

Developing Resource Integration Capabilities in Wine Industry R&D Collaborations

Jodie Conduit

The University of Adelaide, Australia

jodie.conduit@adelaide.edu.au

Carolyn Plewa

The University of Adelaide, Australia

carolin.plewa@adelaide.edu.au

Roderick J. Brodie

The University of Adelaide, Australia

University of Auckland, New Zealand

r.brodie@auckland.ac.nz

Abstract:

Purpose: This project aims to identify the resource integration capabilities needed by all parties involved in R&D focused collaborations between the wine industry and its research partners and determine how such capabilities can be mutually developed.

Design/methodology/approach: 20 in-depth interviews were conducted with a series of experts from universities, government research institutions, and industry partners from the wine industry in South Australia regarding wine-related R&D collaborations. The interviews were analysed by thematic coding of the transcripts.

Findings: The results reveal a range of capabilities critical for the successful resource integration in R&D collaborations, which can be grouped into technical capabilities (technological competence and market knowledge competence), as well as relational capabilities, related here to capabilities enabling the resource integration between partners (absorptive capacity, network competence and co-creation capability). We also identify evidence of the co-development of these capabilities over time among collaboration groups.

Practical implications: Identified capabilities should be developed in a broad range of wine industry participants to facilitate more far-reaching collaboration and resource integration in R&D across the wine sector. Findings from this research will provide a framework to enable these skills to be developed among further participants in the wine sector.

Keywords: Co-creation, resource integration, capabilities, R&D collaborations, competencies

1. BACKGROUND

The global wine industry has undergone a period of dramatic modernisation and transformation, founded in changes of market and production characteristics as well as technological advance (Giuliani et al., 2010). To develop their competitive advantage in the global wine industry, new wine producing regions in particular have responded, investing heavily in research and development (R&D) activities. Indeed, the search for innovation and competitive advantage has led to an increasing frequency and intensity of interactions between researchers and members of the wine industry (Cusmano et al., 2010). University-industry collaborations are now recognised as important mechanisms for providing R&D services known to stimulate the economic cycle of innovation and growth (Berbegal-Mirabent et al., 2015), with scientists being acknowledged as playing a key role in the advancement of the industry (Giuliani et al., 2010). University-industry collaborations offer a unique opportunity to integrate the diverse resources that exist within the respective partners. Strategy research has acknowledged for some time that inter-organisational collaborations involve the sharing of resources for improved outcomes (Hardy, Phillips and Lawrence, 2003). Indeed, the primary driver of such collaborations is the reliance each partner has on the resources of others to achieve the desired outcome (Berbegal-Mirabent et al., 2015). For example, while the involvement of regional wine producers enables research institutions the physical resources (e.g. the grapes) and practical insight to facilitate research that will benefit the industry, researchers offer the scientific expertise and tools facilitating innovation.

While previous strategy literature has recognised that resources are *shared* in collaborations; recent literature has highlighted the importance of the *integration* of partner resources so value is co-created (Vargo and Lush, 2015). We draw from the comprehensive reviews of the literature on resources by Madhavaram and Hunt (2008) and Kozlenkova et al. (2014), to further develop our knowledge in this area. We also draw on the theoretical foundations of resource-based theory (Barney, 2014) and dynamic capabilities theory (Teece et al., 1997). Resource-based theory recognises that both *operand* resources (those on which an act or operation is performed e.g. grapes) and *operant* resources (those that act on other resources e.g. scientific knowledge) provide an avenue for competitive advantage (Vargo and Lusch, 2015). Recent commentaries point out that a strategic advantage requires resources that are ‘socially complex’ and thus are difficult to imitate by others (Barney, 2014). This points to the operant resources of a firm, which can be conceptualised as competences, capabilities and dynamic capabilities (Madhavaram and Hunt, 2008).

In this exploratory study, we focus primarily on capabilities and thus a “subset of resources” (Kozlenkova et al., 2014, p. 4) representing the “organizationally embedded non-transferable firm-specific resource whose purpose is to improve the productivity of the other resources possessed by the firm” (Makadok, 2001, p. 398). In particular, this research seeks to identify key capabilities (resources) that (1) are integrated within R&D collaborations in the wine industry and (2) enable resource integration in this context. Despite the increasing conceptual and empirical evidence as to the relevance of resource integration for the creation of value (Gummesson and Mele, 2010), surprisingly little is known about the specific capabilities partners bring to the collaboration. This leads us to our first research question.

