Knowledge Integration and Dynamic Organizational Adaptation in Family Firms

Francesco Chirico, Carlo Salvato

The speed of change in competitive environments has prompted firms to develop processes directed at enabling organizational adaptation. This is captured by the concept of dynamic capabilities. We focus on a particular form of business organization, that is, the family firm. Specifically, we argue that knowledge integration—a dynamic capability through which family members' specialized knowledge is recombined—guides the evolution of capabilities. We present a general framework illustrating factors that affect knowledge integration in family firms. We conclude that only those family firms that are able to effectively integrate individual family members' specialized knowledge will be successful in dynamic markets by changing their capabilities over time.

Introduction

In today's high-velocity environment, recognizing enablers of dynamic organizational adaptation is essential to sustainable competitive advantage. This is especially relevant in family firms, whose specific threats to transgenerational success and survival have long been discerned. The speed of change in competitive environments has driven firms to develop processes directed at changing existing capabilities—their idiosyncratic, path-dependent ways of doing business—and increasing their strategic adaptiveness and competitive fit. This is captured by the notion of dynamic capabilities (DCs), which offers an explanation of the evolutionary nature of capabilities (e.g., Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997; Winter, 2003).

The bedrock of the DCs concept lies deep in notions of organizational knowledge and knowledge recombination. As Penrose (1959) first noted, the cumulative knowledge of the firm provides options to expand in new markets and businesses in the future, hence matching, if not creating, environmental dynamism. Building on this premise, the DCs perspective suggests that firms learn new skills at increasingly higher levels by recombining knowledge embodied in capabilities (e.g., Kogut & Zander, 1992; Teece et al., 1997).

Despite the intuitive appeal of this approach, it has been a task of considerable complexity to identify the knowledge-related units of analysis driving organizational adaptation, the underlying causal mechanisms, and the outcomes at the level of competitive advantage. The fundamental explanatory notions of the knowledge-based approach to organizational adaptation—notions such as routines, capabilities, competencies, and DCs—are aggregate concepts that may be located in teams, in firms, among firms, and even in industrial districts and industries (Foss, 2005). As a result, the micro foundations of the DCs approach are still unclear, hence hampering the value of this concept for both theory and practice.

In this article, we advance a conceptual model of dynamic knowledge recombination in family firms by exploring the family-specific antecedents of knowledge integration (KI) among members of

the controlling family contemporaneously active within the controlled business. KI empowers the recombination of family members' specialized knowledge, whereby the ensuing sum is greater than its components. Since KI requires the co-presence of multiple agents in the organization (Grant, 1996a; Tiwana & McLean, 2005), our model is valid for family firms in which multiple members of the same family are actively involved in the controlled business (Miller, Le Breton-Miller, Lester, & Cannella, 2007, p. 836). We believe that a focus on family firms may both advance knowledge on the micro foundations of DCs in any type of firm and help us understand why some family firms are more successful than others in dynamic markets, that is, markets in which the competitive landscape shifts quickly and unexpectedly, and change must be promoted to survive (Eisenhardt & Martin, 2000).

The potential insights that can be gained by addressing DCs from a family-firm perspective result from the unique features of capabilities in family firms. Capabilities are unique in family business since they result from the interactions between the family, its individual members, and the business (Sirmon & Hitt, 2003). Family firms are depicted as emotionally committed organizations characterized by intense interactions among family members within the family and the business. For these reasons, they represent an interesting arena to study KI processes underlying the dynamic evolution of capabilities. The family business is the only organization in which family members are simultaneously active in the family and the business, hence significantly influencing—in both positive and negative ways—knowledge-integration processes. The density of social interactions typical of family firms may hence shed light on the underlying mechanisms through which DCs are formed and knowledge consequently recombined. Although family business research has addressed knowledge transfer and acquisition (e.g., Cabrera-Suarez, De Saa-Perez, & Garcia-Almeida, 2001; Chirico, forthcoming), little attention has been paid to KI and to the antecedents of such integration. This article is hence focused on KI as a DC characterized by peculiar forms in family firms, which allows illuminating its functioning in any type of organization.

The article is organized as follows. We first present a concise review of the literature on DCs, illustrating why a focus on KI in family firms may significantly advance our knowledge. We then propose a model of relevant family-specific antecedents of KI and resulting capabilities evolution in family firms, and we develop corresponding propositions. In the concluding section, we discuss our main contributions and present their implications for research and practice. Our work contributes to unveiling the mechanisms behind the evolution of capabilities in family firms. Exploring family-specific antecedents of KI offers valuable contributions to both our understanding of sustainable competitive advantage in family firms and of the causal mechanisms underlying dynamic adaptation within any kind of organization.

