68 shows the significant direct effect of Trusting Cooperation on Market Performance but the moderating effect is not significant. Therefore, hypothesis 7b, hypothesis 9b and hypothesis 10b were not supported; only hypothesis 9a is supported.

In order to test the medicating effects of Entrepreneurial Orientation on the relationships of Government Support - Market Performance and Institutional Support - Market Performance. Models of Exhibit 6.71, Exhibit 6.73 and Exhibit 6.75 were built. Exhibit 6.74 and Exhibit 6.76 presents the hypothesis testing results, observing that there are no significant mediating effects of Entrepreneurial Orientation on the impacts of Government Support and Institutional Support on Market Performance. These results should be interpreted with caution since variables are mean centred in all models (Aiken and Stephen 1991, Díez-Vial and Fernández-Olmos 2012). For instance, the result for Trusting Cooperation on Market Performance (γ=0.002, p>0.1) shows that Trusting Cooperation does not have a significant effect on Entrepreneurial Orientation for firms with an average level of Trusting Cooperation. Likewise, the lack of significance for the “External Openness” variable (γ=0.056, p>0.1) indicates that External Openness does not have a significant effect on Market Performance for firms with average level of External Openness. Thus, Hypotheses H11 and H12 are not supported in the research.

A summary of research hypotheses testing results are shown in Exhibit 6.77.

Hypotheses No.	Content of Hypotheses	Testing Results
H1a	Government Support positively influences Trusting Cooperation of cluster firms	Accepted
H1b	Government Support positively influences External Openness of cluster firms	Accepted
H2a	Supportive Institutions positively influences Trusting Cooperation of cluster firms	Accepted
H2b	Supportive Institutions positively influences External Openness of cluster firms	Accepted
H3a	Trusting Cooperation of cluster firms mediates the influence of Government Support on External Openness	Accepted
H3b	Trusting Cooperation of cluster firms mediates the influence of Institutional Support on External Openness	Accepted
H4	Entrepreneurial Opportunity positively influences Entrepreneurial Orientation	Accepted
H5	Entrepreneurial Opportunity positively influences firm Market Performance	Rejected
H6a	Entrepreneurial Orientation positively influences Market Performance	Accepted
H6b	Entrepreneurial Orientation mediates the influence of Entrepreneurial Opportunity on Market Performance	Accepted
H7a	External Openness positively moderates the influence of Entrepreneurial Opportunity on Entrepreneurial Orientation	Rejected[8]
H7b	Trusting Cooperation positively moderates the influence of Entrepreneurial Opportunity on Entrepreneurial Orientation	Rejected
H8a	External Openness positively influences Market Performance	Rejected
H8b	External Openness positively moderates the influence of Entrepreneurial Opportunity on Market Performance	Rejected
H9a	Trusting Cooperation positively influences Market Performance	Accepted
H9b	Trusting Cooperation positively moderates the influence of Entrepreneurial Opportunity on Market Performance	Rejected
H10a	External Openness positively moderates the influence of Entrepreneurial Orientation on Market Performance	Accepted
H10b	Trusting Cooperation positively moderates the influence of Entrepreneurial Orientation on Market Performance	Rejected
H11	Entrepreneurial Orientation mediates the positive influence of Government Support on Market Performance	Rejected
H12	Entrepreneurial Orientation mediates the positive influence of Institutional Support on Market Performance	Rejected[9]

Exhibit 6.77: Summary of Hypotheses Testing Results

[8] ExOp was found negatively and significantly moderated the EOP-EO relationship.

[9] The moderating effects of GS and INS on the entrepreneurial process were also tested for experimentation purpose. No moderation effects were found. Based on extensive literature, the mediation models were adopted in the research.

6.8 Chapter Summary

Chapter 6 provides results of hypotheses testing. Multivariate analysis of variance (MANOVA) was employed at the beginning of the thesis to compare variables of interest according to winery locations (GIs) and membership. In order to test the proposed structural models, a higher order factor of EO was developed. The data fits all the proposed structural models. In order to test the interaction effects of trusting cooperation and external openness of cluster resources on entrepreneurial processes, product variables were developed by using Ping's (1996) method. In order to test the mediating effects of EO on the relationships of Government Support-Market Performance and Institutional Support - Market Performance, Models of mediations were built. This chapter ends by displaying hypotheses testing results. These hypotheses testing results is further discussed in Chapter 7.

7 Thesis Conclusion

7.1 Chapter Introduction

As the final chapter of the thesis, this chapter firstly, summarises the research undertaken and discusses the research outcomes. It then identifies limitations associated with the research, based on which possible future research directions are discussed. Finally, it presents the implications and contributions the research has made to theory and practice.

7.2 Summary of Research

The research interest of the thesis was to investigate how firms located in clusters leverage shared strategic resources and entrepreneurial strategic orientation in pursuit of entrepreneurial opportunities to achieve higher market performance. The variables of interest are Government Support, Institutional Support, Trusting Cooperation, and External Openness of shared cluster resources, Entrepreneurial Orientation, Entrepreneurial Opportunity, and Market Performance. A five-dimension perspective on Entrepreneurial Orientation was adopted in the research: Proactiveness, Risk Taking, Innovativeness, Competitive Aggressiveness and Autonomy. As a concept in entrepreneurship theory, EO is not only limited to start-up ventures but is also applicable to organisations of any size (Morris and Paul 1987). In this research, the Entrepreneurial Orientation concept was applied to well-established wineries in Australia to investigate firm level entrepreneurship.

Based on cluster theories of knowledge spill-over and strategic alliance, this research, from a social network perspective, sees the hierarchical relationships between cluster strategic and common resources. As such, it was hypothesised in the research that Government Support and Institutional Support are conducive factors leading to trust based cooperation inside clusters as well as openness toward organisations outside clusters.