Research Question 1: *What are the key capabilities that (a) are integrated between partners, and (b) facilitate resource integration in wine-industry R&D collaborations?*

In wine industry R&D collaborations, various partners integrate these capabilities (or operant resources) to gain value from the collaboration (Madhavaram and Hunt, 2008). By coming together, the partners develop and grow their own as well as each others' capabilities. This reflects the notion of dynamic capabilities espoused by Teece et al., (1997, p. 516) as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments". As R&D collaborations progress over time the integration of resources among the partners leads the capabilities themselves to develop and evolve, and reconfigure to be more effective in the R&D collaboration. In addition, the collaboration partners get more efficient and effective at the process of integrating their resources to create value for themselves, their partners and for the industry. They potentially further build the capabilities required for this process. This leads us to our second research question.

Research Question 2: *How are capabilities developed in wine-industry R&D collaborations?*

2. METHOD

To explore the role of capabilities in wine industry R&D collaborations, a series of in-depth interviews were conducted with key informants in South Australia. Since the 1980s, Australia has developed a reputation of innovation leadership in the global wine industry, with strong centralisation of R&D levy collection and distribution and research priority setting to help maximise the industry uptake of innovation (Aylward, 2007). This has had the desired outcomes of high-quality and consistent output from the region, and duly a strong and marketable reputation, making Australia and its largest wine producing State South Australia a relevant region to conduct this study. South Australia, in particular, leads wine innovation through its Wine Innovation Cluster, comprising the Australian Wine Research Institute, CSIRO Plant Industry, South Australian Research & Development Institute and the University of Adelaide, in collaboration with national and international partners.

Semi-structured in-depth interviews were deemed the most appropriate methodology, as they allow for an exploration of complex concepts (Fern, 1982; Kinnear et al., 1993) and thus, in this context, the meaning and nature of particular capabilities and their change within the context of wine industry R&D collaborations. In total, 20 interviews were conducted, with personal contacts and snowball sampling used to recruit participants. Initially, individuals and organisations well-known as current and proactive contributors to R&D efforts were invited to participate in this study. At the completion of the interviews, participants were welcomed to refer the investigators to others with relevant expertise.

A diverse sample was sought so as to capture a broad range of perspectives on the topic under investigation from those involved in R&D collaborations in the Australian wine industry. Hence, interviewees were chosen to represent the different stakeholders involved in wine industry R&D collaborations, including a variation in the number of years/ collaborations interviewees had been involved in. The interview sample comprised of 6 university-employed

researchers, 8 researchers employed by government-funded research bodies, and 6 employed by regional wine producers. Interviews were primarily conducted face-to-face (with two telephone interviews) and were digitally recorded for later transcription. Notes were also taken during the interviews to capture emergent themes and ideas.

Interviews were analysed by thematic coding of interview transcripts using qualitative analysis software NVivo. Following Miles and Huberman {Miles, 1994 #342}, coding nodes were developed based on themes inducted from the literature and were modified during the data analysis, meaning a simultaneous process of coding and analysis. Thematic coding also permitted the inclusion of emergent themes that did not directly inform the interview questions, but were relevant to the research problem and warranted exploration.

3. RESULTS AND DISCUSSION

The results are structured in line with the aims of this paper. The first section details findings and related literature of the key capabilities (a) that partners integrate as part of wine industry R&D collaborations and (b) that facilitate resource integration between partners. A discussion of the development of capabilities in this context follows.

3.1 Core Capabilities involved in Wine Industry R&D Collaborations

The results reveal a range of capabilities critical for R&D collaborations, which can be grouped into technical capabilities, and thus the capabilities that are integrated as part of the R&D collaboration (technological competence and market knowledge competence), as well as relational capabilities, representing that capabilities that enable the resource integration between partners (absorptive capacity, network competence and co-creation capability). The relational capabilities are foundational factors that facilitate the sharing of more technical competencies among the R&D collaboration partners leading to greater innovation success (Ritter and Gemünden, 2004; Li and Calantone, 1998).