Micro Foundations of Dynamic Capabilities in Family Firms

Although the construct of DCs has received considerable attention in the strategic management literature (e.g., Eisenhardt & Martin, 2000; Teece et al., 1997; Winter, 2003; Zollo & Winter, 2002), little research has been devoted to studying DCs in family firms. This omission may result in a considerable weakness of the field, as family firms are usually depicted as thriving on heavily path-dependent abilities, which are hence difficult to adapt to changing environments (Koiranen & Chirico, 2006; Salvato and Melin, forthcoming).

An organizational capability is a routine, or assemblage of routines, allowing an organization to perform a specific task or activity (Nelson & Winter, 1982). For instance, organizations grow capabilities in product development, distribution, or marketing. Strategic management literature distinguishes ordinary capabilities from DCs. DCs are connoted by change. They are defined as higher-level routines that govern the rate of change of ordinary capabilities. Ordinary capabilities enable an organization to "make a living" in the short term (Winter, 2003). DCs, on the other

hand, allow a firm to extend, modify, or create ordinary capabilities by accessing and recombining knowledge, hence enabling success over time (Collis, 1994; Eisenhardt & Martin, 2000; Teece et al., 1997; Zollo & Winter, 2002). Existing literature hence conceptualizes DCs as those higher-level capabilities through which an organization changes (i.e., modifies or builds) its capabilities to match high-velocity environments. For instance, Zahra, Sapienza, and Davidsson (2006) distinguish a capability, the ability to develop new products, from a DC, the ability to change the way new products are developed.

How do DCs confer a competitive edge over rivals? Although DCs are idiosyncratic in their details, they exhibit commonalities across firms. In other words, DCs show equifinality, which denotes that they may engender similar outcomes (e.g., product development) across different types of organizations (Eisenhardt & Martin, 2000). What truly differentiates DCs across firms, hence conferring superior competitive features, are the mechanisms through which they are generated and sustained. In the original conceptualization proposed by Teece et al. (1997, p. 518), the ability shown by some firms to dynamically adapt their competitive advantage lies with their organizational processes, that is, their "patterns of current practice and learning." These patterns of interaction are resident in group behavior, and significantly shaped by path dependencies. As learning tends to be local, "history matters" heavily in determining the attributes of a firm's capabilities and its adaptive potential.

Family firms are hence ideal settings to explore the micro foundations of DCs, allowing a vivid understanding of the social interactions and cognitive attitudes that deeply influence KI. As does any organizational capability, DCs yield a sustainable competitive advantage only if they are rare, valuable to the market, difficult or costly to imitate by rivals, and nonsubstitutable (Barney, 1991). In family firms they are rendered that way by the family-specific factors spawned by idiosyncratic knowledge-recombination and knowledge-manipulation practices and their subtle configuration (Miller & Le Breton-Miller, 2005). In the next section, family-specific antecedents of KI and their impact on the dynamic evolution of capabilities is hence discussed within the context of family organizations.

From Knowledge Integration to Organizational Adaptation in Family Firms

The DCs approach has been explicitly developed to overcome the excessive focus of the resource-based view (RBV) on exploiting existing firm-specific assets. Although RBV invites consideration for managerial value-creating strategies for developing new capabilities (e.g., Barney, 1991), issues such as skill acquisition, the management of knowledge and know-how, and learning are fundamental strategic phenomena kept in the background by RBV. In contrast, the DCs approach sees the greatest potential for contributions to strategy in the knowledge dimension, "encompassing skill acquisition, learning, and accumulation of organizational and intangible or 'invisible' assets" (Teece et al., 1997, p. 514).

The DCs approach is hence essentially a knowledge-based approach (Foss, 2005). Knowledge is the organizational asset most likely leading to enduring success. It is socially complex and difficult to imitate (Barney, 1991; Grant, 1996a; Nonaka & Takeuchi, 1995; Polanyi, 1967). Knowledge is viewed as the relevant and actionable information based on experience and education (Cabrera-Suarez et al., 2001; Nonaka & Takeuchi, 1995) that shapes a firm's capabilities (Eisenhardt & Martin, 2000; Zollo & Winter, 2002). For this reason, DCs rely extensively on a firm's existing and new knowledge and on the organization's ability to integrate both explicit and tacitly held knowledge. Their main outcome is hence knowledge recombination (Grant, 1996a; Kogut & Zander, 1992; Kusunoki, IkuJiro, & Nagata, 1998).