In regard the entrepreneurial process concerned in the research, on one hand, it is arguably viewed in strategic management and entrepreneurship literature that Entrepreneurial Orientation is conducive to firm performance. On the other hand, it has been pointed out that the more entrepreneurial opportunities that are perceived by a firm, the more the firm will be entrepreneurially oriented. Thus, this research further hypothesised that both Entrepreneurial Orientation and Entrepreneurial Opportunity impact positively on the Market Performance of firms meanwhile Entrepreneurial Orientation mediated the impact of Entrepreneurial Opportunity on performance.

Based on RBV, resource dependence theory, and entrepreneurship theory, it was hypothesised that strategic shared resources moderated the entrepreneurial process of concern while Entrepreneurial Orientation mediated the impacts of common shared resources on market performance of firms located in clusters in the research.

To test a set of 20 research hypotheses, a survey was developed and distributed across the Australian wine industry. The Australian wine industry was selected as a population from which to draw a sample because of its clear cluster development tendency, world-renowned innovation ability and proactive, risk-taking management behaviours observed in wineries. Online-based questionnaires were used to elicit responses from winery owners, CEOs and managers from six states of Australia: Western Australia, South Australia, Queensland, New South Wales, Victoria and Tasmania. The measurements of the variables of interest were synthesized by combining the measurements derived from existing research and the practical experience of knowledgeable Australian wine industry informants. After a series of pilot tests, a closed ended questionnaire was sent to 2402 officially registered wineries in Australia, which resulted in 264 valid responses.

Descriptive analysis was conducted by using SPSS software followed by path analysis using AMOS. Measures of research variables were derived from the literature review. Before conducting hypotheses testing, firstly, SPSS software was used to clean, tidy data and to do preliminary data analyses. Secondly, AMOS software was used to assist further understanding the data and to perform confirmatory factor analysis (CFA) to ensure data validity.

AMOS is the main instrument to examine the proposed relationships among the variables of interest. A series of Structural Equation Models was used to test the relationships among Entrepreneurial Opportunity, Entrepreneurial Orientation, Market Performance, Government Support, Institutional Support, Trusting Cooperation, and External Openness. Interaction models were developed to identify the roles played by cluster strategic shared resources in the afore-mentioned relationships. Mediation models were developed to test the proposed mediating relationships among cluster common resources, Entrepreneurial Orientation and market performance of firms.

Most of the hypotheses are supported by the outcomes of the hypotheses testing in the research. In general, the research sees interactive relationships among cluster shared resources and the dynamic interaction between cluster strategic shared resources and the entrepreneurial process of individual cluster firms. The details of the research findings are discussed in the following section.

7.3 Discussion of Results

The main objective of this research was to discover whether and to what extent cluster shared resources and winery entrepreneurial management behaviours influenced firm market performance. The empirical investigation was conducted using a firm level survey that resulted in 264 responses from 65 wine-producing regions across Australia over four months. Using the collected data, structural models depicting the relationships among the variables of interest were tested. The structural models including several contingency models were built based on theoretical perspectives in the literatures of strategic management, industrial clusters and entrepreneurship.

The Australian wine industry shows strong characteristics of entrepreneurship and clustering development tendency. The findings of the research provide theoretic support of the contributions of shared resources in clusters and strategic entrepreneurial oriented management behaviours to individual wineries. The Australian wine industry offers an ideal case capable of providing insight into the economic value of the spatially and entrepreneurially anchored performance. Of the wineries that participated in the survey, well established, small and family owned businesses were dominant. These wineries predominantly rely on wine regional resources such as wine institutions (associations) and regional based networks in R&D and marketing promotion.

Through empirical examinations of the models proposed, this research finds the unique characteristics associated with individual shared resources in clusters as well as their influence paths on the entrepreneurial process. A new conceptual model derived from the outcomes of hypotheses testing is presented below in Exhibit 7.1. The following parts in this section discuss the research findings in details.

