The Resource-Based View of Strategy: Application to the Agricultural Industry

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Abstract

The paper examines the application of the Resource-Based View of strategy (RBV) to the Australian floral industry. Despite the RBV's successful application to research in a number of discipline areas and the formalisation of its relationship with Competitive Advantage (CA) 15 years ago, the empirical support for the benefit of the RBV and development of research constructs has been inadequate. This has been partly due to the difficulty of identifying and separating the contribution of resources. The RBV literature is now consistent in the criteria required of a resource for CA and identifies a range of empirical research objectives (e.g. the need for contextual constructs), data evaluation focuses (e.g. measuring the impact of management, process, regional and scale affects) and results objectives (such as identifying the causal structure of resources). Research was conducted in the Australian floral industry to produce supporting generalisable data and constructs for the RBV. This industry is well bounded with several strongly differentiating resources and operates in a global market environment, which is necessary for these research objectives. Six hypotheses were examined; (1) the use of resources as the input of the CA, (2) the impact of the development process on resources, (3) the impact of management control on the development of resources (4) the impact on capability of management, process, region and scale, (5) the impact of resource development maturity on the approach to resource development and (6) the possibility of evaluating individual resources according to various criteria. The data was collected using selected participant interviews, with validation of conclusions by industry experts. It was analysed using content analysis, comparative analysis and cognitive mapping. The research determined that organisations in the Australian floral industry possessed important resources including geography, skills, technology, R&D, supply chains and production costs. These contributed to four CA creating production outputs; quality, capacity, reliability and customer convenience. The research findings supported hypotheses 1, 3, 4, 5 and 6. The lack of support for the two remaining hypotheses, relating to the process of resource development, may be explained by the low resource development maturity of the industry which masks the impact of the resource development process. The results also determined that one resource could contribute to a number of CAs and that resources not meeting all of the normal RBV CA criteria could still provide a CA in an industry where few resources met all criteria. It was postulated that these resources’ contribution to competitive was not durable.

1. Introduction

Very little research has been conducted in the area of strategy for the agricultural industry, despite its major contribution to the economies of many developed nations (such as Australia and France) and its vital economic contribution to developing countries (such as China and India). This paper presents needed empirical evidence for the value of and constructs to be used in future research in one of the cornerstones of modern strategic management [1, 2] - the Resource-Based View (RBV) of strategy.

The contribution of the RBV to explaining variations in organisational performance is considerable compared to the explanatory value of other models, such as Porter's 1980’s perspective on the role of industry in explaining organisational profitability. In the mid-1990s, a four-year longitudinal study of 2800 US businesses determined that, whilst industry conditions explained 4% of profitability variation, individual company resources could explain 44% of profitability variation across companies [3]. A more recent study in Spain, involving 1642 organisations found that industry conditions explained 3% and company resources explained 36% of performance variation [4].

Despite its obvious contributions, the RBV literature has provided very limited empirical testing of its ability to predict Competitive Advantage (CA) and calls for the development of constructs though which it can be applied; as will be demonstrated.
2. Literature Review

The RBV contains elements of the structure and cost (economics) theories of the determinants of performance in an industry [5]. It also contains components of Industrial Organisation (IO) theories, such as the economic models of perfect competition and transaction cost theory, but rejects other elements making it independent of existing IO theories [6]. Its development was also strongly influenced by the work of Penrose, representing a further departure from mainstream IO theory [7].

The RBV theory development commenced with the work of economists such as Chamberlain, as early as the 1930s, evolved through the contributions of strategy researchers, such as Ansoff, in the 1960s and 70s and was formalised through a prodigious volume of conceptual development of the topic in the late 1980s [2]. Barney's 1991 explanation of the RBV postulates that a CA can be derived from resources and capabilities that are valuable, rare, difficult to imitate and not substitutable [1]. The RBV has provided a very useful taxonomy for the analysis of the contribution of specific business disciplines to organisational value creation, such as human resource management [8], entrepreneurship and international business literature and some contributions to the economic literature in the areas of causality [1].