A stylized representation of our line of thought is depicted in Figure 1. Capabilities exist at different levels of relevance to a firm's survival and competitive success (Collis, 1994; Winter, 2003). In Figure 1, Capability t_n, $level_p$, and Capability t_{n+1},

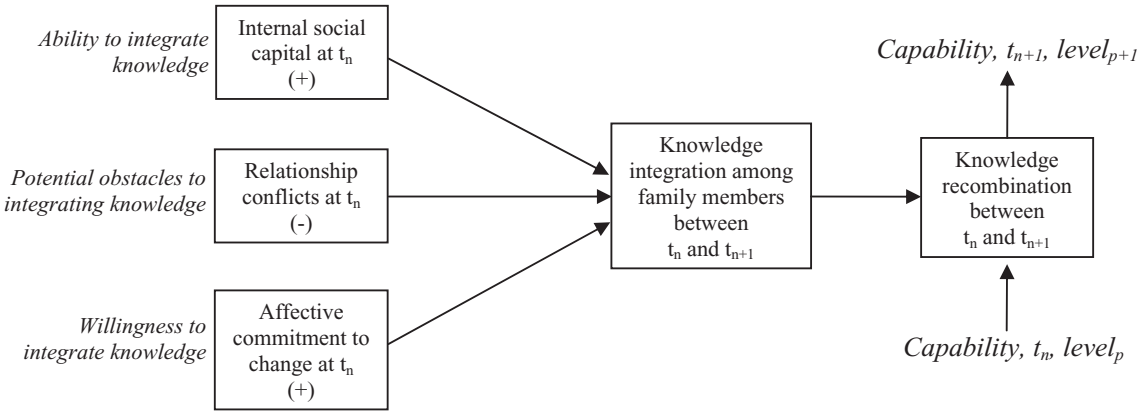

Figure 1 Knowledge Integration and Dynamic Organizational Adaptation in Family Firms.

$level_{p+1}$ represent a family firm's capabilities at time n, and at time n + 1, respectively. Between n and n + 1, recombination of new and existing knowledge allows the family firm to enhance the capability from level p to level p + 1 in response to environmental dynamism. Our main argument is that KI occurring among family members between n and n + 1 enables this process, hence representing an instance of the firm's DC. The model should display several orders of capabilities, constantly updated and improved to match environmental changes (Collis, 1994; Winter, 2003). However, to simplify the explanation, Figure 1 only considers two periods, t_n and t_{n+1}.

Figure 1 illustrates those factors that are consistently indicated by extant literature as the main antecedents of KI among family members (Enberg, 2007; Grant, 1996a; Tiwana & McLean, 2005). These are (1) the stock of internal social capital available to the controlling family at time n, which determines the *ability* to integrate existing and newly accessed knowledge; (2) family members' affective commitment to change at time n, which reflects their *willingness* to integrate knowledge; and (3) the degree of relationship conflicts at time n, resulting from previous interactions among family members, which embodies potential *obstacles* to KI. The theoretical explanations are presented in the next sections.

Knowledge Integration

Focusing on KI among family members bears a significant potential in illuminating the micro foundations of DCs and of organizational adaptation. Processes of knowledge accumulation and integration take vivid forms in family firms, in particular when tacit knowledge is involved. Living within the family and working within the business from an early age allows family members to develop deep levels of firm-specific tacit knowledge (Chirico, forthcoming; Zahra, Neubaum, & Larraneta, 2007). It is, certainly, also of vital importance to absorb knowledge from outside, since family members cannot be expected to develop all relevant knowledge within a family business. Knowledge must hence be also updated to avoid obsolescence (Cohen & Levinthal, 1990; Zahra & George, 2002). However, since the manipulation of knowledge is particularly important in environments of rapid change (Grant, 1996a, 1996b; Spender, 1996), knowledge accumulation and acquisition processes are crucial, but unable to sustain the evolution of capabilities when the environment changes. Hence, we focus our attention on KI, assuming given endowments of existing or accessible knowledge, and given levels of managerial awareness about the need to upgrade the firm's knowledge stock (Chen, 1996; Ferrier, 2001).

