**Adapting through learning and knowledge acquisition: The cases of four global family firms**


## Abstract

**Purpose** – The purpose of this case study is first to investigate the importance of knowledge as a tool for adaptation and competitive advantage through qualitative research, exploring the cases of four global family firms. A second purpose is to develop a theoretical framework based on the knowledge-based view (KBV) of the firm to facilitate understanding of learning and knowledge acquisition among family firms.

**Design/methodology/approach** – This investigation focuses on the cases of four family firms, two operating in a developed (Australia), and two in an emerging economy (Uruguay). In-depth, face-to-face interviews were conducted with firm owners, co-owners, and one manager.

**Findings** – Regardless of firms' operating environment (OECD, emerging economy), similar outcomes were revealed. Indeed, firm management's ability to gather, contextualise and synthesise knowledge, including tacit knowledge, emerged as crucial to adapt to new challenges in their business environment. Several tenets of the KBV emerged, including those associated with knowledge to solve emerging problems, specialisation through knowledge acquisition, and applying specialised knowledge to produce. Importantly, firms' ability to anticipate future events through tacit or new knowledge acquisition became evident.

**Originality/value** – The study makes two key contributions that represent originality and value. First, the presented theoretical framework facilitates understanding of various dimensions of knowledge, their resulting influence on firms' preparedness to adapt to events in their business environment, and potential implications on their competitive advantage. Second, by qualitatively examining the participating family firms, the study addresses a

recognised research gap, notably, that research investigating this group has been predominantly quantitative.

**Keywords**: Knowledge, knowledge-based view of the firm, adaptation, global family firms, case studies, Australia, Uruguay.

## 1. Introduction

Academic research highlights the importance of family firms as nations' socioeconomic pillars (e.g., Astrachan and Shanker, 2003; Chirico and Nordqvist, 2010; Dana and Ramadani, 2015; Fitzgerald and Muske, 2016; Klein, 2000; Poza and Daugherty, 2014; Siakas et al., 2014). Despite their significance, and as with other businesses, family firms are confronted with the complexities of a fast-paced business environment (Chirico and Salvato, 2008). To increase their competitive fit and strategic adaptiveness, firms need to create processes to change and direct existing capabilities, or those path-dependent, idiosyncratic ways of conducting business (Chirico and Salvato, 2008). Knowledge, particularly organisational knowledge, becomes a crucial element for firms (Chirico and Salvato, 2008). Indeed, in the case of family firms, understanding the significance of transferring knowledge can contribute to developing or retaining their competitive advantage (Cabrera-Suárez, Saá-Pérez, and García-Almeida, 2001).

In an organisation/business context, knowledge is defined as actionable, relevant information that is at least partly based on experience (Leonard-Burton and Sensiper, 1998). Knowledge can be subjective, and comprises "a subset of information… linked to meaningful behavior… it has tacit elements born of experience" (Leonard-Burton and Sensiper, 1998, p. 113), as well as explicit elements (Nonaka, 1994). Tacit knowledge is unconscious and semiconscious knowledge; tacit elements of knowledge are experiential, more complex, and subjective (Chuang, Jackson and Jiang, 2016; Leonard-Burton and Sensiper, 1998). In a company environment, tacit knowledge can be illustrated through the experience employees have accumulated, as well as knowledge associated with their beliefs and attitudes (Nonaka and Takeuchi, 1995). In contrast, explicit knowledge is structured, codified, rational, objective, and is accessible to individuals other than those originating it (Leonard-Burton and Sensiper, 1998).

In their study of family firms' succession, knowledge and realisation of competitive advantage, Boyd and Royer (2012) differentiate between three forms of experiential knowledge:

*Idiosyncratic*: Specific knowledge about location- and time-detailed "conditions that cannot be formalised" (p. 367).

*Subject-related*: Knowledge that is experienced without an association with location or time conditions, and is dependent on abilities and skills.

*Network-related*: Based on Basly's (2005) work, Boyd and Royer (2012) explain that, typically, family firms have networks that positively contribute to more knowledge development.

More recent research comparing the cases of two family firms (Boyd et al., 2015) revealed the significance of idiosyncratic knowledge in the early stages; this knowledge was transferred within the family. However, as time went on, network-related knowledge became more important (Boyd et al., 2015).

Strongly interlinked with these notions is organisational learning (OL), a relevant element in today's knowledge-based, changing and globalised economy (Chadwick and Raver, 2015; Chiva, Ghauri and Alegre, 2014). OL has been defined as "the process of improving actions through better knowledge and understanding" (Fiol and Lyles, 1985, p. 803). In the process of gaining a greater understanding of learning organisations, continuous learning, which can be adaptive or incremental, is also fundamental (Appelbaum and Goransson, 1997). Within an organisational context, and in line with Appelbaum and Goransson (1997), Doppelt (2010) identifies three key types of learning:

*Adaptive learning (AL) is*, essentially, a coping, reactive form of learning, involving "the search for direct solutions to immediate problems" (p. 217). For example, in a group context, and in response to changes, AL can occur through variations in role structure or group configuration (Sessa and London, 2006).

*Anticipatory,* relates to avoidance of future problems by identifying probable triggering events, and overall seeking strategies to best prepare for them (Doppelt, 2010).

*Action,* converting real tasks or problems "into a learning laboratory" (Doppelt, 2010, p. 219), whereby teams within the organisation try solving the problem and learning from the experience.