At the time of Barney’s work, resources were identified as physical, human or organisational. Since then RBV theory has been extended by the addition of the dynamic capabilities perspective (the development of the ability to apply resources to create a CA) and the knowledge perspective (which integrates organisational learning) [4, 9]. Many subgroups of resources have also been identified [2]. More recent research has focused on the impact of the management skills available in the organisation to control the conversion of resources into CA [2]. Research in this area has identified skills, processes and assets as possible leverages (capabilities) for converting resources into a CA [9]. Recent research involving 164 organisations determined that CA for manufacturing can result from proprietary processes and specialised equipment which can only be acquired using knowledge gained from internal and external sources [10]. This suggests that knowledge may actually form a barrier to resources substitution through imitation and supports the appropriateness of the rarity criteria proposed by Barney.

Table 1 below shows the various criteria recommended by Barney and selected researchers. The difference between these sets of criteria is quite small. Barney's four criterion set is the more suitable for the empirical research discussed in this paper because of the simplicity, clarity of definition and scope of coverage of the criteria. Grant's criteria focus more on the internal management perspectives and do not include the value that the resources create. Internal management perspectives will be considered in this research as a research variable focus criteria. Collis and Montgomery's criteria are essentially the same as Barney's, except for the addition of durability. Durability is a second order criteria which, whilst clearly contributing to the long term viability of the organisation, is less important from the research perspective than the creation of value. It can also be argued that the criteria durability is represented by the criteria value. Amit and Schoemaker's criteria overlaps with Barney's criteria, with the exception of durability and complementarity. Durability has been identified as a second order criteria and complementarity is considered to be more appropriately measured as a research variable focus criteria, rather than as a resource criteria. For this reason, Barney’s criteria were adopted as the independent variables for this research. Complementarity is considered as one of the research variable focus criteria and durability is considered in the discussion for the time dimension it contributes as it is clearly identified in Barney's criteria.

<table>
<thead>
<tr>
<th>Resource Criteria</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value, rareness, inimitability and non-substitutability</td>
<td>Barney [1]</td>
</tr>
<tr>
<td>Durability, transparency, transferability and or applicability</td>
<td>Grant [15]</td>
</tr>
<tr>
<td>Inimitability, durability, appropriability, substitutability and competitive superiority</td>
<td>Collis and Montgomery [16]</td>
</tr>
<tr>
<td>Complementarity, scarcity, low tradeability, inimitability, limited substitutability, appropriability, durability and overlap with strategic industry factors</td>
<td>Amit and Schoemaker [17]</td>
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</table>
Although there has been some good conceptual RBV development, researchers agree that there still has been inadequate empirical examination of the RBV to identify the relationship between the characteristics of resources and capabilities (constructs) when CA is created or the ability to use it to predict or control the creation of CA [2, 4, 11]. Most of the RBV empirical research to date has been focused on isolated areas of business operations and has led to few generalisable and unifying conclusions regarding the application of RBV theory. Unquestionably, further empirical research in this area is required to fully explore the unifying capability of RBV theory [6]. This research should consider the organisation in its entirety and investigate one (or more) single bounded industries so that the impact of variations between local environments and across industries (even if this factor is small), is eliminated. In this way the empirical research findings are more likely to be generalisable (so as to identify support for the RBV) [12] and create the necessary constructs for different contexts and industries [13, 14].

The empirical RBV research to date has determined that the capability to utilise resources for CA was affected by the efficiency of the business unit operations and corporate decision-making processes [18, 19]. This finding supports the importance of investigating the impact of management skills noted earlier. The impact of capabilities are difficult to separate when considering outputs as the dependant variable, so it is better to view the capability process from the management and the operations perspective individually [19].

One of the very few RBV empirical research investigations in the agricultural industry (that meets the criterion for contributory research in this area discussed above) was a recent study of a cluster of Brazilian wine producers. This research determined that clusters could also share the resources and the capabilities necessary to gain a CA [14]. Not unexpectedly, the research also identified that cognitive mapping of the resources and capabilities of the cluster provided an improved management understanding of how to increase the efficiency of the cluster's capability to transform resources into a CA. Particular resource categories identified in this research were knowledge, technology and production control and contractual skills. The capabilities necessary to sustain CA identified included organisational learning and non-codified expertise, long-term investment in technology and staff, long-term investments in cluster resources (such as research institutes and training colleges), complexity, information asymmetries and specialisation [14].