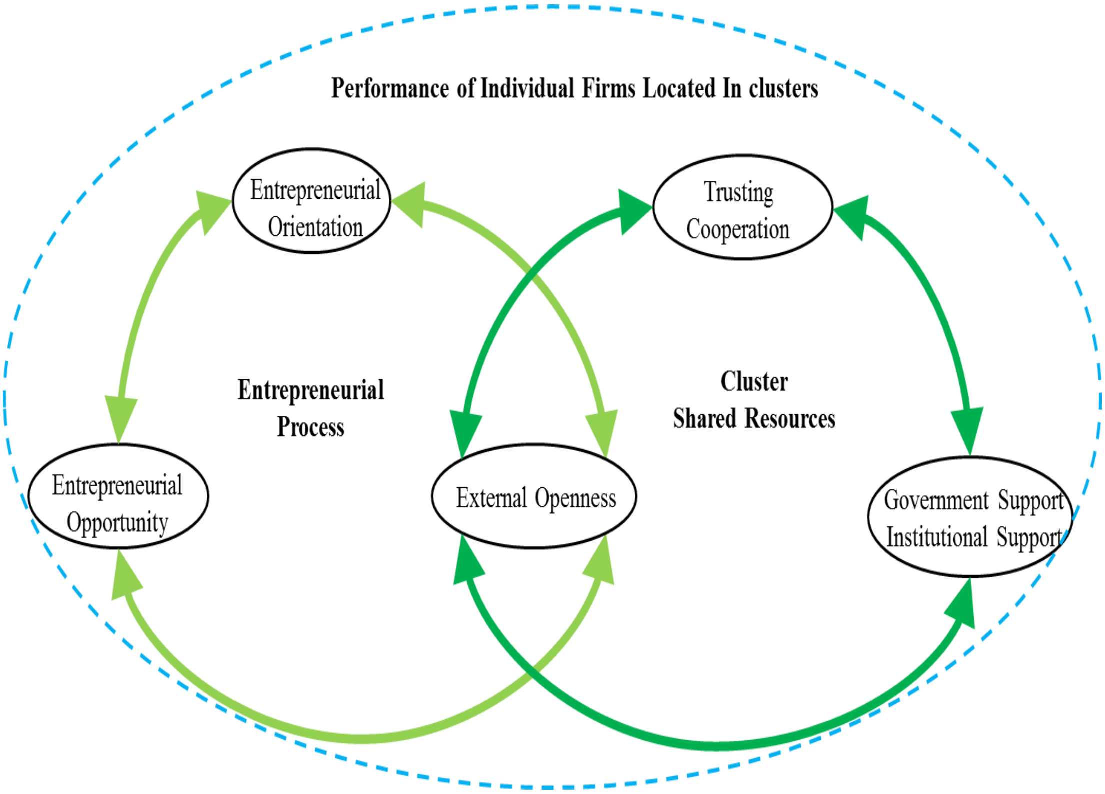


Exhibit 7.1: The Revised Conceptual Model Drawn from the Research

7.3.1 The Interactive Dynamic Process of Relations Based Resources in Cluster

Four types of relational based resources in clusters are examined in the research: Trusting Cooperation, External Openness, Government Support and Institutional Support. It is hypothesised in the research that “common cluster resources”, Government Support and Institutional positively influence cluster “strategic shared resources”, Trusting Cooperation and External Openness. It is found in the research that Institutional Support and Government Support positively and significantly contribute to firms’ intra cluster Trusting Cooperation. The significant and positive effect of Institutional Support on firms’ extra-cluster External Openness was supported in the research while significant relationship between Government Support and External Openness was not supported. A mediation model to test the mediating effects of Trusting Cooperation of the relationships of Government Support-External Openness and Institutional Support was tested in the research. The results of the mediation model supported the full mediation effect of Trusting Cooperation on the Government Support-External Openness relationship and partial mediation effect on the Institutional Support – External Openness relationship.

These findings evidence the social networking role of governments and institutions and suggest potential hierarchical relationships among shared resources available in clusters (Caniëls, 2003). The findings of Government and Institutional Support on regional external and internal collaborations and activities are consistent with previous research findings (Lee, Lee et al. 2001, Bas and Kunc 2012, Roxas and Chadee 2013). Bas and Kunc (2012) suggest that institutions such as universities, not only promote regional interactions but also extra linkages of resources in natural resources based industries like wine. This research is consistent with the argument of Bas and Kunc (2012) and finds that Institutional Support plays a significant and positive role in inside and outside networks for regional wineries. Some public - private institutions have been found to foster multiple, cross-cutting ties between public and private actors to ensure cluster firms’ access to a variety of knowledge resources (McDermott, Corredoira et al. 2009).

Theoretically and practically, the phenomenon of heterogeneous firm performance in clusters is supported. Previous research has argued it is due to knowledge being unevenly distributed in clusters or cluster firms' different absorptive capacity. This research advances previous research by integrating perspectives in RBV, clusters and entrepreneurship. It was hypothesised that shared resources in clusters do not evenly contribute to cluster firm performance, but only those firms that are strategically oriented toward growth.

7.3.2 Entrepreneurial Process of Firms in Clusters

The strategic oriented firms are measured using the five-dimensional perspective of the EO construct. The five dimensions of EO are proactiveness, innovativeness, risk taking, competitive aggressiveness and autonomy. EO is consistently argued in the literature as the primary means to deal with opportunities presented in the external environment, as well as to transform these opportunities into performance. Thus, triangular relationships between EO, Entrepreneurial Opportunity and performance were also hypothesised in the research.

The findings of the positive effects of Entrepreneurial Orientation and Entrepreneurial Opportunity on market performance are consistent with previous research (Lumpkin and Dess 1996, Frishammar and Hörte 2007, Wang and Ellinger 2009). The findings also provide one valuable case study to the scarce empirical research on the mediation effect of EO on the opportunities - performance relationship. To this point, opportunities are often associated with and/or referred to external environment munificence (Zahra and Covin 1995, Lumpkin and Dess 2001). Thus, it is argued in the research that wineries benefit from environment dynamics rich in opportunities if they implement a high level of EO in decision-making norms and management practices. The strong influence of opportunities on EO suggests that the environmental conditions should be taken into consideration when investigating EO. Thus, it is argued that entrepreneurial oriented practices can be nurtured, cultivated and influenced by the external environment.

Most empirical work that has examined the relationship between EO and performance has conceptualised EO as a stable independent variable that influences performance in specific settings (Lumpkin and Dess 1996, Rosenbusch, Rauch et al. 2013). However, this approach is questioned in this current research since it is found that EO varies according to the degree of opportunities existing in environment. This finding is consistent with Covin and Slevin (1991) who suggest that external and internal environment factors determine degrees of EO among firms. Therefore, more research is needed to find the antecedents and consequences of EO to avoid oversimplifying models regarding EO and to avoid mixing its causes and effects.

7.3.3 The Moderating Effects of Strategic Shared Resources in Clusters

7.3.3.1 The Moderating Effects of External Openness

It is suggested in the literature that cluster shared resources strengthen the relationship between entrepreneurial orientation of a cluster firm and its performance (Stuart and Sorenson 2003, Ratten, Dana et al. 2007). The results of this research attest to the positive role of external networks of cluster firms in successful exploitation of entrepreneurial opportunities. When firms exhibit high levels of External Openness, that is, they have extensive networks outside of clusters, they are exposed to new information, ideas, vision and technologies, which facilitate the effective implementation of EO. In contrast, cluster firms with low levels of External Openness, the EO and Market Performance positive relationship becomes flat indicating the positive moderation role of External Openness on the relationship.

EO is a resource commitment strategy. The resources needed to build competitive advantage and high market performance, are usually borrowed from others since a firm's own resources and capabilities are often far from enough. In this scenario, external openness of firms acts like a bridging role bringing external resources availability to build higher market performance of the firms. On one hand, poor external linkages of firms have limited access to information, knowledge and other types of resources obtained by other firms. These firms may experience market return lower than expected or even exacerbate the uncertainty and costs associated with certain dimensions of EO such as Risk Taking (Lumpkin and Dess 1996, De Clercq, Dimov et al. 2010). Thus, firms with low external linkages are not encouraged to exert high entrepreneurial oriented strategies. On the other hand, high levels of external linkages require firms to be highly entrepreneurial oriented to exploit and access resources available externally to enhance performance.