3.1.1 Technological Competence

An organisation's technological competence manifests in its ability to understand and utilise internal state-of-the-art technology (Ritter and Gemünden, 2004; Madhavaram and Hunt, 2008). Technological capabilities emerged from the data as central to the scientific partner, reflected in specialised scientific knowledge, methodological and analytical skills. Commonly, a variety of researchers coordinate so as to fully cover the technological skills required to bring about the mutual value creation and specifically innovation success: *"We needed some skills that we don't have to do the work ... we needed those skills, and I've talked to them in the past, and there's trust there, so we decided to try to put in the grant together."* (Researcher#3)

3.1.2 Market Knowledge Competence

Market knowledge, on the other hand, emerged from the data as an important resource brought to R&D collaborations by the wine industry partner(s) involved. Such competence has long been touted as critical for new product development (Li and Calantone, 1998). While research organisations such as universities contribute the scientific staff expertise to

conduct the research, they rely upon the commercial partners' knowledge of the industry and market to develop technologies that are applicable and successful (Debackere and Veugelers, 2005). Market knowledge competence is a specific operand resource of a firm, and represents the process, or series of activities, that generates and integrates market knowledge (Li and Calantone, 1998 p. 14). As expressed by one of the researchers interviewed:

"At the start of any work, we would want to develop varieties that the industry wants. We consult with industry about the types of specifications that they'll be interested in There's a knowledge that we have to have from industry feedback at the start of that sort of process".
(Researcher#12)

3.1.3 Absorptive Capacity

As the wine industry goes through a period of dramatic change (Guliani et al, 2010), organisations need to be able to recognise new external knowledge, assimilate it and apply it for the purpose of creating value (Jansen et al., 2005). This ability, referred to as absorptive capacity, recognises a set of organizational processes by which firms not only acquire and assimilate new knowledge, but also integrate it with existing knowledge to transform and exploit this knowledge and learn from this to enhance the market knowledge capability (Zahra and George, 2002). Absorptive capacity emerged from the data as relevant to both research and industry partners, both of which recognised the necessity of seeking and utilising new knowledge in wine R&D collaborations.

"Sometimes, you do get a genuine feedback loop happening where they're bringing their industry experience to the table; you're bringing the ideas to the experience, and they say, "That's great. That would never work, but this could," and that can help narrow your focus."
(Researcher#1)

3.1.4 Network Competence

All interviewees indicated the importance of developing relationships and networks, not only to enable the development and maintenance of R&D collaborations and the ability to exploit potential opportunities as they arise, but also to ensure resources offered by the different partners can be integrated in the process. Drawing on extant literature, network and alliance competence emerge as relevant capabilities to draw on in this context. Network competence is an organisational capability oriented towards managing business relationships across all life-cycle stages, including relationship initiation, development, and termination (Ritter and Gemünden, 2004). The conceptualisation of networking capabilities captures the behavioural routines that are followed within the organisation, such as building an image to attract potential business partners, embedding systems and setting expectations to work with partners, and implementing procedures built around termination (Mitrega et al., 2012).

"I think that getting together [and] making sure that you've got a good understanding of what each other want. Managing the stakeholder relationship all the way along, because research never goes the way you think and there's inevitably a tension in terms of pace. Industry always wants it faster than you can usually do it scientifically robustly, but that's where you just need to have a group of people who understand each other's requirements." (Researcher#7)

In addition to the ability to initiate, maintain and, if necessary end, relationships, interviewees also commented on the importance of developing experience in partnering by being involved in a multitude of collaborations, as well as the need for individuals taking responsibility for managing the collaborations and relevant interactions. These facets are part of alliance competence as conceptualised by Lambe et al. (2002). Experiences working within R&D collaborations, or alliances, can be leveraged into new and existing collaborations, as it contributes to the knowledge of how to effectively work within the alliance to achieve value co-creation (Lambe et al., 2002).

“If you had a raft of potential collaborators to work with you could probably choose the one that you thought had the greatest industry visibility... There's some real value of interacting with that company by virtue of what you got through the connections from work with somebody like that. Like I said before, it's relationship management.” (Researcher#8)

Companies that have collaborated previously often have superior capabilities in selecting and negotiating with potential partners, and planning the day-to-day operations so that everyone has a clear understanding of role expectations (Day 1995). Firms with a strong alliance capability are also able to develop capable alliance managers that facilitate effective management of the R&D collaboration (Spekman et al., 1996), with one interviewee noting that different people may take on roles as communicator versus general manager.

There needs to be at least one or two very good communicators in the overall collaboration ... making sure that nothing is misinterpreted. ... It's definitely good to have one person who—it doesn't have to be the communicator—but one person who is very good at keeping track of where everything's up to.” (Researcher#1)

3.1.5 Co-creation Capability

While respondents varied in their use and predilection for the term “co-creation”, the relevance of having the capability to integrate resources through activities and interactions emerged clearly from the interviews.