Research into the US food retail industry determined that a general organisational dynamic capability could affect the application of some resources (such as supply chain management skills), but did not affect other resources (such as environmental management skills). In this instance, external factors were found to affect the application of the resource ‘environmental management skill’, although the participants did not view environmental management as a resource that could create a CA [20]. Another US food retailer study found that ignoring the interdependencies between up and down stream competencies and the external environment affected the overall level of CA achieved [21].

2.1. Problems with RBV theory

Selection of the correct empirical research methodology to enable the identification of specific resources meeting Barney's criteria and the separation of the contribution of these resources to CA has proven to be one of the difficulties associated with empirical research into the RBV. Industries need to be very homogenous to enable fair comparisons to be made across organisations; and resources can be difficult to identify as many are intangible [2, 4, 11, 19]. Given the definition of valuable resources shown in Table 1, the logical conclusion is that the very best resources will be the hardest to identify [2]. Furthermore, such resources must also be very difficult to attain in the first place [9]. The literature suggests that such resources need to be identified using qualitative methods [22].

Selection of the correct output variables to measure has also been given little attention to date. Further development of the constructs representing the impact of resources on CA is required for investigation of the RBV. For example, a recent RBV study of US organisations found that measuring the net value achieved by the resources was a better approach than many of the previous studies which had only considered accounting profit [19].

In addition, the theory does not adequately consider how organisations establish the resources to create CA [23]. Such resources must also be very difficult to attain in the first place [9] and may be explained by linkage, resource leverage and learning [23]. With these characteristics, the resources that are most likely to be targeted for development would most
likely be those that are also the least rare, most imitable and most easily transferred [24], as less effort would be required to
develop and acquire them. Organisations need to mix internal resource development and external resource acquisition to
maximise their dynamic control and minimise the costs associated with causal ambiguity and time compression
diseconomies [24]. This would create a complex resource management and development process which may be integrated
with other activity development processes.

2.2. Criteria for empirical testing of the application of RBV

The following criteria for empirical testing of the application of RBV were extracted from the literature review above
and have been classified under the following three headings:

(1) Theory Evaluation Criteria
2. Generalisation of empirical findings to support RBV [12]
3. Production of contextual constructs from findings [13].

(2) Research Variable Focus Criteria
4. Treatment of resources as an input to advantage (to avoid the circular definition of advantage in identifying the
resources that created it as valuable) [2].
5. Consider the process of the development of the resources (time compression diseconomies, interconnectedness, scales
of mass efficiency, causal ambiguity and the resource development trajectory relative to industry conditions can affect
the contribution that these resources actually make) [2, 23].
6. Identify use of management control to convert the resource to customer perceived value [2].
7. Consider multiple resources when complimentary resources need to be integrated with core resources [21].
8. Measurement of impact of management, process, regional and scale effects on the capability to utilise resources to
create a CA [19].
9. Differentiation of use of internal development versus external acquisition as a measure of maturity of resource
development for CA (considering the time compression diseconomies and causal ambiguity affects associated) [24].
10. Identification of individual resource criteria evaluation techniques [24].

(3) Specific Findings Criteria
11. Explain performance differences between organisations on the basis of asset differences [6].
12. Identify the causal structure of resources (capability is difficult to copy because it takes time, even if the resource is
acquired) [2, 9].
13. Explanation of how resources can be used to create competitive heterogeneity [9].

2.3. Research Hypothesis

This research will focus on the generalisation of empirical findings which support the application of the RBV and the
production of contextual constructs. With this in mind, the research variable focus criteria identified above were adopted to
produce the following hypotheses:

H1: Resources can be viewed as an input to creating CA. The consideration of this hypothesis will identify whether the
RBV is applicable to the agricultural industry. It tests the generalisability of the past major examinations of the value of the
RBV in explaining performance [3, 4] to the agricultural industry. It utilises the theory extension criteria 1 and 2 above. It
meets research variable focus criteria 4 and contributes to specific findings criteria 11.