The research also uncovered a negative moderating effect of External Openness of firms on the relationship between Entrepreneurial Opportunity and EO. There exists positive relationship between Entrepreneurial Opportunity and EO when low External Openness is present. On the contrary, there exists negative

Entrepreneurial Opportunity- EO relationship when External Openness is high. The Entrepreneurial Opportunity measured in the thesis is based on the *perception* of survey respondents of opportunities that existed in the last two years. It is found that when a firm with abundant and another firm with limited external connections both perceive rich opportunities in the market place, the latter's behaviours tend to be much more entrepreneurially oriented than the former. In contrast, it is also found that when the two firms both perceive limited opportunities, the behaviours of the firm with abundant networks is much more entrepreneurially oriented than the firm with limited external connections.

There are two possible explanations for the results. Firstly, the explanation relates closely to theories of entrepreneurial opportunity exploration and exploitation. According to actor network theory and the knowledge spillover theory of entrepreneurship (Callon 1999, Jack, Dodd et al. 2008, Korsgaard 2011, Shu, Liu et al. 2013), networks of a firm contribute to entrepreneurship by extending the asset base of human, social, market, financial and technical capacity and facilitating access to the firm's external resources. Due to exposure to more ideas, market signals etc., firms with abundant external linkages perceive more opportunities than firms with limited external linkages do. Similarly, due to external resources availability in human resources, technology and so on, firms with abundant external linkages are more capable than firms relying on self-owned resources for opportunity assessment, evaluation and justification. This is why it is common to see high externally exposed firms turn down more opportunities than internally focussed firms do.

Secondly, the research context, the wine industry, offers another explanation. The wine industry is an industry that heavily depends on external linkages to sell wines (Giuliani 2013, Török and Tóth 2013). Thus, once external marketing channels are established, wineries may become less entrepreneurial to compete in a particular given market or, said another way, the necessity to be entrepreneurial is less prominent. In this circumstance, wineries may pay more attention to wine quality and channel management. This is why, wineries show less need to be entrepreneurial to explore Entrepreneurial Opportunities when they have high levels of external linkages. This finding is consistent with a recent research conducted by Beverland (2009). Drawing from in-depth interviews with 26 marketing managers of Australian and New Zealand wineries exporting to China, Beverland (2009) claims that relationships between buyers and sellers of grape wine in China may dampen the entrepreneurialism of wineries.

In examining the moderating effect of External Openness, the insignificant direct positive relationship between External Openness and firm Market Performance is found. This finding challenges the mainstream literature on strategic alliances (Gulati 1998, Khanna, Gulati et al. 1998, Gulati, Dialdin et al. 2002), which suggests that networks outside clusters of firms are beneficial to firm marketing performance. This finding is supported by wine industry experience and some previous research findings. Practically, as an exported oriented wine industry, it is common to see wineries in Australia to have broad external networks, beyond wine regional boundaries, domestically or internationally due to attendance at various wine shows. However, these relationships may not be of high quality. Theoretically, this finding is supportive to the argument presented by Ulaga and Eggert (2006) who argue that relationship quality and relationship value are necessary in using relationships for marketing purposes.

This finding is supportive, to some extent, to the research findings of Li, Veliyath and Tan (2013) on 252 plastic moulding manufacturing firms located in a mould industry cluster in the Zhejiang province of China. Li, Veliyath and Tan (2013) found that the network tie characteristics of centrality, tie strength and tie stability have significant negative relationships with performance. This finding is also consistent with some previous research arguments and findings (Eisenhardt and Martin 2000, Helfat 2000, Edelman, Brush et al. 2005, Wiklund, Patzelt et al. 2009). For example, Eisenhardt and Martin (2000) argue that firm strategic capabilities are essential in facilitating the manipulation of resources into value-creating strategies. Thus, this research finding, to some extent, may reflect the underestimated quality and characteristic of external networks for wineries located in specific wine regions in Australia.

7.3.3.2 The Moderating Effects of Trusting Cooperation

The contingency roles played by Trusting Cooperation on the entrepreneurial opportunity-EO and EO-performance relationships were not supported in the research, which indicates contingency views of EO, resources and performance need to be adopted cautiously. These findings, on one hand, present a challenge to the mainstream in the contingency theory of EO, which suggest that EO is more successful in enhancing performance with the presence of ample resources (Shaner and Maznevski 2011). On the other hand, these findings indicate that trust based cooperation, activities of firms located in clusters may not appear as contingency factors in the process of entrepreneurial opportunity exploration and exploitation, but are firm intrinsic resources.

Recently, some studies throw doubt on the reliability of using contingency theory in the entrepreneurial process (Danese 2011, Rosenbusch, Rauch et al. 2013). For example, Sousa and Voss (2008) propose that institutional theory emerges as an alternative theoretical perspective to explain deviations from contingency-determined patterns. As suggested by Danese (2011) powerful external organisations may exert political pressures discouraging or encouraging the use of certain management practices that deviate from contingency-determined patterns. Thus, Rosenbusch et al. (2013) call for research on the mediating role of entrepreneurial strategic orientation in the task environment and performance relationship.

The firm internal resource role of Trusting Cooperation is supported since its direct effect on market performance is also evidenced in the research (Camagni 1991, Polenske 2004). Winery Market Performance is found directly and positively influenced by Trusting Cooperation that is defined as the networks of one winery with other related organisations in their wine regions based on trust. Co-location based trusting cooperation is often regarded as a strategic alliance in the strategic management research literature on clusters, which refers to cooperative arrangements between two or more firms to improve collective competitive position and performance by sharing resources (Jarillo 1988, Ireland, Hitt et al. 2002, Wu, Geng et al. 2010).