Against this background, which emphasises the strategic significance of knowledge and learning within a firm context, the present empirical study contributes to the family business literature in various ways. Fundamentally, the study is concerned with a) how and b) specific ways in which knowledge is manifested in design and execution of adaptation strategies among family firms.

According to Chirico (2008, p. 434) "research on the construct of knowledge in family business" is scant. In addition, there is a dearth of academic studies examining the significance of knowledge-based attributes as part of global family firms' strategy, particularly in the Southern Hemisphere, and in distant geographic locations. Furthermore, quantitative methods appear to be predominantly used to examine family firms (Hair and Sarstedt, 2014), and much less so qualitative research.

The present study contributes to narrowing these knowledge gaps, examining the cases of four medium-sized model global family firms, two operating in developed (Australia), and two in a developing economy (Uruguay) through semi-structured, in-depth, face-to-face interviews. Given the study's focus on knowledge as a tool for adaptation, and in line with previous family business research (e.g., Cabrera-Suárez et al., 2001; Hatak and Roessl, 2015; Woodfield and Husted, 2017), the study will adopt the knowledge-based view (KBV) paradigm (e.g., Grant, 1996; Grant and Baden-Fuller, 1995; Nickerson and Zenger, 2004). This adoption and the identified associations with the findings result in a further contribution through the proposition of a theoretical framework, which could guide future investigations, including case study research.

## 2. Literature Review

### *2.1 Knowledge and family firm adaptation*

The academic literature implicitly and explicitly presents and discusses the strong significance of knowledge as a key asset for firms to learn from an organisational point of view and adapt to the rapid pace of the business environment. For example, Chirico and Salvato (2008) suggest that members of family firms have adequate knowledge internally concerning external factors; correspondingly, through this knowledge their firms can adapt to dynamic business or industry environments. De Massis et al. (2016) explain that, by leveraging tradition, family firms can "rediscover distinctive knowledge whose adaption to current market needs and expectation may open the door to the creation of unique opportunities… and, as a consequence, competitive advantage" (p. 101). In their study of four family firms from two different countries, Chirico and Norqvist (2010) found that firm Alfa was able to operationalise its accumulated knowledge to support adaptation for growth while its industry environment was changing.

### *2.2 The KBV of the firm*

Numerous academic investigations have contributed to developing the KBV (e.g., Foss, 1996; Foss, Lyngsie, and Zahra, 2013; Grant and Baden-Fuller, 1995; Grant, 1996; Kogut and Zander, 1992; Nickerson and Zenger, 2004; Nonaka and Takeuchi, 1995; Nonaka, Toyama, and Hirata, 2008). The KBV is suggested as an extension of various research streams (Grant, 2015), including innovation and new product development, OL, and the resource-based view of the firm (Grant and Baden-Fuller, 1995). This theory seeks to analyse how firms acquire, create, protect, transfer or apply knowledge (Cabrera-Suárez et al., 2001). The KBV also highlights the role that knowledge plays in determining performance and organisation (Macher and Boerner, 2012). In essence, it views the core of organisations in terms of promoting the efficiency of knowledge application and generation (Grant, 2013). This process depends on integration and specialisation of knowledge, regardless of whether such knowledge resides in organisation or information systems, within humans or capital equipment (Grant, 2013).

Furthermore, the ‘rudiments’ of KBV, which are based on Grant and Baden-Fuller’s (1995) review of the pertinent literature (e.g., Hedlund, 1994; Nonaka, 1994; Quinn, 1992) include a rationale for firms’ existence, analysis of integration of knowledge within firms, and assumptions regarding knowledge and firms. Thus, five key assumptions are postulated:

1. Knowledge is a crucial productive resource for firms, for instance, contributing to adding value and overall strategic importance (Grant and Baden-Fuller, 1995). Moreover, demonstrating its links to OL, knowledge is a valuable resource that can help firms gain

competitive differentiation (Blome, Schoenherr and Eckstein, 2014). Furthermore, through the application of knowledge itself can generate new knowledge (Rebolledo and Nollet, 2011).

2. Knowledge comprises skills, information, technology, and know-how. Also, as previously indicated, key distinctions exist between explicit and tacit knowledge.

3. People gain knowledge, and accumulate tacit knowledge (Grant and Baden-Fuller, 1995).

4. Given time and cognitive limitations, "individuals must specialize in their acquisition of knowledge" (Grant and Baden-Fuller, 1995, p. 18). Importantly, in order to make gains in depth of knowledge, people may forgo breadth of knowledge.

5. Producing by creating value through the transformation of inputs into outputs, typically entails applying various kinds of specialised knowledge (Grant and Baden-Fuller, 1995).

A further insightful theoretical proposition is provided by Grant (1996), who explains that, in order to develop a theory of the firm, it is crucial to determine the characteristics of knowledge that could have key implications for the firm's management. Some of these characteristics are summarised as follows:

*Transferability:* The notion that knowledge transferability is significant, both between firms, and within a firm. For instance, through external knowledge transfer, firms can acquire expertise, which can positively affect their processes or products (Blome et al., 2014). By transferring knowledge, firms also need to address "the issue of knowledge retention"

(Rebolledo and Nollet, 2011, p. 329). Internally, and in the case of family firms, life and work in the family enterprise from an early age enables family members to acquire high levels of tacit knowledge (Chirico and Nordqvist, 2010).