H2: The process of developing resources affects their capability to create value. This hypothesis examines the
contribution of the resource development process which has been identified as influencing the value created by resources [2,
9, 10] in the agricultural industry. It meets theory extension criteria 2, research variable criteria 3, 5, 8 and 9 and specific
findings criteria 12.
H3: Management control can affect the value created from a resource. This hypothesis examines the management contribution construct for the RBV in the agricultural industry [18, 19] which is necessary to further develop the RBV [13, 14]. It meets theory evaluation criteria 2 and 3, research variable focus criteria 5, 6, 8 and 9 and specific findings criteria 13.

H4: Capability can be affected by management, process, region and scale effects. This hypothesis examines the more recent environmental constructs for the RBV [14, 21] that relate to these factors. It meets theory evaluation criteria 3, research variable focus criteria 8 and 9 and specific findings criteria 11, 12 and 13.

H5: Internal resource development reflects a different level of resource development maturity to external resource development. This hypothesis examines the identified importance of Intel versus external resource development balances and the learning that lies behind their development [23, 24]. It meets theory evaluation criteria 1 and 3, research variable focus criteria 9 and 10 and specific findings criteria 11, 12 and 13.

H6: Individual resources can be evaluated according to various criteria. This hypothesis examines the ways in which the value of resources can contribute to creating value [19, 22, 23]. It meets theory evaluation criteria 1 and 3, research variable focus criteria 4, 6, 7 and 10 and specific findings criteria 11 and 13.

3. Methodology

As the project is concerned with collecting empirical evidence to support the hypotheses above, a positivist research approach was adopted and a research protocol providing rich data and good response rates was selected. Advice from floral industry researchers suggested that response rates for questionnaire based survey protocols would be too low to be useful, so an interview protocol was developed. Ten flower growers/retailers were selected randomly from an industry directory and approached by phone with e-mail follow-up. All ten agreed to be interviewed, although one later withdrew and was replaced by another randomly selected organisation from the same database. The interviews were conducted with the CEOs. Interview data were then confirmed with participants and the final results reviewed by two industry experts.

The approach taken for identifying the importance of resources (and the effectiveness of capabilities) was based on the suggested criteria of adequacy, volatility, quality, usability and versatility [25]. Resources considered included labour, vehicles, equipment, capital and information and outputs included revenue, profit, quality, uptake, customer satisfaction, delivery performance and inventory levels [19]. Where possible, the data was analysed according to the ratio of inputs to outputs for each of the resources [19], although as predominantly qualitative data was collected, it was often difficult to quantify this relationship. Resource and capability outputs were measured by evaluating process outputs that created CA.

The interview guide included a section collecting demographic characteristics of the interviewees so that similar responses could be compared on the basis of organisational characteristics. This was followed by a section addressing the bases for competition in the industry so as to identify any sources of CA (dependent variables) that were not apparent from the literature review. The next section asked the interviewees to identify resources that were significant to the industry in their experience. This was structured in the interviews under a Porter’s five forces framework to emphasise the connection with industry competitiveness and avoid the inclusion of resources that did not result in a CA. A list of resources drawn from the above review was provided to stimulate this process. Interviewees we asked to identify the relative importance of the resources they identified (although all were unable to give them an absolute ranking). Resource development and control were assessed in a similar manner, utilising a weakness/strength framework to ensure only capabilities that lead to increased CA were included. The interviews concluded with a consideration of resource development that the interviewees thought would strengthen the industry in the future. This information was used to correct for different or short term perspectives in the responses. The interview guide is available from the author on request.

Where possible, cognitive mapping analysis was used to identify resources and capabilities and the associated processes for their management [14]. An hermeneutic [26] and interpretivist analysis [27] was used to create a cognitive mapping of
themes which were consequently classified as structure, resources, capabilities, environmental characteristics and process outputs. These themes were then compared to the hypotheses to produce the research findings.