The benefit of a strategic alliance to firm performance is often explained through theories of transaction cost economics, social networks and the resource-based view (Dyer and Singh 1998). From the resource-based perspective, a firm is viewed as a collection of heterogeneous resources and the strategic alliances of a firm are used to develop the optimal resource configuration (Eisenhardt and Schoonhoven 1996, Das and Teng 2000). Social network theory views firms' strategic actions as affected by direct and indirect relationships with network actors (Golden and Dollinger 1993, Gulati 1998). According to social network theory and resource-based theory, mutual trust and exchange of resources are important components of successful strategic alliances. Transaction cost theory views that the costs of strategic alliances such as coordination costs and monitoring costs are less than market or hierarchical functions (Jarillo 1988, Khanna, Gulati et al. 1998, Chung, Singh et al. 2000). This research supports these afore theories by seeing the positive influence of localised trust based relationships on individual cluster firm's market performance.

7.3.4 The Mediating Effects of Common Shared Resources in Clusters

The direct effects of Government Support or Institutional Support on winery Market Performance are not supported in this research. Institutions of clusters have been argued by some as contributing to the formation of tacit and codified knowledge of clusters as well as the interactions of clustered firms with external firms (Molina-Morales, 2011). The roles acted by cluster institutions have been found critical for the development of a particular cluster and cluster firm innovation (Beebe, Haque et al. 2013). However, there is still limited research on the relationship between institutions and market performance of clustered firms.

This research finding is consistent with the little previous research done in this field. Liu and Chen (2010) argue the inefficiency of government funded R&D in enhancing business market performance comparing with R&D funded by business themselves. Government policies and supporting political environments have been found beneficial to economic growth (Gindling and Berry 1992, Yoon 2004). According to institutional theory, government has limited control over some programmatic elements in the market place (Scott 1987). No significant effect of Government Support on Market Performance of wineries probably suggests the limited authority of government on business strategic behaviours of the wineries.

Similarly, it is found in this research that nurturing firm level entrepreneurship (EO) does not act as a mediating role on the influences of Government Support, Institutional Support on firm Market Performance. This finding, to some extent suggests that entrepreneurship and opportunities in the Australian wine industry are not derived from Government Support or Institutional Support at this stage. It is found in the research that the positive role of Government Support and Institution Support in enhancing firm external networks and the positive relationship between External Openness and Market Performance. Thus, it is suggested by the research that governments and institutions should focus on the quality of firm external relationship as a main means to promote cluster firm performance instead of focusing on direct interventions.

In summary, this research advances the notion that the role of external shared resources available to cluster firms is to enhance a cluster firm's ability to leverage its entrepreneurial orientation into successful performance (Runyan, Droge et al. 2008, Wang 2008, Grande, Madsen et al. 2011). The findings of this research suggest the effects of shared resources available in clusters vary in the successful exploitation of entrepreneurial opportunities into enhanced market performance. The findings demonstrate the dominant positive role of EO with five dimensions (proactiveness, innovativeness, risk taking, autonomy and competitive aggressiveness) significantly and positively influences market performance.

Although the importance of shared resources available in clusters for the entrepreneurial orientation in the pursuit of entrepreneurial opportunity is revealed in this research, the results also show tremendous future research potential on how entrepreneurial orientation of firms operates in a cluster context. Nurturing and expanding shared cluster resources are encouraged to facilitate the process of entrepreneurial opportunity exploitation.

7.4 Research Limitations and Future Research Directions

Although the design of the research was based on a broad literature review and careful practical examination, there are a few limitations to the research. These limitations might influence the implementation of the research findings, although they do not necessarily negate the research results. These research limitations are caused by the research design itself, the research funds, the research duration etc. Despite research limitations, the results of the research and these limitations provide some directions for further research. These limitations of the research are presented below and future research directions are discussed.

First, the research is restricted to the Australian wine industry. The Australian wine industry has more than 200 years of history and shows a strong cluster development tendency. As a new world wine producing country, the Australian wine industry has created development opportunities due to innovation, proactiveness and aggressive strategies in facing competition. It offers an ideal case for researching the interaction between entrepreneurship and an industrial cluster. Australia is both a developed and an immigrant country, and the wine industry, by its nature, and is an agricultural industry. Thus, because of the country and industry background differences, the research results are not necessarily generalisable to other countries and/or industries.

- *Future research could be undertaken in developing countries and other industries to examine to what extent "country type" and "industry type" moderate the relationship of the variables concerned in the research.*

Second, the questionnaire collected data based on an online survey. This research design saves time and money but it might exclude wineries that do not have email addresses and do not like to respond to telephone interviews (although that number is probably quite small). There is a quite high email usage proportion in the Australian wine industry, over 90%, but those who do not use emails and rely solely on personal communications to do business might use clustered shared resources more frequently than those wineries using email frequently.

- *Future research should use diverse means of data collection to make the responses comprehensive.*

Third, the measurement instruments of the research were derived from prior research in industries other than the wine industry. Although substantial efforts were placed on piloting and testing of the questionnaire, these efforts were focussed on comprehension of the questionnaire and industry peculiarities. The internal consistency of factors might be influenced, although it is not a concern in this research since all Cronbach's alpha values of factors of interest are well above the recommended threshold of 0.7. However, due to data sample limitations (there were 264 responses), this research did not apply more validity related analyses such as splitting research data to conduct data validation and hypotheses examination.

- *Future research could be based on diverse ways of data collection to generate more responses. The validity of the survey questions used should be pre-tested according to industry type.*

Fourth, market performance is the only dependent variable in the research. Entrepreneurial opportunities refer to opportunities to introduce new products, services, marketing strategies and new geographical markets in this research. Therefore, entrepreneurial opportunity naturally induces innovation performance that may increase market performance. Furthermore, this research adopted the five dimensions perspective of EO, but did not examine the individual dimensions of EO and the dependent variable. Firm entrepreneurship is arguably the main reason for firm innovation performance instead of market performance in the literature. The research could be improved by introducing innovation into the thesis model.