*Capacity for aggregation:* Knowledge aggregation, which includes individuals' ability to add new knowledge to already acquired knowledge (e.g., knowledge absorption), can provide an element of efficiency in the transfer of knowledge. This efficiency is significantly enhanced when knowledge can be articulated through common language, for instance, through statistics and information technology, which represent explicit knowledge (Grant, 1996). Two empirical studies highlight firms' capacity for knowledge aggregation. In one, Aguilera-Caracuel, Hurtado-Torres, and Aragón-Correa's (2012) explain how exporting firms have benefited from their international experiences. In the other, De Massis et al.'s (2016) investigation of long-lasting family firms reveals "the potential of past knowledge in terms of value creation and capture" (p. 93).

*Appropriability*: Knowledge is a resource subject to complex issues of appropriability. For example, tacit knowledge cannot be directly appropriated because it is not directly transferable; rather, it can only be appropriated "through its application to productive activity" (Grant, 1996, p. 111).

*Knowledge requirements of production*: This characteristic, which is essential to the KBV, relates to "the assumption that the critical input in production and a primary source of value is knowledge" (Grant, 1996, p. 112).

Nickerson and Zenger's (2004) contribution highlights that knowledge formation and problem solving are at the core of the KBV. A key knowledge-based goal for managers is to maintain above-average performance (i.e. profits), constantly searching for new solutions or knowledge-related discoveries "that form unique combinations of existing knowledge" (Nickerson and Zenger, 2004, p. 618). Further, if firms are to develop unique capabilities or knowledge, they need to a) identify valuable problems, referred to as those problems that, if solved, can yield desired capability and knowledge, and b) conduct efficient solution searches (Nickerson and Zenger, 2004). This identification process illustrates firm management's ability to assess the expected value when seeking to find potential solutions.

Value to firms is delivered through valuable solutions, and can be achieved by developments or enhancements of products/services, or by reducing costs of delivery or production (Nickerson and Zenger, 2004). In summarising the KBV, Nickerson and Zenger (2004) state that "firms shift their boundaries in response to changes in the problems they address" (p. 629). These problems fall under life cycles that experience evolutionary changes, and require dynamism from firms' organisational structure. Provided that firm problems are not extremely severe, the theory proposes the discussion of these problems, subsequently breaking them into sub-problems (Nickerson and Zenger, 2004). Overall, developing a culture of consensus decision-making, and widespread knowledge-sharing within the organisation may yield valuable solutions (Nickerson and Zenger, 2004).

The usefulness of the KBV to understand various dimensions of knowledge gathering, as well as the operationalisation of knowledge as a resource contributing to family firms' competitive advantage potential has been recognised in the academic literature. An earlier contribution (Cabrera-Suárez, Saá-Pérez, and García-Almeida, 2001), which considered both the resource-based and KBV to propose the examination of family firms' succession process concludes emphasising the usefulness of these ideologies. Moreover, from a strategic leader perspective, the ideologies help scrutinise processes whereby firm successors absorb both the family's knowledge and philosophy, which in turn helps guarantee the firm's continuity (Cabrera-Suárez et al., 2001).

Research by Chirico and Salvato (2008) led to the development of a framework illustrating factors affecting knowledge integration among family firms. This framework proposes that knowledge integration among family members is, among other elements, dependent on the ability (internal social capital) and willingness to integrate knowledge (affective commitment to change).

More related to the present study, an empirical contribution focusing on four family firms operating in two different countries (Chirico, 2008) proposes a family business knowledge model. On one hand, the framework highlights the importance of openness factors, which include past study and working experience (family members), as well as employing family or non-family members. On the other hand, the framework underlines emotional factors, represented by family relationships within the firm, which enhances trust among family members, commitment to the firm, and psychological ownership of the family firm (Chirico, 2008). Together, the two types of factors affect the accumulation process of knowledge, which then becomes an enabler of family firm longevity.

Based on the previously discussed theoretical notions, the present study draws on the KBV to examine the significance of knowledge as an adaptation tool for global family firms, and ways in which knowledge contributes to adaptive strategies. Consequently, the following research questions (RQs) are investigated:

RQ1: How is knowledge manifested among family firms, notably, in the design of adaptation strategies to operate in their business environment?

RQ2: In what specific ways, if any, does knowledge contribute to adaptation among family firms?

## 3. Methods

### *3.1 Approach*

In adopting the KBV as the theoretical foundation, this study investigates the importance of knowledge, as well as ways in which knowledge is a factor in firms' adaptive processes and strategies to address contemporary business issues. Four family firms, two from an emerging (Uruguay) and two from a developed economy (Australia) will be presented. In choosing these firms, an objective of the present research was to ascertain whether their acquisition and application of knowledge differs based on the business environment in which they operate (i.e. less versus more developed business environments and economies).

Given the nature of the research, choosing selected model firms, a case study approach, "which focuses on understanding the dynamics present within single settings" (Eisenhardt, 1989, p. 534) was adopted. Moreover, case studies examine contemporary cases, illuminating and facilitating understanding, with researchers expecting to uncover unusual or new interactions, explanations, cause-effect relationships, events, or interpretations (Hays, 2004). Importantly, generalisation is not an objective of case studies; instead, "discovering the uniqueness of each case is the main purpose" (Hays, 2004, p. 218). However, generalisability may be possible when research is based on various cases studies studying a similar phenomenon (Hays, 2004). Further, a case study approach typically combines different data collection methods, including observations, archives, field work, interviews, or a combination thereof, and the evidence can be quantitative, qualitative, or both (Eisenhardt, 1989; Yin, 1981). The above characteristics fit in the context of the present study.