4. Findings

4.1. Industry Structure

The industry was fragmented and distributed across Australia with a particular concentration of organisations in the Australian state of Victoria. In Victoria, large volume production goes to the supermarket chains through major distribution companies with contracts with many growers. The remaining sales occur through florists which were either outlets of growers or independent florists who purchase their flowers at wholesale markets.

Several participants noted that medium levels of rivalry existed in the industry, predominantly in the retail segment. Some respondents suggested that this competition improved product and service quality, whilst others viewed it as detrimental and reduced levels of industry cooperation. Rivalry was identified by the respondents as being the most significant between the larger and smaller enterprises, general retailers and the supermarkets and between qualified and untrained florists.

4.2. Identification and Evaluation of Resources

The important resources identified were geographical resources (specifically the climate and soil conditions available in Australia), skills, technology, R&D, supply chains and production cost control.

The respondents reported that climate and soil conditions allowed Australian growers to produce a sufficient volume of high quality flowers to meet most of the domestic market demand; however, this capacity sometimes resulted in an oversupply of some varieties and corresponding product wastage (the product has a short shelf life).

The skills of Australian professionally trained florists were regarded as providing an advantage against imported floral arrangements because Australian florist training encouraged creativity and thus improved the quality of presentation through design. However, the industry is now unregulated and many florists are untrained. Respondents also reported a shortage of skilled workers.

Technology was considered to be a major resource that created a CA and affected three areas of operations; market expansion, irrigation and process control. Only market expansion and irrigation were considered as being desirable applications of these resources. Several participants mentioned the Internet as an effective resource for suppliers, retailers and customers as it expanded the marketplace for those who used it. One noted that the most successful retailer in the industry ensured each site had a computer with Internet technologies and that it was a source of CA. Another highlighted younger generations’ preference to use the Internet for flower shopping. Surprisingly, some respondents claimed that it gave them no benefit. These respondents were small organisations who may not have had the capability to utilise these resources effectively. Irrigation technology was also identified as an important resource, especially as Australia is experiencing one of its worst droughts on record. In contrast to the generally positive view of technology as resource, one participant noted that Australia was weak in relevant production technologies compared to New Zealand – a major international exporting competitor.

Although R&D was identified as an important resource, little evidence was provided regarding the CA that it created for the floral industry in Australia. The respondents also noted that more product development occurred in Europe than in Australia, suggesting a weakness in this aspect of R&D amongst Australian flower producers.

Operating cost efficiency was another area where Australian flower producers found themselves at a comparative disadvantage. Products produced in undeveloped countries could be imported into Australia at competitive prices because the significant labour cost component of flower production favours low labour-cost country production. Flower producers in Australia compensated for their relatively high labour costs by developing the technical resources necessary to support Internet-based sales, which reduced retail costs. They also improved the efficiency of their supply chains and adopted
approaches such as distributing straight to major supermarkets to reduce costs, although some respondents suggested that this operating costs focus has reduced the attention paid to product quality.

The industry appeared to be concerned about developing the resource of capacity management skill as overcapacity represented a major risk for organisations in this industry. The respondents reported that excess capacity would increase operating costs, whilst under capacity could impact upon supply dependability and damage customer satisfaction. International market knowledge was another identified resource which required further development, as many respondents indicated that the requirements of major potential markets, such as the Japanese market, were poorly understood.

4.3. Measures of Competitive Advantage Derived from Process Outputs

This section considers the characteristics (outputs) of the production process which incorporates the effect of CA creating resources and the capability to leverage them. Four process outputs providing CA were identified by the participants -- product quality, production volume capacity, supply dependability and customer convenience. All of these outputs were strongly linked to specific resources and several resulted from multiple resources (for example, the respondents indicated that Australian customers have a huge range of choices of flower types as the natural climatic condition variations across Australia are used to make most varieties available all year, instead of seasonally, which draws upon the resources of geography, skills and supply chains). In addition, some evidence of an interrelationship between the outputs of production capacity and supply dependability was identified by the respondents.

It is interesting that competitive operations costs were not identified as an important output, even though there was concern about competing on the basis of cost and the ability of production cost control was considered to be an important resource. It could be argued that, in this industry, cost is an order qualifier rather than an order winner [28]. Whilst it may be supported by resources, such as the previously mentioned geography factor, it does not meet the requirements of resources considered by the RBV of CA.