“A researcher's job is to find the value and then the user's job is to make use of that to improve their business That's one-on-one co-creation. You couldn't create that value if this other party didn't work with you to define what it is that is the value. Otherwise you could be working on something which is totally esoteric and of no value to anyone.” (Industry#5)

Drawing on recent marketing literature, authors identify that organisations need to possess an “ability to facilitate and enhance mutually beneficial interaction and resource integration processes with individual actors within the service system” (Karpen et al., 2015, p.91) or in this context to integrate resources with partners in the R&D collaboration. Co-creation capability comprises six dimensions that explicate the interaction that occurs between the R&D collaboration partners and facilitates the co-creation of value in an organizational setting, namely individuated, relational, ethical, developmental, concerted and empowered interaction capabilities (Karpen et al., 2015).

3.2 Co-development of Capabilities

In addition to identifying key capabilities that (a) are integrated between partners and (b) facilitate the integration between partners in wine-industry R&D collaborations, an important contribution of this research lies in the identification of capabilities that not only support resource integration within wine-related R&D collaborations, but also facilitate the development of relevant capabilities missing in one or all of collaborative partners. Importantly, the results show a clear ability of capability co-creation as part of R&D collaborations, with one interviewee stating that *“At this stage, I feel as though we’re co-creating more resources and expertise than actually products that...have reached commercialisation”* (Industry#3). This is illustrative of the notion that successful collaborations involve the co-development of capabilities, not just specific research outcomes or commercial results.

It was evident throughout the interviews that collaborative R&D participants see the collaborations as sources of long-term competitiveness, a primary reason why co-development of capabilities is critical. Wine producers discussed how they wanted to *“[build] expertise within our researchers so as we keep using them they’ve got the expertise that we want them to have to support us”* (Industry#3). It was also acknowledged that co-development of knowledge was a “two-way process,” and industry input developed researchers’ *“technical knowledge of our processes and... a better feeling for the way we think”* (Industry#3), but that at the same time, wine producers knew they should *“be open to some new ideas that they [the researchers] will show us.”*(Industry#3)

4. CONCLUSIONS

Driven by increasing competitive pressure in the global wine industry, significant funds are invested into the development and uptake of innovation in the Australian wine industry (AGWA, 2015). While reflected in a greater frequency and intensity of R&D collaborations so as to unite unique strengths and skills of researchers and industry, few have sought to understand the integration of resources in this context. This paper contributes to the literature by identifying key capabilities, or operant resources, that are integrated or facilitate R&D collaborations, with a specific focus on the wine industry. It acknowledges that these resources are not simply shared among partners but form the basis of their interactions and are integrated to create value for the mutual betterment of all parties. Moreover, the results identifies the co-development of capabilities as part of R&D collaborations that enable the effective and efficient integration of resources as a distinct operant resource.

This research provides important insight not only for individuals and organisations engaged in wine R&D collaborations but also to related funding bodies. In particular, it suggests the need to consider relational capabilities when seeking to develop new collaborations, as well as to develop guidelines or support programs aimed at strengthening those capabilities to ensure partners can integrate their resources to achieve maximum value from the collaboration. Importantly, such capabilities should be developed in a broader range of wine industry participants to facilitate more far-reaching collaboration in R&D across the wine sector. While this research provides initial insight into wine R&D collaborations and their

resource integration, its limitations should be acknowledged, such as the focus on South Australia. Future empirical research should be conducted to test our results across multiple regions and over time, so as to better understand the mutual development of capabilities.