- *Future research could examine the relationships between entrepreneurial opportunities, individual dimensions of entrepreneurial orientation and firm innovation performance. Instead of using a latent variable constructing different types of entrepreneurial opportunities, future research could investigate the relationships between entrepreneurial orientation and individual types of entrepreneurial opportunities and its corresponding innovation performance.*

Fifth, measures for the dependent variables and independent variables of interest in this thesis were collected at the same time, which may include potential for reverse causality.

- *Future research could introduce a certain time lag between dependent and independent variables.*

Sixth, the network based cluster shared resources investigated in this research mainly focusses on the cooperation attribute. However, it is suggested in the literature that competitive cluster environment is also beneficial to the formation of cluster firm competitiveness (Khanna, Gulati et al. 1998). The competitive aspects in firm cooperation is common since cooperation means that each firm in the alliance can access other firms' know-how and consequently cooperative firms compete to maximize partners' know-how for private gains. For example, in the strategic alliance literature, Hamel et al. (1989) suggested that the competitive aspects of strategic alliances are of crucial importance when firms treat alliances as opportunities to learn from their partners and when the ratio of private to common benefits is high. Thomas et al., (2013) treat building cooperative business relationships as an important element of entrepreneurial marketing that is defined as "a process of passionately pursuing opportunities and launching and growing ventures that create perceived customer value through relationships by employing innovativeness, creativity, selling, market immersion, networking and flexibility" in the French wine industry. Thomas et al., (2013) found that entrepreneurial marketing acts positively to winery performance in the market place.

- *Instead of focusing solely on the cooperative aspect of networks, future research could focus on cooperation and competition aspects of networks.*

Finally, specifically for research on the (Australian) wine industry, the research deals with firm level resources, opportunity perception and entrepreneurial orientation. Although the examination of entrepreneurial orientation and performance can be frequently found in literature, little research can be found in the literature investigating the relationships between entrepreneurial orientation, entrepreneurial opportunity and market performance in shared resources of cluster context. However, in research of this kind focusing at regional or national level little is known about the mechanisms that enable firms to benefit from the interactions of firm level entrepreneurship with a specific environmental setting. In this research, firm level relationships of resources, opportunities, entrepreneurial management behaviours of firms are the focus. Thus, this research evidences that it is reasonable to investigate cluster shared resources and EO at the firm level (Molina-Morales and Marti'nez-Ferna'ndez 2003, Wu and Geng 2010, Keui-Hsien 2010). It still could not neglect the fact that the cluster was not quantitatively defined in this research. Most of the respondent wineries are closely located in wine regions suggesting geographic proximity, which were also endorsed by statistical analysis. However, the point remains that some wine regions with few wineries might not declare or consider themselves as clusters. Furthermore, opportunity perception has been argued in the literature as an individual level phenomenon. Although this research only focussed on opportunities that have been identified, it is still quite hard if not impossible to determine a distinction between opportunities identified and opportunities that are not, making the rate of opportunity identification indeterminable.

- *Future research possibilities could be generated based on this limitation such as empirically classifying clusters in the Australian wine industry, investigating resource status in these clusters, and entrepreneurship/opportunity status at cluster level. The single aspect of these or the combination of any of these could be valuable research directions for the Australian wine industry as a promising cluster development industry.*

7.5 The Research Contributions

This research was designed to address the research gap regarding the contingencies at cluster context through which entrepreneurially oriented firms achieve improved market performance. This research provides a first attempt to advance understanding of the role of entrepreneurial orientation in the cluster context. It could serve as a stepping-stone for better understanding of the interactions of firm level entrepreneurship and resources available in the cluster context. The findings of this research into the importance of entrepreneurial orientation and shared resources in clusters for market performance of clustered firms, offers significant theoretical and practical implications. These contributions are discussed below.

7.5.1 Theoretical Contributions

The research contributes to theory in a number of ways. Empirically, this research recognises and measures five dimensions of entrepreneurial orientation (EO): proactiveness, innovativeness, risk taking, competitive aggressiveness and autonomy. Confirmatory factor analysis was used and confirmed that these five dimensions were statistically significant. Prior research has examined selected dimensions of entrepreneurial orientation. In contrast, this research provides a richer understanding of entrepreneurial orientation and its impact on market performance. The reflective measurement of firm entrepreneurship and entrepreneurial opportunities are used in the research.

The measurement model of EO reflecting the contributions of individual dimensions provides evidence for future research in adopting three dimensions of EO or five dimensions. Similarly, measurements of entrepreneurial opportunity are quite rare in the current entrepreneurship research literature. Current research more often than not uses other instruments to substitute opportunity measures such as innovation or environment conditions. Consequently, the research findings drawn from these measures are not reliable. This research is based on a comprehensive literature review on this subject and the actual conditions experienced in the Australian wine industry to develop survey questions to empirically measure entrepreneurial opportunities.

Another contribution is investigating the effects of firm level entrepreneurial management behaviours and entrepreneurial opportunity perception on market performance, which is one of the central concerns in entrepreneurial process research. With a focus on the particular variables of interest in this research, the interdependence between entrepreneurial behaviours of firms and entrepreneurial opportunities can be observed. Complementary to previous ‘individual-opportunity nexus' research (Shane and Eckhardt 2003), this research reflects a systematic perspective on entrepreneurship at the firm level. The results found in the research confirm the primacy of EO in market performance of wineries. It calls for further research on the single dimensions of EO on market performance of wineries. It also demonstrates the indispensable position of opportunities on winery market performance. Similarly, future research is called for to account for types of opportunities in winery market performance and innovation performance.