Quality was given a very broad definition and resulted from resources such as technology, geography and the qualifications of florists who were regarded as being able to create greater value for the customer than trained florists in other countries. The industry also operated with a number of untrained florists who did not have access to this skill.

Production volume capacity was seen as an important output for secondary customers such as retail florist chains and supermarkets. The ability to provide large volumes of specific flowers at special times of the year was perceived as a significant output for these customers and was believed to create more customer loyalty, supporting sales at other times of the year.

Supply dependability was closely related to production volume capacity as a source of CA, however, it also impacted upon the end-of-the-line customers. The ability to produce the correct flowers for critical events during the year was perceived to be an important output for all levels of customer. Both dependability and capacity were required as co-joint outputs.

Customer convenience was an important output, according to the participants, which resulted from the two resources of skill and supply chains, as well as the structure of the industry (although this was not identified as an important resource by participants). The structure of the industry was important because, in many cases, flower growers retailed their own produce or retailed their produce through cooperatives. This approach allowed them to more accurately control what was produced in response to their point of sale market knowledge. Industry structure, in this case, however, fails the criteria of inimitability and substitutability as an RBV resource and has not been considered in relation to the hypotheses.

4.4. Future Development of Resources

R&D capability was identified as a resource which could provide further CA than is currently being realised. Respondents suggested that development of this resource should be directed towards creating the process output improvements of increasing the life and maintaining the quality of flowers during export transportation, identifying varieties
suitable for hydroponic production (continual production), the development of hybrids for exporting and increasing the range of domestic varieties, to create further CA.

Industry marketing was also identified as an important resource to be developed in the future. The participants claimed that the few flower producers and retailers which have developed this resource demonstrated the corresponding CA by acquiring a larger market share.

An improvement to control of the domestic and international supply chain would also reduce costs and encourage loyalty, in the face of the biggest threat – low cost imports. The lack of skilled labour was also a scarce resource on which the industry did not focus sufficiently and which impacted on the outputs of quality, product features and supply capability.

5. Discussion

The level to which the identified resources meet the RBV criteria proposed by Barney [1, 5] is shown in Table 2 below.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Value</th>
<th>Rareness</th>
<th>Inimitability</th>
<th>Non-substitutability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographical resources</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Skills</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>R&amp;D</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Supply chains</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production costs</td>
<td>?</td>
<td></td>
<td></td>
<td>✓</td>
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The above analysis shows that only geographical resources met all four criteria. It is not surprising, therefore, that this resource contributed to a number of the identified process outputs, including quality, supply dependability and customer convenience. The fact that these three process outputs are achieved using the same resource suggests that they are, in fact, related outputs.

Three of the other six resources qualified for the criteria of value (hence the perception that they were important), however, failed to achieve more than one other RBV criteria, indicating that they were not a basis for CA. The discussion above regarding future development of resources reflects an underlying understanding of the need to strengthen some of these. In addition, as there was only one resource identified for the industry that met all of Barney's criteria, other resources that met the some of the criteria may still be able to provide a basis for competitive advantage in the absence of other stronger resources. Why R&D and production costs were identified as important resources can be explained by virtue of the comparative disadvantage that Australian flower growers and retailers experience in these areas, resulting in an inability to compete on these bases. Development of these resources is a priority for this industry.

Examining this information in the context of each of the hypotheses supports the following conclusions:

*H1: Resources can be viewed as an input to creating CA* - even resources that failed to meet all four RBV criteria were considered to be important and a basis for competition. Those resources that did not meet the criteria of value were identified as important because of the competitive disadvantage that this represented, whilst the resources that met some of the criteria, including value, had limited apparent sustainability. Hypothesis one is supported by the research.