Knowledge usually resides within individuals (Nonaka, 1994). Postrel (2002) describes indi-

vidual specialized knowledge as the specific expertise possessed by an individual in a given domain to perform a specific task or activity in that specific domain. This implies that KI is a fundamental process through which firms gain the benefits of knowledge. Enberg (2007, p. 10) defines KI as a collective process through which different pieces of specialized knowledge from different individuals are recombined "with the purpose of benefiting from knowledge complementarities existing between individuals with differentiated knowledge bases." In the long run, organizations cannot be distinguished by how much they know but by how well they use what they differently know through the integration of organizational members' knowledge.

Since KI emerges from repeated interactions between individuals and can be better developed by close-knit groups who identify themselves with a larger collective (Kogut & Zander, 1992), family firms are an interesting organizational form to study KI. The interaction of two social systems—the family and the business—enables family members to act simultaneously within the family and the business. This creates a specific context for KI, which can be conducive of both positive and negative outcomes (Sirmon & Hitt, 2003; Zahra et al., 2007).

Strategy theorists label KI as the cornerstone of DCs (e.g., Alavi & Tiwana, 2002; Eisenhardt & Martin, 2000). Specifically, given that an organizational capability resides in knowledge embodied within individuals (Grant, 1996a), we argue that the evolution of capabilities in family businesses is guided by the integration of knowledge, especially tacit knowledge, among family members active in the firm, rather than by knowledge itself. Accordingly, the integration of family members' specialized knowledge, viewed as a DC, may enable a family business to adapt its capabilities to environmental changes (see Figure 1) (Kogut & Zander, 1992; Zahra et al., 2007; Zollo & Winter, 2002).

There are countless situations in which organizational members need to integrate their knowledge with each other to realize its value. Examples include product development groups working on a common product. A family firm may have specific capabilities in product making, but these capabilities may not be sufficient to be successful in dynamic markets where customer demand changes continually. Accordingly, family members need to integrate their individual specialized knowledge in order to change the family organization's product-making capabilities and create new products according to the changing demand of customers. Consequently, new capabilities in product making will be developed.

Hence, the successful execution of a product-development process highly depends on how individual knowledge bases are integrated. Nonaka and Takeuchi (1995, p. 242) observe that "the product development process emerges from the constant interaction of a multidisciplinary team whose members work together from start to finish." Hence, it would not be reasonable for each family member to learn all the knowledge possessed by the other family members; rather, it is more efficient to integrate individual family members' specialized knowledge while reducing the time spent transferring knowledge between them. For instance, Alavi and Tiwana (2002, p. 1031) posit that "the time demand of knowledge acquisition and transfer might lead to the inability of the organization to respond in a timely manner . . . integration of existing and new knowledge is by definition a more efficient response mechanism" to high-velocity environments.

In so doing, each family member contributes to KI and capabilities change through his or her specific expertise. Although higher-order capabilities (Capability t_{n+1} in Figure 1) involve the integration of lower-level capabilities (Capability t_n), such integration can be achieved only through integrating individual knowledge (Grant, 1996a). Similar arguments are developed by Henderson and Cockburn (1994) through the concept of "architectural competence" and by Kogut and Zander (1992) through the concept of "combinative capabilities." In formal terms:

Proposition 1. KI among family members will be positively associated with dynamic adaptation of capabilities in family business.

Antecedents of Knowledge Integration

In this section, we illustrate those factors that are systematically described by extant literature as more likely to affect the integration of individual family members' specialized knowledge and the ensuing evolution of family-firm capabilities (Enberg, 2007; Grant, 1996a; Tiwana & McLean, 2005): internal social capital, affective commitment to change, and relationship conflicts (see Figure 1).

Internal social capital. Social capital is defined by Arregle, Hitt, Sirmon, and Very (2007, p. 75) as "the relationships between individuals . . . that facilitate action." It involves both relationships between organizational members (internal social capital) and external parties (external social capital) (Adler & Kwon, 2002). In this article, focus is on internal family business social capital. Prior studies indicate the positive influence of social capital on KI. Dynamic KI largely depends on the social context within an organization (Kusunoki et al., 1998). By increasing understanding between actors and reducing the time and effort associated with developing an agreement in the network (e.g., Tiwana & McLean, 2005), KI is greatly facilitated.