Earlier studies, for instance, on adaptive and OL (e.g., Appelbaum and Goransson, 1997; Chadwick and Raver, 2015; Chiva, Ghauri and Alegre, 2014; Doppelt, 2010; Sessa and London, 2006; Tyre and von Hippel, 1997) were consulted in the process of designing the research questions. Through an earlier data collection process, with interviews conducted with managers of regional agencies, including shires (Australia), chambers of commerce and producer associations (Uruguay) four model family firms were identified. According to the feedback obtained, these firms were constantly involved in innovative practices, and highly efficient in managing and maximising their resources. For example, one key characteristic of managers/owners was their exceptional entrepreneurial spirit, particularly discovering new or maintaining strategically significant international consumer markets. The decision to consider family firms is also supported by studies emphasising the importance of this group of businesses for countries' economies (e.g., Chirico and Nordqvist, 2010; Poza and Daugherty, 2014).

*3.2 Data collection*

Initial email contact sent to the attention of the firms' owners/general managers described the objectives of the study, and formally invited them to take part in the research. Contact was undertaken during the second half of 2014 in the case of Uruguayan firms, and in the second half of 2015 in that of Australian firms. Moreover, given the geographic distance between the two countries, it was decided to gather the data from the two countries separately, allowing the researcher to travel to the firms' operations or main building whenever possible.

Follow up emails and telephone contact in the weeks after the first email contact confirmed the participation of all four firms' management. During the researcher's travel to Uruguay in December of 2014, a semi-structured, in-depth, face-to-face interview was first conducted with the co-owner of Firm 1 at the winery. This interview also allowed for useful on-site observations of the firm's operation to be made. This participant is responsible for marketing, tourism and domestic sales. This data collection process was complemented with subsequent email correspondence with the second co-owner, who is responsible for the winery's international commerce, through 2015. In the case of Firm 2, face-to-face interviews were undertaken with both the co-owner and general manager at the firm's main office on two separate occasions. These three interviews lasted on average 70 minutes; knowledge about the firms was further enhanced through industry-related videos on the internet, website reports and news.

Regarding the two Australian firms, given the geographic distance between the researcher's university and Firm 3, a 45-minute telephone interview was first conducted with the co-owner in November of 2015. After the interview, the co-owner's agreement was obtained to travel to the business operations early December, 2015. This visit, which lasted over three hours, allowed the conducting of a second in-depth interview, and a visit of the premises, which was experiencing major technological and expansion developments. Finally, with regard to Firm 4, the co-owner's work commitments only allowed the face-to-face interview to be conducted in January of 2016. This interview was complemented by a tour to the firm's facilities; this interview lasted approximately one hour. Thus, in all, six respondents contributed to the study. In all four family firm cases, the data collected through interviews and on-site visits was further strengthened by email communication maintained with all six participants in the successive months following the fieldwork, and by company news and information available on updated online content (firms' website).

The participation of only four firms is recognised as a limitation of this study, which may prevent broad generalisations to be made from the overall findings. However, the findings provide a number of perspectives that could be of practical valuable to firms and industry, and conceptually/theoretically for academics, particularly through the adoption of KBV.

*3.3 Data analysis*

All interviews were digitally recorded with participants' permission, and were subsequently transcribed verbatim. The data collected in Uruguay was translated into English by the researcher, who is bilingual. To analyse the data, content analysis (e.g., Hsieh and Shannon, 2005; Weber, 1990) was used, which facilitated the identification of emerging themes and patterns from participants' verbatim comments.

*3.4 Demographic characteristics of firms and participants*

As would be expected given their role as firm co-owners, all participants except one (F2P2), have several decades of experience (Table 1). In four cases, such experience goes as far back as when the company was established in the 1970s and 1980s, while in a fifth case (F2P1), a new generation of family members (second generation) inherited the firm. Aligned with co-owners' experience, all four firms date from various decades. In one case (Firm 1), the company has been in family ownership for 10 generations, which suggest the new ownership's ability to draw from crucial past knowledge, including tacit knowledge, as well as expertise, to adapt and develop resilience. The two Uruguayan firms fall under the category of medium-sized enterprises, or between 20 and 99 employees (Gatto, 1999); similarly, Firm 3 and Firm 4 are considered medium for Australian standards, or between 20 and 199 employees (ABS, 2001).

Table 1 Here

## 4. Results

*4.1 RQ1: Knowledge, family firms, and adaptation*

Throughout their reflections, participants' comments illustrated numerous ways in which knowledge contributes to family firms' adaptation to an increasingly challenging business environment. Whether operating in an emerging or developed economy, in the main participants' comments clearly underline that embracing knowledge to adapt to a changing business environment knows no geographic boundaries. Table 2 provides a concise summary of the main threads that emerged from the content analysis, while the following sections elaborate on the findings, highlighting each individual firm.