5. REFERENCES

- AGWA (Australian Grape and Wine Authority) (2015), "Strategic Plan 2015-2020", available at <https://www.wineaustralia.com/en/About%20Us/corporate-documents.aspx> (accessed 9 September 2015).
- Aylward, D. (2007), "Innovation and inertia: the emerging dislocation of imperatives within the Australian wine industry", *International Journal of Technology and Globalisation*, Vol. 3 No. 2-3, pp. 246-262.
- Barney, J. B. (2014), "How marketing scholars might help address issues in resource-based theory", *Journal of the Academy of Marketing Science*, Vol. 42 No. 1, pp. 24-26.
- Berbegal-Mirabent, J., García, J. L. S., and Ribeiro-Soriano, D. E. (2015), "University–industry partnerships for the provision of R&D services", *Journal of Business Research*, Vol. 68 No. 7, pp. 1407-1413.
- Cusmano, L., Morrison, A., and Rabellotti, R. (2010), "Catching up trajectories in the wine sector: A comparative study", *World Development*, Vol. 38 No. 11, pp. 1588-1602.
- Day, G. S. (1995), "Advantageous alliances", *Journal of the Academy of Marketing Science*, Vol. 23 No. 4, pp. 297-300.
- Debackere, K., and Veugelers, R. (2005). "The role of academic technology transfer organizations in improving industry science links", *Research Policy*, Vol. 34 No. 3, pp. 321-342.
- Fern, E.F. (1982) "The Use of Focus Groups for Idea Generation: The Effects of Groups Size, Acquaintanceship, and Moderator on Response Quantity and Quality" *Journal of Marketing Research*, 14 (1), pp. 1-13.
- Giuliani, E., Morrison, A., Petrobelli, C. and Rabellotti, R. (2010), "Who are the researchers that are collaborating with industry? An analysis of the wine sectors in Chile, South Africa and Italy", *Research Policy*, Vol. 39, pp 748-761.
- Gummeson, E., and Mele, C. (2010), "Marketing as value co-creation through network interaction and resource integration", *Journal of Business Market Management*, Vol. 4 No. 4, pp. 181-198.
- Hardy, C., Phillips, N., and Lawrence, T. B. (2003), "Resources, knowledge and influence: The organizational effects of interorganizational collaboration", *Journal of Management Studies*, Vol. 40 No. 2, pp. 321-347.
- Jansen, J. J., Van Den Bosch, F. A., and Volberda, H. W. (2005), "Managing potential and realized absorptive capacity: how do organizational antecedents matter?", *Academy of Management Journal*, Vol. 48 No. 6, pp. 999-1015.
- Karpen, I. O., Bove, L. L., Lukas, B. A., and Zyphur, M. J. (2015), "Service-dominant orientation: Measurement and impact on performance outcomes", *Journal of Retailing*, Vol. 91 No. 1, pp. 89-108.
- Kinnear, T.C., Taylor, J.R., Johnson, L., and Armstrong, R. (1993) *Australian Marketing Research*, Roseville: McGraw-Hill.

- Kozlenkova, I. V., Samaha, S. A., and Palmatier, R. W. (2014), "Resource-based theory in marketing", *Journal of the Academy of Marketing Science*, Vol. 42 No. 1, pp. 1-21.
- Lambe, C. J., Spekman, R. E., and Hunt, S. D. (2002), "Alliance competence, resources, and alliance success: conceptualization, measurement, and initial test", *Journal of the Academy of Marketing Science*, Vol. 30 No. 2, pp. 141-158.
- Li, T., and Calantone, R. J. (1998), "The impact of market knowledge competence on new product advantage: conceptualization and empirical examination", *Journal of Marketing*, pp. 13-29.
- Madhavaram, S., and Hunt, S. D. (2008), "The service-dominant logic and a hierarchy of operant resources: developing masterful operant resources and implications for marketing strategy", *Journal of the Academy of Marketing Science*, Vol. 36 No. 1, pp. 67-82.
- Makadok, R. (2001), "Toward a Synthesis of the Resource-Based and Dynamic-Capability Views of Rent", *Strategic Management Journal*, Vol. 22, pp. 387-401.
- Mitrega, M., Forkmann, S., Ramos, C., and Henneberg, S. C. (2012), "Networking capability in business relationships—Concept and scale development", *Industrial Marketing Management*, Vol. 41 No 5, pp. 739-751.
- Miles, M. B., and Huberman, A. M. (1994), *Qualitative data analysis: An expanded sourcebook*. Sage.
- Ritter, T., and Gemünden, H. G. (2004), "The impact of a company's business strategy on its technological competence, network competence and innovation success", *Journal of Business Research*, Vol. 57 No. 5, pp. 548-556.
- Spekman, R. E., Isabella, L. A., MacAvoy, T. C., and Forbes, T. (1996), "Creating strategic alliances which endure", *Long Range Planning*, Vol. 29 No. 3, pp. 346-357.
- Teece, D. J., Pisano, G., and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic management journal*, Vol. 18 No. 7, pp. 509-533.
- Vargo, S. L., and Lusch, R. F. (2015), "Institutions and axioms: an extension and update of service-dominant logic", *Journal of the Academy of Marketing Science*, pp. 1-19.
- Zahra, S. A., and George, G. (2002), "Absorptive capacity: A review, reconceptualization, and extension". *Academy of Management Review*, Vol. 27 No. 2, pp. 185-203.