A third contribution is based on network perspective of industrial cluster resources. This research identified four dimensions of resources shared within clusters and examined the hierarchical relationships between these resources. Extra-cluster networks, intra-cluster networks and supports from governments and institutions are used to measure cluster strategic shared resources among cluster firms. The investigated relationships between these shared resources contribute to the limited studies in this field. These identified shared resources as well as the interactions among these resources can be referred to by future similar research. Notably, the important roles of trusting cooperation between wineries within one specific wine region on market performance of wineries and external linkages were evidenced in the research. This research finding is against the arguments of the negative effects caused by geographical proximity such as "lock in effect", "local embeddedness" and "innovation inertia" to name a few (Pouder and St. John 1996, Baptista and Swann 1998, Martin and Sunley 2011). However, it is consistent with the argument that localised advantages can be developed in distinctive ways according to industry types and other factors (Gordon and McCann 2000, Aharonson, Baum et al. 2008, Beaudry and Swann 2009). In addition, the way we defined industrial clusters in the wine industry could also be used as a reference for future research.

Lastly, this research examined the interaction between entrepreneurial opportunities, firm entrepreneurial management, and firm strategic resources available in clusters. The research makes valuable contribution to how firms leverage cluster resources to interact with firm level entrepreneurship. Through empirically investigating the interaction effects, this research contributes to the entrepreneurship and strategic management literatures. As a result, the research methodologies and outcomes of the research contribute to the development of entrepreneurship theory, cluster theory and the relationships between the two.

7.5.2 Practical Contributions

This research has important implications for governments and practitioners. It highlights the necessity of wineries to develop EO and to build trust based inner cluster networks as a way to reach higher levels of market performance. It is argued in the research that EO, based on proactiveness, innovation, risk taking, competitive aggressiveness, and autonomy, has positive effects on winery market performance. For policymakers, this research has implications in terms of creating entrepreneurship friendly environments to nurture wine industry entrepreneurship. The network-based resources identified in the research provide wine industry practitioners with knowledge to realise the importance of these strategic resources available in clusters. Supports from government and institutions as well as networks of wineries inside their wine regions are found as valuable resources, beneficial for winery market performance. While the use of internal resources and capabilities is a competitive necessity today, managers should identify the critical resources available to them within clusters.

The hierarchical relationship between cluster resources, especially the roles of governments in promoting cluster development, is examined in the research. It provides suggestions for governments in promoting cluster development. The interaction effects examined in the research between entrepreneurship and cluster resources provides insights for governments in promoting regional entrepreneurship as well. Collaboration within wine regions was found to be a crucial factor for winery market performance. This suggests the importance of regional collaboration in securing market growth in other similar industries. It could help managers in making important decisions about joining an alliance. Managers can establish the mechanisms that encourage the integration of internal resources, capabilities and resources, and networks available in their regions.

This research has also analysed how cluster shared resources interact with firm level entrepreneurship to enhance firm market performance. While have the empirical study of resources shared within clusters at the firm level has been here developed, previous research has limited findings in this field especially in the Australian wine industry. In particular, it is found that External Openness and Trusting Cooperation influence Market Performance and Entrepreneurial Orientation of firms. These findings suggest that clusters have influences on regional firm market performance and firm entrepreneurship, thus favouring regional development. The findings and research insights uncovered in this study have important implications for governments and managers alike. They allow policy makers and practitioners to develop informed strategies and training support programs to promote industry cluster development and regional entrepreneurship as well as to enhance winery market performance. Although much work remains, this research can serve as a catalyst in developing a set of recommended best practices derived from a variety of similar research.

7.6 Chapter Summary

Chapter 7 summarises the objectives and design of the research undertaken in the thesis. The research focusses on the interaction effects of shared relational resources of industrial clusters on the relationships between Entrepreneurial Orientation, Entrepreneurial Opportunity and Market Performance at firm level. This research focusses on four characteristics of shared relational resources within industrial clusters: Government Support, Institutional Support, and Trusting Cooperation within clusters and External Openness. Measures of Entrepreneurial Opportunity and Entrepreneurial Orientations are drawn from a thorough literature review and the context of the research. A conceptual model is developed to illustrate the proposed relationships between the variables of interest.

The Australian wine industry offers an ideal case for the proposed model because of its entrepreneurial development trajectory and cooperative behaviours industry wide. A structured questionnaire and online survey were used to collect data from managers/owners of wine producing companies. SPSS and AMOS were used for preliminary data analyses and advanced hypotheses testing respectively. Theoretically, it adds another research perspective to research on industrial cluster and entrepreneurship. Practically, it offers several possible approaches to enhance market performance of wineries in Australia.

Through the empirical study of the Australian wine industry, the aim of the research is to investigate the interaction of firm level entrepreneurship and network based cluster resources at firm level. It then discussed the research findings to draw relationship among variables of interest. The research limitations presented in the research are either commonly seen in the academic literature or caused by the research context. Research limitations and future research directions are presented for academics, governments and managers. Theoretically, this research provides a first attempt to advance understanding of the role of entrepreneurial orientation in the cluster context. Consequently, it could serve as a stepping-stone for a better understanding of the interaction of firm level entrepreneurship and resources available in cluster context. Contributions of the research from an applied perspective were also presented in terms of what the findings of this research mean for practitioners and policy makers regarding considerations for applying cluster policy and entrepreneurship policy.

Questionnaire

- **Winery name (optional): ________________**
- **Establishment year: ____________________**
- **In what Geographical Indication(s) (GI) is your winery?**

  :___________________

  Not applicable: _____________
- **Winery membership:**

Types of membership	Organisation(s) your winery will join or re-join in the future	Organisation(s) your winery will join or re-join in the future
International organisations	☐	☐
International organisations	☐	☐
International organisations	☐	☐
International organisations	☐	☐

- **Tonnes crushed in 2010 – 2011 financial year**
  - one
  - Less than 20
  - 20 — 49
  - 50 — 99
  - 100 — 249
  - 250 — 499
  - 500 — 999
  - 1000 — 2499
  - 2 500 — 4 999
  - 5 000 — 9 999
  - 10 000 +
  - Not Sure
- **Cases sold (9 litres per case) in 2010 – 2011 financial year**
  - None
  - Less than 1 400
  - 1 400 — 3 499
  - 3 500 — 6 999
  - 000 —17 499
  - 17 500 — 34 999
  - 35 000 — 69 999
  - 70 000 — 174 999
  - 175 000 — 349 999
  - 350 000 — 699 999
  - 700 000 +
  - Not Sure
- **Number of employees (full time equivalent staff)**
  - Less than 5
  - 5 — 14
  - 15 — 29
  - 30 — 49
  - 50 — 99
  - 100 +
  - Not Sure