Table 2 here

*Firm 1:*

Being one of Uruguay's most forward-thinking wine businesses, with a century-old grape-growing and winemaking tradition, Firm 1 clearly demonstrates the role of knowledge in equipping entrepreneurs with tools to adapt to new market demands. As F1P1 explained, in the 1970s, a proposal to improve and position the winery to compete in a growing globalised consumer market, represented both a key challenge and a key opportunity for the winery's ownership to use a vast reservoir of knowledge and adapt to the new global order. This development was pioneering in Uruguay, and represented a key step in the 'coming of age' of the national wine industry. Interviews with other industry stakeholders, such as other firms and chamber of commerce representatives, along with industry reports on this firm further supported the firm management's assertions.

F1P1 also reflected on all the steps leading to the firm's ability to compete and adapt in very demanding international consumer markets. First, as part of the reconversion process, planting new, pest-free, imported rootstock, and purchasing state-of-the-art technology to support efforts to improve the quality of the wines demanded significant investments: *"At that* *time no one talked about overseas markets; all wineries focused on the domestic market, predominantly producing table wines, in one-litre bottles or demijohns."* The reconversion process, which took F1P1 well over a decade to complete, enabled the firm to gain knowledge and incrementally build on this knowledge to open up key markets: *"You have [to] adapt the staff to the new realities of world markets… have to start traveling the world in order to learn about the types of wines the different consumer markets demand."*

Another key investment undertaken, with resulting accumulated knowledge, included participation to specialist international wine fairs:

> *Köln, 1989. It was the eye-opener, which helped us realise how far we were from matching international markets' demands. We needed to update our wines, produce fruitier wines, with livelier colours. The bottles had to be new and of excellent quality; new labels, corks, cases... we became the first in the country to produce high-end wines in 750cc bottles… our staff were trained to only think and focus on quality wines.*

Today, the winery has gained access to more than one dozen markets, including some of the most demanding, such as Canada, Germany, United Kingdom, or United States.

The reflections of the other co-owner (F1P2) further emphasised the associations between knowledge and adaptation. Focusing on the marketing and tourism side of the business, F1P2 mentioned the development of wine tourism since 2004 as an additional revenue stream. Moreover, working collaboratively with other Uruguayan wineries led to an alliance supporting an infrastructure to host visitors to a newly established wine trail. This alliance contributed to a significant increase of wine tourists, from nearly 4,000 in 2004 to over 60,000 in recent years. As many as 40% of these visitors came from neighbouring countries, and, upon their return, often purchased cases of wine. This new development partly resulted from investment in knowledge to learn and adapt to new market segments. For example, F1P2 acknowledged the earlier organisation of wine tourism workshops, recruiting wine tourism experts from as far as Australia to increase the local industry's knowledge about this alternative business option.

*Firm 2:*

According F2P1 and F2P2, and supported through conversations with individuals working at Uruguayan chambers of commerce and news/industry reports, various historic events occurring within the family firm, and associated with accumulated knowledge and adaptation, shaped the ownership's decision to make a fundamental strategic change. This change entailed the firm's shift of business focus, from predominantly being a maritime agency trading fishing products and providing for fishing vessels, to producing caviar. This radical shift was first based on the owner's foresight concerning the growing complexities of pursuing the traditional business focus of the family firm long-term. Second, the owner's existing networks with Soviet researchers in the 1960s increased his knowledge, not only about the commercial potential of this species, but also, and critically, knowledge that, given a number of challenges, sturgeons' natural habitat, and therefore future high-quality caviar production, was threatened.

The combined events, coupled with the owner's accumulated technical knowledge over nearly 20 the years of contacts with highly knowledgeable researchers culminated in gaining approval to introduce and farm sturgeons in Uruguay, and import key equipment. Adapting to the realities of the new entrepreneurial direction represented a significant learning curve, which underlined the importance of knowledge (F2P1): *"At the beginning, we managed to* *resolve issues as they emerged. Luckily, we did more things right than wrong, and ended up developing a product and a process that we can control well from a technical point of view."*

The associations between innovation and knowledge suggested earlier (e.g., Grant and Baden-Fuller, 1996; Liu et al. 2014) became apparent in this firm's activities, with the owner undertaking a series of innovative practices that led to the firm's competitive advantage. For example, a feeding plant was established to guarantee a controlled and consistent food supply for the sturgeon population, with no dependency on imported feed. A few miles/kilometres away, and through gravitation, fresh water flows into the built pools for sturgeons to benefit from an environment that resembles the natural habitat. Through this innovative development, accomplished through key collaborative relationships with overseas experts, the fish breathe in nearly 100% oxygenated water, with significant implications for the quality of the final caviar product (F2P1, F2P2).

Knowledge, both tacit, built from previous experiences, as well as newly acquired, including knowledge of new trends, new consumer markets, and ways to reach these are crucial for the new ownership of family members. Moreover, the founder's knowledge was transferred to, and further developed by the four siblings who inherited the family enterprise to seek to adapt to the numerous and increasing changes and challenges in caviar's supply and demand. As F2P2 noted, Uruguay's geographic distance to key consumer markets represents a severe constraint demanding a very well-coordinated logistics structure, which often is beyond the firm's control. As a result, constant monitoring of potential changes in airlines' timetabling or numbers of flights on a given week can also have strong impacts on a) time delivery, and b) product quality. Furthermore, with key informants in various parts of the world, the firm can learn and gather knowledge about latest developments.