Family firms are characterized by socially intense relations between family members, which also occur informally outside the work context. These relations are developed through a history of interactions and mutual trust that make it less likely to discredit each other's ideas and perspectives (e.g., Sirmon & Hitt, 2003). The family business structure, based on close interaction of kinship ties and reciprocal trust, encourages the existence of strong family relations, which in turn enable family members to easily integrate their individual specialized knowledge to promote action. Arregle et al. (2007, p. 77) suggest that "social capital developed in the family is probably one of the most enduring and powerful forms of social capital." The reason is that the four factors proposed by Nahapiet and Ghoshal (1998) as most conducive of social capital (i.e., stability, interdependence, interaction, and closure) take particularly strong forms in family firms. The following descriptions highlight the most salient features of these dimensions of social capital in family firms.

Stability. Social capital constitutes a form of accumulated history in which time allows organizational members to build stable relations in the long run (Nahapiet & Ghoshal, 1998). Given that family members live within the family and work within the business from an early age, stable relations exist in family organizations (Arregle et al., 2007).

Interdependence. Social relations are eroded when organizational members become less dependent on each other. To the contrary, mutual interdependence fosters social capital (Nahapiet & Ghoshal, 1998). According to the family business literature, kinship relationships make family members dependent on each other (e.g., Arregle et al., 2007), hence strengthening their mutual bonds.

Interaction. Since social capital increases with use, repeated interactions between actors enhance social relationships (Nahapiet & Ghoshal, 1998). Family members have the opportunity to interact with each other very often in formal and informal meetings within the family and the business (see Zahra et al., 2007). In particular, family meetings facilitate social interactions by developing shared beliefs based on consensus after discussion and debate among participants, hence leading to renewed collective actions (Sorenson, 1999).

Closure. Strong communities based on dense social relationships that distinguish members from nonmembers enhance interconnections among organizational members (Etzioni, 1996). In family firms, closure is enhanced by the family, which develops internal relations through kinship (Arregle et al., 2007). This facilitates the emergence of norms and maintains the trustworthiness among family actors, thereby increasing familial social relations. Indeed, family firms are depicted

as organizations with a high sense of community, in which family members experience shared realities (Miller & Le Breton-Miller, 2005).

In addition, Nahapiet and Ghoshal (1998) stress the importance of those social relations based on a *common system of meanings* (e.g., in terms of language, words, expressions, or even body movements), which facilitates the common understanding of collective goals and proper ways of acting in concert. A common system of meanings is usually strongly developed between family members, thereby allowing them to discuss and exchange information easily and to perform specific tasks or activities efficiently and rapidly through predictable patterns of collective behavior. For instance, Tagiuri and Davis (1996, pp. 204–205) notice that "over the many years of shared experiences between relatives special words, phrases, expressions, and body movements evolve that have agreed upon meanings. Private languages, 'family languages,' allow family members to communicate more efficiently than is generally possible among nonrelatives, even among close friends. This can permit relatives to exchange more information with greater privacy and arrive at decisions more rapidly than can two nonrelatives." Similarly, Grant (1996a) refers to common knowledge in terms of common vocabulary, conceptual knowledge, shared experience, and behavioral norms as an essential prerequisite for the integration of different knowledge components.

Therefore, although KI is not achieved by transferring knowledge—so that each individual involved in the collective action knows the same things—it requires at least that knowledge can be effectively communicated between individuals through close and stable social relations (Grant, 1996b). This allows family members to rapidly build on each other's knowledge, hence changing organizational capabilities when needed.

According to this logic, high levels of internal social capital based on stability, interdependence, interaction, closure, and a common system of meanings allow family members to efficiently integrate their individual specialized knowledge. This promotes the evolution of capabilities and the family firm's ability to respond appropriately to environmental dynamism and, at times, to generate change (see Figure 1). In formal terms:

Proposition 2. Internal social capital among family members will be positively associated with KI in family business, hence sustaining dynamic adaptation of capabilities over time.

Affective commitment to change. Commitment is a multidimensional construct. It is defined by Meyer and Herscovitch (2001) as a frame of mind that binds an individual to a course of action of relevance to a target. They distinguish between affective commitment (i.e., desire to follow a course of action), normative commitment (i.e., perceived obligation to follow a course of action), and continuance commitment (i.e., perceived cost of not following a course of action). Since Meyer and Herscovitch (2001) specify that, among the three forms of commitment, affective commitment is able to predict a wider range of behaviors, and given that Sharma and Irving (2005, p. 16) recognize that "the typical usage of the term commitment in the family business literature is consistent with the definition of affective commitment," we refer to this type of commitment in our research.