*H2: The process of developing resources affects their capability to create value.* Limited evidence was available to support a relationship between the resource development process and its capacity to create CA. The evidence did support increased CA from the magnitude, or scale, of a resource (such as in the case of the use of Internet sales), however, the consequence of time compression diseconomies and other processes were not apparent. This hypothesis was not supported by this research.
H3: Management control can affect the value created from a resource. The consequence of management decisions, such as to employ qualified florists, were identified as sources of CA derived from the resource skill. A comparison with other countries where alternative management decisions were made (e.g. employing staff at lower skill levels and the decision of the industry to adopt different florist training approaches), indicates that they did not result in a CA. This supports hypothesis three.

H4: Capability can be affected by management, process, region and scale effects. The data provided very little evidence regarding the impact of the capability of utilising resources to create a CA, reflecting a simplified management structure in this industry. The capability of utilising Internet sales to increase customer convenience (and reduce costs) is clearly affected by the scale, as only the large-scale applications of this technology appeared to have an impact. Region and process did not appear to be associated with levels of capability and so the research does not support hypothesis four. A hierarchy of regions of Australia for the geographical resource appeared to exist which did affect the level of CA achieved. It might therefore be argued that the capability of taking advantage of geographical location in some parts of Australia would be lower than in other parts. This is, however, insufficient evidence to assert hypothesis four.

H5: Internal resource development reflects a different level of resource development maturity to external resource development. This industry appeared to utilise very few externally developed resources, apart from utilising the Internet for sales and receiving advice regarding technical processes such as irrigation. Measures of resource development maturity, however, such as the ability to achieve all four RBV criteria for a number of resources and the structure of the industry as a whole (being fragmented rather than oligopolistic) does not suggest that the industry is particularly mature in its resource development. The development and operation of an apparently sophisticated training program producing highly skilled florists was the only example of resource development maturity in the industry identified. This would suggest that internal resource development is consistent with low levels of resource development maturity for this industry and supports hypothesis five.

H6: Individual resources can be evaluated according to various criteria. The analysis presented in Table 2 above supports the conclusion that individual resources can be evaluated according to various criteria and supports hypothesis six.

6. Conclusions

The research determined that organisations in the Australian floral industry possessed important resources which were categorised as geography, skills, technology, R&D, supply chains and production cost controls. These resulted in four production outputs that created CA - product quality, production capacity, production reliability and customer convenience. The research also identified interrelatedness between production outputs, but not resources (for example the outputs of production capacity and reliability both supported one another in creating CA). It was also identified that one resource could contribute to a number of CA creating production outputs (e.g. the contribution of geographical location to product quality, production capacity and production reliability).

The research determined that, although members of an industry might identify resources as important and identify their contribution to specific production outputs that create a CA, many of these may not meet all the criteria for creating a CA identified by any prior research [2]. This is likely to have applied to the floral industry because only one resource was identified which met all Barney's criteria, allowing for other resources that met some criteria to produce some CA. One can conclude that these resources must result in unsustainable advantage and thus do not meet the test of durability for CA generating resources.

Despite only possessing one resource (geography) that met all Barney's criteria, the research provided empirical support for the role of such resources in creating a CA. Indeed, given the challenges identified, it might be argued that this single resource is also an explanation for the survival of the industry.
The research also provided support for a number of hypotheses including the role of resources as an input to CA, the process of management control affecting the value created from resource, internal versus external resource development reflecting the level of resource development maturity of the industry and the fact that individual resources can be evaluated according to various criteria. This supports the use of these constructs for empirical research in other industries, as well as their application to resource management for CA in the organisation.

The lack of support for the two hypotheses relating to the process of resource development may be explained by the resource development maturity of the industry. In the case of the process of resource development affecting the capability to create CA in an organisation with resources that do not meet all of the RBV criteria, the impact of the resource development process may be masked. In a similar manner, the impact of management, process, region and scale effects on the capability to leverage resources to create value may also be less significant when the capability, itself, is impacted upon by shortfalls in the sustainability of the CA provided by the resource. The discussion regarding the hierarchy of geographical locations impacting upon the CA that can be gained from the geographical resource supports this view.

Further research is now required to examine hypotheses two and four in industries with more mature resource development processes to identify whether these hypotheses are supported in this situation. Further research could also seek to identify whether relationships exist between resources in other industry environments.

References