*Firm 3:*

Having grown avocados since the 1970s, thereby being a pioneer in the region, and similar to Firm 2, F3P1 and her husband had accumulated crucial knowledge about their industry, including the marketing of avocados, which helped her and her firm learn about emerging events, both from a supply and demand perspective. In fact, F3P1 mentioned the ownership's foresight to anticipate a production glut, with potentially devastating consequences for the firm, and at the same time adapt by filling emerging gaps. Thus, from growing avocados, the firm turned to packaging and consulting to cater for the needs of the region's avocado growers. At the same time, knowledge of producers elsewhere in Australia led to establishing networks to boost avocado exports to various lucrative South-East Asian consumer markets.

F3P1's comments further illustrate the significance of tacit and explicit knowledge in helping build the firm's capacity to withstand upcoming challenges, and maintain its competitive edge. For example, the firm has recently embarked in new strategies that include partly shifting its business focus to cater for the needs of end consumers. This fundamental extension of existing business focus has demanded constant consideration and re-designing of strategies to solve problems, particularly through innovative practices and technologies (F3P1). To accomplish the task of maintaining the balance between the firm's main and extended business foci, the owners have made several considerable investments, particularly of high-end equipment. These developments have been highlighted in local and national media outlets, including on ABC's Landline television program broadcast. The firm's extended business focus has also required the recruitment of various professionals, including a food scientist, to conduct research and potentially develop new food products geared towards consumer segments, including the growing aged-care group and infants. These initiatives also underline the significance of creativity and learning for sustainable growth highlighted in recent research (e.g., Lozano, 2014).

The balancing act of innovating while further developing additional business dimensions and strengths demands constant surveillance of international markets, a key revenue source for the firm, and therefore knowledge gathering to adapt to potential future threats. Apart from the always-present avocado competing markets producing cheaper fruit, F3P1 also noted other threats that require prompt adoption of knowledge and adaptive capacity. In fact, the firm's success was perceived to become a potential future threat. As F3P1 explained, the firm's ability to sell more avocados and maintain a high price, which has been based on the avocados' quality and perceived quality among buyers may lead to a future shortage of the product to satisfy ever-increasing demand.

However, the accumulated tacit knowledge, and the newly acquired knowledge, through constant exposure to international and very demanding markets, new company focus, and new product development as well as innovative strategies, provide a solid foundation for the firm's ownership to anticipate and adapt to future challenging scenarios. In addition, and as F3P1 indicated, the advice provided to regional growers through consulting has enhanced product quality and the price both the firm and growers earn. This achievement could further incentivise growers to maintain existing or even increased production volumes while focusing on consistency of quality standards.

*Firm 4:*

Knowledge about the economic realities of food production led F4P1, one of the co-owners of the family business to propose a new business model that would significantly change its strategic direction. Moreover, rising costs of labour triggered by Western Australia's mining boom (e.g., between 2007-2010), coupled with inconsistency of quality from growers supplying the firm were clear signals for F4P1 to communicate to family members that, if no fundamental changes were soon made, the firm's very existence would be at risk.

The resulting strategy meant abandoning labour intensive products, focusing more on machine-harvested crops, securing land to shift production at particular times of the year, and at particular locations depending on the season. Further adding to the business's sustainability was the maximisation of recycling of wastage from the harvested products, which is now utilised to feed some 300 heads of cattle. In this case, newly acquired knowledge about the properties of the feed to subsequently produce beef plays a key role, as does expertise testing this alternative (consultation with experts, trial and error) to confirm its usefulness; as F4P1 stated, *"this green feed is excellent for cattle."*

Further, while F4P1 underlined the low-margin nature of the agriculture industry, he also emphasised various aspects related to knowledge as the key to adapting to new challenges. In fact, the fundamental business strategy is based upon 'start to finish', where working ahead of time is thorough and systematic. For example, management choose the varieties the firm will grow/produce and secure the seeds in advance. Growth, harvest, ensuring the quality is 'good enough' (F4P1) and selling the products follow; all these systematic steps further highlight the critical association between enhanced knowledge from previous experiences and AL.

Furthermore, although seemingly a simple step for a firm of 100 employees, investing in designing a website was the result of the decision to expose the *firm "and chase the export market."* This step was followed by another knowledge-based decision resulting from a critical event (F4P1): *"When the [Australian] currency fell, I did a bit of travelling… I could see that the products that I was looking at… I could work the margins in my head, and I thought that we could be 'in the game'. Since then we have been in [city/country] for nearly two years… they are now our number three customer."* The decision to broaden the export market was clearly a move to spread the risk of depending on primarily few major domestic clients.

However, specialised, explicit knowledge, in this case of exchange rate fluctuations, became critical for the firm to adapt and make crucial business decisions. For example, in referring to an earlier discontinued export activity, F4P1 emphasised the constant surveillance of the exchange rate: *"…it [export to country X] was good, and then the currency changed significantly… domestic price improved… taking the risk away… [therefore] we got out of the export market."*

## 5. Discussion

The case studies revealed clear links between the findings and various tenets of the KBV. Figure 1 provides a conceptualisation of these links, predominantly highlighting the contributions by Grant and Baden-Fuller (1995), Grant (1996), and Nickerson and Zenger (2004). First, the four case studies document the significance of knowledge as a productive resource (Baden-Fuller, 1995) that becomes invaluable over time, with reinforcement and further development of firm ownership's know-how and skills. The long history of the firms, in the case of Firm 1 as long as 10 generations, provides a foundation for the storage of tacit knowledge (Leonard-Burton and Sensiper, 1998; Nonaka, 1994), passed or inherited from generation to generation. This notion is supported by contemporary family business research (Chirico and Nordqvist, 2010), which highlights the importance of growing up and working at the family firm, which contributes to individuals' learning and storing tacit knowledge.