Affective commitment is associated with a strong positive emotion toward a specific target. In particular, family members are depicted as being strongly committed to the family business and to its continuity across generations. The empirical analysis performed by Randall, Fedor, and Longenecker (1990) revealed that affective commitment contributes significantly to KI between organizational members. Herscovitch and Meyer (2002) found that higher levels of affective commitment are associated with successful organizational changes. Affective commitment to change in a family business context can hence be seen as an emotional force binding family members to a course of action conducive of change initiatives aimed at remaining competitive in a dynamic market (see Figure 1).

Therefore, affective commitment stems from the desire to provide support to change. In this sense, it is strongly related with family members'

willingness to make changes, which may differentiate successful family firms from their less successful counterparts during environmental shifts. Family members with a strong affective commitment to a change initiative may be willing to go above and beyond the call of responsibility and exert extra efforts on behalf of the organization to find a way to make capabilities change possible (see Meyer & Herscovitch, 2001; Sharma & Irving, 2005). In other terms, family members who are affectively committed to change will adapt their behavior to be consistent with the spirit of change. Their mindset will direct attention to the intended capabilities change outcome, thereby allowing them to do their best to integrate knowledge and achieve that outcome. As reported by Herscovitch and Meyer (2002), collective interaction is influenced by affective commitment. Such commitment encourages individuals to work cooperatively and to perform assigned tasks and needed changes (see Beckhard & Dyer, 1983; Herscovitch & Meyer, 2002) to the best of their ability in order to accomplish organizational goals (Sharma & Irving, 2005). In so doing, family members feel satisfied since they know they are contributing to the success of their own business and to its continuity over time. Hence, affective commitment is viewed as one of the most important factors in supporting change, as it promotes KI between organizational members (Beckhard & Dyer, 1983; Grant, 1996a; Herscovitch & Meyer, 2002; Nonaka, 1994).

However, commitment can also be a source of resistance to change. Research reveals that family organizations are often reluctant to change even when change is needed. Founders and their heirs are often focused and emotionally attached to the traditional way of doing business and may hence resist transformation (Beckhard & Dyer, 1983; Kellermanns & Eddleston, 2006). They tend to consider the historical business as part of their identity, if not an extension of self. This attitude may give rise to inappropriate strategies. According to Dyer (1994, p. 125), "feeling and emotions related to change are likely to be deeper and more intense" in family than in nonfamily firms, hence making capabilities change more difficult. This rigidity may prevent a family organization from adapting to environmental shifts. For instance, if some family members are not emotionally committed to a change initiative, they may deliberately refuse to integrate their knowledge. To the contrary, highly committed family members are likely to provide emotional support to change, hence making KI more timely and efficient. Hence:

Proposition 3. Family members' affective commitment to change will be positively associated with KI in family business, hence sustaining dynamic adaptation of capabilities over time.

Relationship conflicts. Family involvement in the business may also hamper KI. Family firms are "fertile environment for conflict," which results "from the dominant presence of the family, setting the rules and having ultimate power, the lack of formalized systems and structures to deal with conflict . . . and the commingling of business and family roles" (Harvey & Evans, 1994, p. 345). There are different forms of conflict in organizations. However, since interpersonal relationships tend to be the most prominent source of familial conflicts (Kellermanns & Eddleston, 2004), in this article focus is on *relationship conflicts*, rather than on *task conflicts*—disagreements about the content of the task being performed—or *process conflicts*, which involve disagreement "about how task accomplishment should proceed in the work unit, who's responsible for what, and how things should be delegated" (Jehn, 1995, p. 540).

Family firms are prone to marital discord, sibling rivalry, and children's desire to differentiate themselves from their parents. Hence, to some extent the family itself makes conflict a prominent characteristic of family firms (Sorenson, 1999). This may be conducive of resistance to KI and change (Beckhard & Dyer, 1983; Eddleston & Kellermanns, 2007; Zahra et al., 2007). Emotional or relationship conflicts may result from interpersonal emotional incompatibilities among actors within a group (Jehn, 1995). Such conflicts are viewed as unproductive since they generate tension, irritation, suspicion, and resentment among organizational members. Relationship

conflicts undermine the potential advantages of group interaction and reduce the effectiveness and efficiency of an organization, thereby preventing the integration of different individual knowledge (Jehn, 1995).