- **Percentage of your grapes sourced from the GI of your winery location**
  - None
  - 0< P ≤25%
  - 25<P ≤50%
  - 50< P ≤75%
  - 75<P ≤90%
  - 90<P <100%
  - 100%
  - Not sure
- **Percentage of your grapes came from your own vineyards**
  - None
  - 0< P ≤25%
  - 25<P ≤50%
  - 50< P ≤75%
  - 75<P ≤90%
  - 90<P <100%
  - 100%
  - Not sure
- **What percentage of your turnover (total revenues) is allocated to research & development? ________________**
- **Winery ownership:**
  - Sole proprietorship
  - Partnership
  - Private Corporation (Pty Ltd)
  - Public Corporation (Ltd)
  - Others, please indicate_________________
- **Is your business a family owned venture?**
  - Yes
  - No
  - If yes, how many generations have been involved in the business
- **Has your winery business changed in management structure / ownership in the last two years?**

  Management structure
  - Yes
  - No

  Ownership
  - Yes
  - No
- **Is there any international investment or ownership of your winery?**
  - Yes
  - No

Please respond to the following statements about your winery, by giving each question a whole number score out of 7. Circle ONE BOX ONLY for each question	**1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Neither, 5=Slightly Agree, 6=Agree, 7=Strongly Agree**						
Statements of Shared Resources in Wine Regions							
Institutional Support							
All wine industry equipment and inputs are available in your GI.	1	2	3	4	5	6	7
Wine industry consulting, marketing and distribution services are extensively available in or near to (within 1-hour drive) your GI.	1	2	3	4	5	6	7
Wine industry financial services (venture capital and investment funds) are readily available in or near to (within 1 hour drive) your GI.	1	2	3	4	5	6	7
There are many support institutions (e.g., trade and professional associations, training centres, research and technology centres, technical assistance centres and universities…etc.) in or near to (within 1 hour drive) your GI.	1	2	3	4	5	6	7
Government Support							
Government policies support wine industry development in your GI.	1	2	3	4	5	6	7
Government programs support wine industry development in your GI.	1	2	3	4	5	6	7
Trusting Cooperation							
The social network among the companies and employees in your GI are based on more than purely economic or transactional needs.	1	2	3	4	5	6	7
There is a high level of trust among companies in your GI.	1	2	3	4	5	6	7
Your winery turns to other wineries in your GI when you need help with technical advice, business information or similar.	1	2	3	4	5	6	7
External Openness							
Being located in your GI encourages and stimulates more economic activities for your winery outside your GI.	1	2	3	4	5	6	7
Being located in your GI allows your winery to establish multiple business relationships outside your GI.	1	2	3	4	5	6	7
Statement of Your Winery's Entrepreneurial Oriented Management Behaviors							
Risk-taking							
The term 'risk taker' is considered a positive attribute for	1	2	3	4	5	6	7

people in our business							
People in our business are encouraged to take calculated risks with new ideas	1	2	3	4	5	6	7
Our business emphasizes both exploration and experimentation for opportunities.	1	2	3	4	5	6	7
Innovativeness							
We actively introduce improvements and innovations in our business	1	2	3	4	5	6	7
Our business is creative in its methods of operation	1	2	3	4	5	6	7
Our business seeks out new ways to do things	1	2	3	4	5	6	7
Proactiveness							
We always try to take the initiative in every situation (e.g.,against competitors, in projects and when working with others)	1	2	3	4	5	6	7
We excel at identifying opportunities.	1	2	3	4	5	6	7
We initiate actions to which other organizations respond.	1	2	3	4	5	6	7
Competitive Aggressiveness							
Our business is intensely competitive.	1	2	3	4	5	6	7
In general, our business takes a bold or aggressive approach when competing.	1	2	3	4	5	6	7
We try to undo and out-maneuver the competition as best as we can.	1	2	3	4	5	6	7
Autonomy							
Employees are permitted to act and think without interference	1	2	3	4	5	6	7
Employees perform jobs that allow them to make and instigate changes in the way they perform their work tasks	1	2	3	4	5	6	7
Employees are given freedom and independence to decide on their own how to go about doing their work	1	2	3	4	5	6	7
Employees are given authority and responsibility to act alone if they think it to be in the best interests of the business	1	2	3	4	5	6	7
Employees have access to all vital information	1	2	3	4	5	6	7

Opportunities Perceived by Your Winery							
Please estimate the frequency of the following opportunities perceived by your winery over the past 2 years.	**1 = None; 2 = Annually; 3 = Bi-annually; 4 = Quarterly; 5 = Monthly; 6 = Weekly; 7 = Daily**						
Opportunities to introduce production innovation.	1	2	3	4	5	6	7
Opportunities to introduce new ways to improve business strategy.	1	2	3	4	5	6	7
Opportunities to develop new supply chain functions and linkages.	1	2	3	4	5	6	7
Opportunities to sell in new geographical markets.	1	2	3	4	5	6	7
Winery Market Performance							
Please evaluate your winery performance over the past 2 years when compared with what you know or believe about your closest competitors	**1=Much Worse, 2=Worse, 3=Slightly Worse, 4=About the Same, 5=Slightly Better, 6=Better, 7=Much Better**						
Sales growth	1	2	3	4	5	6	7
Market share growth	1	2	3	4	5	6	7
Profitability	1	2	3	4	5	6	7
Customer retention	1	2	3	4	5	6	7

Thank You Very Much for Completing the Questionnaire!

If you would you like to be included in the draw to win the rewards (Advertisement, iPad, Marketing Consultant and Dinner in National Wine Centre), please fill in your contact details below:

Name:

Po Box:

State:

Postcode:

Email Address:

Phone number:

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