Furthermore, newly acquired, explicit knowledge is operationalised and adapted by the new ownership when addressing emerging challenges through the development of OL and resilience. In the case of Firm 2, for example, with the firm operating in a high-end industry, growing a product for a niche market, and implementing very concise, often innovative strategies and practices, illustrates the significance of tacit knowledge, specialisation, production and application of specialised knowledge (Grant and Baden-Fuller, 1995).

Importantly, while most technical knowledge may be modestly updated or changed, the newly acquired knowledge provides a key complement. Indeed, the reputable quality of the firm's caviar incentivises management to learn about global trends and events that may affect the company. The existence of key informants (distributors) in strategic markets illustrate yet another form of acquired knowledge; together the above knowledge-based strategies have proven fundamental for the firm's success. These aspects of Firm 2's strategy relate to Blome et al.'s (2014) point that external knowledge transfer allows firms to gain expertise, and influence their products or processes in a positive manner. As postulated by Rebolledo and Nollet (2011) the application of knowledge, reflected in the case of Firm 2 in the form processes to maintain or improve the quality of its caviar, can help create new knowledge. This new knowledge could extend to the discovery of new consumer markets or avenues to position their product.

Transferability of knowledge (Grant, 1996), in this case, within the firm itself was also documented in various ways. Firm 1, for instance, accumulated knowledge about wine production for generations (tacit knowledge); this finding aligns with De Massis et al.'s (2016) view that past knowledge can be an avenue for value capture and value creation. This knowledge was further developed through observation and learning about new trends, which could be implemented to cater for new markets, as with wine and food tourism and related events (explicit knowledge). Learning about new trends and markets is also associated with Chirico's (2008) research, which emphasises the importance of openness factors (e.g., past study, work experience). Capacity for aggregation was also illustrated, especially in the case of Firm 3, developing new business foci that require further searching for information, researching (new product development), or, in the case of Firm 4, spreading the geographic scope, calendar, and types of food production, as well as establishing trade through international relationships.

Furthermore, the application of knowledge in various ways, with Firm 2's ownership/management maintaining unique production methods, and assuring quality consistence, or Firm 3 using accumulated knowledge and expertise in the local avocado industry, underline the association of the element of appropriability of knowledge (Grant, 1996). Firm 4's constant surveillance of monetary fluctuations, or Firm 1's export and wine tourism strategies also emphasise knowledge as key source of value, whereas in the case of Firm 2 and Firm 3, it arguably constitutes a vital input in production (Grant, 1996). In all four firms, emotional factors (Chirico, 2008) were also manifested, for instance, through commitment and psychological ownership of the firm. These factors, together with openness factors (Chirico, 2008) can be determinant in firm's accumulation of knowledge, which in turns can result in enhancing firms' longevity.

Nickerson and Zenger's (2004) contribution also became apparent in the findings. Indeed, in all four cases, and in agreement with Chirico and Nordqvist (2010), the formation of knowledge in previous years and decades represented a key alternative to solving emerging problems. Facing the new 'world order' in the wine industry in the 1970s, and even today (Firm 1), the foreseen decline of business activities (Firm 2), the 'future' threat of the avocado glut forcing participants to opt for new strategies (Firm 3), or the need to design a new business model in light of increasing labour costs (Firm 4), demonstrate the key contribution of knowledge as a key problem-solving tool. In addition, these cases, particularly that of Firm 4 in shifting trade direction (e.g., exports versus domestic sales) in response to currency fluctuations aligns with the element of shifting boundaries in response to problems (Nickerson and Zenger, 2004).

Lastly, during the interviews it became apparent that knowledge sharing was a clear element in everyday company life, in particular, among members of the firm's ownership. This finding also relates to recent research (Woodfield and Husted, 2017), which underlines the central aspect of knowledge sharing, particularly for family-owned businesses. Figure 1 further illustrates, that, together, all the different complements and extensions of knowledge can help family firms to anticipate or foresee crucial and often defining events. Hence, as revealed in the findings, the ability to foresee or anticipate significant events potentially affecting the firm, enables operators to choose strategic alternatives to best adapt to these events. This notion aligns with the term ‘anticipatory learning’ (Doppelt, 2010). Moreover, the above alternatives that are fundamentally based on tacit and/or newly acquired knowledge can be a source of competitive advantage, with fundamental implications for firms’ bottom-line.

Figure 1 Here

## 6. Conclusions

The academic literature emphasises the value and impact of knowledge as a key component of AL and OL (e.g., Appelbaum and Goransson, 1997; Blome et al., 2014; Doppelt, 2010; Fiol and Lyles, 1985; Rebolledo and Nollet, 2011; Tyre and von Hippel, 1997). Part of the literature also underscores the significance of knowledge in the context of family firms (e.g., Boyd and Royer, 2012; Boyd et al., 2015; Bretton-Miller and Miller, 2006; Cabrera-Suárez et al., 2001; Chirico, 2008; Chirico and Nordqvist, 2010; Chirico and Salvato, 2008; De Massis et al., 2016; Hatak and Roessl, 2013).