Kellermanns and Eddleston (2004, p. 213) view relationship conflicts within a family organization as familial "feelings leading to suspicion and resentment," as they are based on family members' emotions, which are usually amplified in this type of organization. They may be particularly detrimental to family firms given that they are continually fueled by the repetitive interactions occurring within and outside the business. For instance, Jehn (1995) recognizes that conflicts have greater negative effects in highly closed and interdependent communities than in other groups.

Interpersonal family conflicts enhance negative reactions and make family members displeased with the family group in which they work. Accordingly, relationship conflicts limit information exchange and prevent change even when needed by decreasing mutual understanding among individuals, which is essential for KI (Beckhard & Dyer, 1983; Eddleston & Kellermanns, 2007; Kellermanns & Eddleston, 2004; Zahra et al., 2007). In addition, social interactions outside the business environment may increase relationship conflicts between family members with negative consequences on their ability to work effectively together as a team. Consequently, assessing and accepting new ideas provided by other family members may become more difficult. Jehn (1995) identifies protracted conflicts as costly in time and effort since they deter members' ability to integrate valuable individual knowledge.

Relationship conflicts lead family members to fight each other rather than take advantages from the joint utilization of their knowledge. Time and energy are devoted to resolve conflicts rather than to adapting the organization to the changing environment. Conflicts result in an unwillingness of family members to share business information with others, which in turn restricts a family firm's growth and performance. In contrast, family firms that encourage knowledge sharing about firm-specific processes tend to be more innovative and efficient (Eddleston & Kellermanns, 2007, p. 559). To sum up, relationship conflicts prevent family members from integrating each other's knowledge and may hence turn the family firm's core capabilities into core rigidities, hence preventing organizational adaptation (see Figure 1). In formal terms:

Proposition 4. Relationship conflicts among family members will be negatively associated with KI in family business, hence hampering dynamic adaptation of capabilities over time.

Discussion and Conclusions

Our objective in this article was to shed light on factors shaping the evolution of capabilities through a focus on the family-specific micro foundations of DCs in family firms. We argue that the critical source for success in dynamic markets is KI, through which different components of family members' specialized knowledge are recombined. Consequently, organizational capabilities can be modeled to adapt the family organization to environmental shifts. Strategic management literature combined with specific family business literature helped us identify factors that influence KI and, consequently, the evolution of capabilities in family business. The proposed model incorporating our propositions is presented in Figure 1.

Our conceptual analysis highlights the role played by internal social capital and affective commitment to change on KI in family business. Internal social capital increases mutual understanding between family members, while family members' affective commitment to change provides emotional support to KI. To the contrary, relationship conflicts based on strong, often negative, familial emotions are depicted as detrimental to KI by leading family members to fight with each other rather than benefiting from the joint utilization of their knowledge.

Based on the review of the existing literature, our analysis suggests that only those family firms characterized by high levels of internal social capital and affective commitment to change, and low levels of relationship conflicts, will be able to successfully adapt to dynamic markets.

Limitations

The approach we proposed to the interpretation of dynamic organizational adaptation in family firms may be limited by its exclusive focus on family firms operating in dynamic markets. Although several studies suggest that DCs are key within dynamic environments (e.g., Teece et al., 1997), other studies challenge this view. For instance, Zollo and Winter (2002, p. 340) note that "firms obviously do integrate, build, and reconfigure their competences even in environments subject to lower rates of change." Similarly, Zahra et al. (2006, p. 922) notice that "Dynamic Capabilies *may* be most valuable when the external environment is changing" but a dynamic environment "is not a necessary component of a dynamic capability." Thus, it is important for researchers to focus also on family firms operating in static environments where they may spontaneously create dynamism through KI.

Moreover, our article assumes that family firm members have sufficient knowledge internally about external factors to adapt to a dynamic environment. Thus, even though it was not our purpose, the process by which these members have access to external critical environmental knowledge (*awareness*) (Chen, 1996) is not currently addressed in the article. For instance, this knowledge may be obtained by hiring an outsider.

Additionally, the theoretical model currently includes the negative effect of relationship conflict on KI. However, it does not consider other forms of conflict that may be valuable, particularly in a changing environment. For example, Kellermanns and Eddleston (2004, p. 211) posit that "without task conflict, family firms may have difficulty adapting their strategies and goals to new environments." Moderate levels of task conflict that entails disagreements about goals and strategies to be pursued (see Jehn, 1995; Kellermanns & Eddleston, 2004) may enable group members to identify diverse perspectives by openly discussing the course of action to pursue so as to improve decision-making outcomes.