Against this background, the present study has made several contributions to family firm research. First in considering the KBV as the theoretical foundation, the study examined the importance of knowledge as a tool enabling family firms’ adaptation strategies to address contemporary and emerging issues. Second, the study proposes a theoretical framework emanating from the findings and the adoption of the KBV. Third, the study provides an original component, presenting research on knowledge-based attributes among global family firms in distant geographic destination; to date, these dimensions have received limited academic attention.

One key finding emerging from the interviews with co-owners and one manager was firms' constant surveillance of the business environment, which primarily rested on accumulated or tacit knowledge, and was significantly complemented, updated, and enhanced through management's acquisition and gathering new, more explicit knowledge. In turn, this added knowledge clearly became part of firms' specialised knowledge and skills, and represent crucial resources, potentially determining their success and long-term sustainability.

The consideration of the KBV allowed for a deeper understanding of knowledge and adaptation among family firms. In particular, and as illustrated in the four cases, the element of problem-solving emerged as crucial, in that firms' management used accumulated (e.g., tacit, explicit) knowledge to articulate strategies and address pressing issues. However, capacity for aggregation, shifting boundaries, knowledge formation, knowledge storage, and production were also conceptual elements illuminating the research, and further demonstrating the value of the KBV as a useful tool to examine the study's key themes.

### *6.1 Implications*

One overarching practical implication emanating from the finding is that the accumulation of knowledge in various forms can have substantial impacts on family firms' future direction, leading to AL and the management's stronger ability to withstand new changes and challenges. This notion implies potentially considerable investments from family firms' ownership, and in cases of family firms with limiting resources, suggests the need for external support, for instance, through business advice and training. These forms of assistance could provide family firms with a level of explicit knowledge that could build upon firm's tacit knowledge, enhancing adaptive strengths or resilience.

Overall, and as the cases illustrate, reinforcing or strengthening the family firm's tacit knowledge, often built through generational processes (e.g., Firm 1, 2, and 4), with new experiential or research-based knowledge can be crucial for their sustainability. This notion further suggests the inherent need to consider knowledge capture at multiple levels. While there is inevitably overarching knowledge that exist, specific tacit knowledge, which builds upon layers and layers of wisdom, can provide opportunities to enhance resilience and competitive advantage.

Moreover, in the case of the participating family firms, both tacit knowledge, and newly acquired knowledge allow their ownership to foresee, and anticipate potentially significant events (e.g., Firm 2, 3, and 4). This point is fundamental, as it can be a key differentiating factor for family firms. Indeed, the suggested foresight resulting from acquiring explicit and accumulating tacit knowledge is further illustrated in firms' adaptation and decision to explore business alternatives. The examples of innovative practices (e.g., Firm 2, 3), or new business strategies (Firm 1, 4) underline the skill of the firms' management in problem-solving, particularly addressing new market demands and requirements, with subsequent effects on family firms' competitive advantage.

From a theoretical perspective, the KBV, especially when broadened to include various key contributions (Grant, 1996; Grant and Baden-Fuller, 1995; Nickerson and Zenger, 2004) provides a valuable perspective to understand AL, and the various facets associated with knowledge acquisition that are vital to family firms' competitive advantage (e.g., problem-solving, shifting boundaries, acquiring, storing tacit knowledge). Along these lines, the resulting framework (Figure 1) provides a tool that allows for a more in-depth reflection on the relationships between knowledge and family firms' adaptive strategies.

In fact, foresight, or anticipating future events based on the accumulation of knowledge, was emergent in this research as a key element associated to firms' adaptation. Foresight, which is also related to anticipatory learning (Doppelt, 2010), as well as proactiveness, or "acting in anticipation of marketplace changes or future needs and problems" (Short et al., 2009, p. 14) provided an additional angle that identifies links between knowledge and family firms' strategic undertakings. Thus, knowledge acquisition, while potentially drawn from previous experiences and information built through generational processes, should be utilised in a form that enables proactive and forward-looking planning. Given its apparent usefulness, including its reference as a key attribute in earlier family firm research (e.g., James, 1999; Ward, 2000) foresight could be considered as an extension when applying the KBV to study family firms.

### *6.2 Limitations and Future Research*

While proponents acknowledge the merits of conducting case study research (e.g., Eisenhardt, 1989; Yin, 1981), selecting four cases of global family firms represents a limitation in the present study, especially as compared to thousands of other existing firms in both nations. Therefore, while the gathered insights provide practical and theoretical value, as well as a platform for future studies to consider and build upon, the overall results must be treated with caution with regard to any generalisations made from them. Apart from a larger number of participants, future research could also widen the scope to firms from more nations, or from different nations, as well as choose small and micro firms. All of these suggested research avenues could add to the body of existing knowledge, as well as confirm/disconfirm some of the emerging themes of this study, thus, allowing for comparisons. Similarly, the applicability of the KBV in these suggested contexts could help illuminate future research, potentially confirming or disconfirming its usefulness, contributing to theory testing and avenues for development. Furthermore, the KBV could be enhanced through the adoption of an alternative theoretical framework, such as stakeholder theory, or the theory of innovation.

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