Contributions

Despite these limitations, two main contributions emerge. First, the present research contributes to filling the gap in the family business literature regarding the study of DCs. Our article is an effort directed to studying the evolutionary nature of capabilities through KI in a family business context. Specifying factors that affect the integration of family members' specialized knowledge allowed us to expand existing research on family firms' ability to adapt capabilities when environments shift. To achieve this goal, we have combined the strategic management literature on DC and KI and applied it to the family business.

Second, our findings shed some light on the micro foundations of DCs in any type of firm. Unveiling some important antecedents of KI clarifies the nature of DCs as knowledge-access and knowledge-recombination processes. This awareness opens up new avenues for both further research into other determinants of DCs and managerial manipulation of these variables aimed at improving the adaptive chances of organizations active in dynamic environments.

Research Implications

The present work suggests some areas for future research. First, empirical studies are needed to test the relationships suggested in this article and, in particular, the degree to which internal social capital, affective commitment to change, and relationship conflicts influence the level of KI among family members and the resulting evolution of capabilities. Given the presence of endogenous variables and possible feedback loops, empirical research may adopt a structural equation modeling approach. However, future empirical work should also assess whether or not the independent variables directly affect knowledge recombination, without the mediation of KI. Moreover, interrelationships among the three constructs (i.e., internal social capital, affective commitment to change and relationship conflicts) may be taken into consideration by looking at the moderating effects of those constructs over KI. To perform

these tests, existing measures of the main constructs will need to be adapted to the family business context.

Second, our model may be extended by taking into consideration additional factors affecting the stock of knowledge available to the family firm for integration. It may hence be interesting to explore how relevant knowledge is sometimes accessed from outside the family before being integrated among family members (Chirico, forthcoming; Cohen & Levinthal, 1990; Zahra & George, 2002). The model could also be significantly enhanced by considering the relevance of KI not only among family members but also between family and nonfamily members. Moreover, since resource shedding can also be interpreted as a precondition for resource access and recombination (Sharma & Manikutty, 2005), future studies may explore its impact on knowledge recombination.

Finally, further time and process dimensions may also enrich our model. In this respect, additional studies may be directed at investigating the process through which family members' specialized knowledge is accumulated within the organization. Our understanding of processual issues in KI may also be furthered by an investigation of the role played by strategic consensus among family members in facilitating KI. The negative effects of some specific familial behaviors, such as nepotism, on a family firm's opportunity to integrate outsiders' knowledge may also be worth exploring (Zahra et al., 2007). Finally, further research could be directed to studying how the specific constructs of our model evolve across generations (see Astrachan, Klein, & Smyrnios, 2002) and, in particular, how "generational involvement" may affect the overall process described in Figure 1.

Implications for Practice

Ideas presented in this article provide some suggestions for family business managers and advisors. First, it is essential to understand that effective KI is important for sustaining the evolution of capabilities. To achieve this goal, family members need to be open, that is, support initiatives, new challenging ideas, radical thoughts and actions, or even simple suggestions when they contrast with beliefs of the dominant coalition. But as feelings and emotions related to change are intense in family business, managers should expect high levels of resistance to change.

This problem can be addressed by supporting open and collaborative exchanges of information at all levels. Participation is one of the most favored methods of overcoming resistance to changes in organizations. Accordingly, social relations, which are essential for KI, need to be "multifaceted so that there is always room for revision or negation" and "participants in the dialogue should be able to express their own ideas freely and candidly" (Nonaka, 1994, p. 25). For instance, when the incumbent generation does not allow the new generation to participate in decision making, change is prevented. Accordingly, the previous generation must have the flexibility to explore and accept the new knowledge and the new way of doing things of the new generation. At the same time, the new generation must appreciate the previous generation's knowledge and contribution to the firm (see, e.g., Kellermanns & Eddleston, 2004). Certainly, such mutual respect and interaction should also exist between family members belonging to the same generation.

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Francesco Chirico, University of Lugano (USI)—Institute of Management, Centre for Entrepreneurship & Family Firms (CEF), Via G. Buffi 13, 6900 Lugano, Switzerland; tel: +41586664474; francesco.chirico@lu.unisi.ch.

Carlo Salvato, Bocconi University—Management Department, Viale Isonzo 23, 20135 Milan, Italy; tel: +390258362535/32; carlo.salvato@unibocconi.it.

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