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Environmental Dynamism, Trust and Dynamic Capabilities of Family Businesses

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Environmental Dynamism, Trust and Dynamic Capabilities of Family Businesses

Purpose – Dynamic capabilities are regarded as the bedrock of firms that survive in a dynamic environment. Notwithstanding this perspective, little research has been implemented in understanding dynamic capabilities of family firms. This paper aims to investigate the relationship between environmental dynamism and dynamic capabilities of family businesses, and the moderating effect of trust on this relationship.

Design/methodology/approach - A quantitative survey was executed with the sampling frame outlined based on the Hemscott Company Guru database. 137 useful responses were employed in this study.

Findings – The results suggest that environmental dynamism is an antecedent of dynamic capabilities. Furthermore, findings show the presence of trust moderates the environmental dynamism-dynamic capabilities nexus.

Research limitations/implications - The cross-sectional design of the study determines that it can only proffer a snapshot of the scenario. In addition, the exclusion of non-incorporated firms in the sample because of the nature of the Hemscott database constrains the generalisability of the study. Future studies in a similar vein may be implemented through national/local development agencies to overcome this barrier.

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3 **Originality/value** - The unique intertwined family and business system embedded in family
4 firms has led to the assumption that trust will influence the environmental dynamism-dynamic
5 capabilities nexus. The current study confirms this assumption and offers a perspective that helps
6 appreciate the environment-business relationship in family businesses.
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15 **Key words** – family business, dynamic capabilities, environmental dynamism, trust
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17 **Paper type** – Research paper
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22 **Introduction**

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24 The recent demise of the then successful photographic film manufacturing giant Kodak raises a
25 critical question to the business community, that is, how a company can survive and prosper in
26 the hyper-competitive market. For most of the 20th century, Kodak had maintained a dominant
27 position in the photographic film market; nevertheless, its slow transition from the traditional
28 film photography to digital photography in 1990s eventually caused the demise. Similarly
29 Polaroid, the instant film manufacturing champion, experienced the soreness and ceased its
30 production of instant film products in 2008. Business environment nowadays becomes
31 increasingly competitive. Firms in this relentlessly competitive environment, no matter whether
32 they like or not, have to continuously renew, reconfigure, and recreate their capabilities to tackle
33 intense competition and remarkable market changes. This business caliber is coined by Teece et
34 al. (1997) as dynamic capabilities.
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50 Since the initiation of the concept, research interest in dynamic capabilities has remained
51 at a high level (Easterby-Smith et al., 2009). Nevertheless, research in this field is primarily
52 related to non-family businesses, whereas studies devoted to the investigation of dynamic
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3 capabilities of family firms are rare (Chirico and Nordqvist, 2010; Chirico and Salvato, 2008),
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5 despite the fact that family businesses represent the most common organisational form across
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7 economies (Konig et al., 2013). This results in a significant gap, causing difficulties in
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9 understanding how a changing environment shapes family firms' capabilities and how family
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11 businesses survive in this dynamic environment. In the family business literature, some
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13 researchers hold the view that family firms have a unique setting, which enables them to
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15 continuously reconfigure their capabilities and adapt strategies to achieve positive outcomes in
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17 the changing environment (Aldrich and Cliff, 2003; Zahra et al., 2004; Chirico and Bau, 2014;
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19 Wang and Poutziouris, 2010). Others claim that family firms are conservative and inward-
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21 looking (Aronoff and Ward, 1997). They often rely on path-dependent abilities (Chirico and
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23 Salvato, 2008), and are reluctant to adapt to the changing environment. In fact, research in the
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25 family business capability domain primarily focuses on internal factors, aiming to unravel the
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27 influence of family and other family-based dynamics (Zahra et al., 2007; Chirico and Nordqvist,
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29 2010; Hoffman et al., 2006); little research so far has been implemented to investigate the impact
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31 of external environment on family firms.
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39 Family businesses, as a group, differ from non-family firms (Sirmon and Hitt, 2003;
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41 Tagiuri and Davis, 1996). Sundaramurthy (2008) argued that the reason why family businesses
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43 can exist as a unique business form for centuries is not because of any idiosyncratic role this type
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45 of businesses can play in the economy, but due to the high level of trust in the firms. Trust is a
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47 critical characteristic of family businesses (Corbetta and Salvato, 2004; Sundaramurthy, 2008;
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49 Eddleston et al., 2010). Nevertheless, in spite of the crucial role trust plays in family firms, trust
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51 has not been well integrated into the mainstream family business research (Eddleston et al.,
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53 2010). Recent studies touch upon trust in family businesses, examining the role of trust in the
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3 cooperative relations between family businesses (Hadjielias and Poutziouris, 2015), the impact
4 of trust on family firms' entrepreneurial development (Shi et al., 2015), and the evolution of trust
5 in family businesses (Sundaramurthy, 2008), to list a few. Yet, the role of trust in nurturing
6 family businesses' dynamic capabilities has never been examined. Drawing upon the stewardship
7 perspective, the author aims to fill in this gap via the current paper. Therefore in general the
8 paper has twofold research objectives: a) to explore the impact of environmental dynamism on
9 dynamic capabilities of family firms; and b) to examine the role of trust in influencing the
10 environmental dynamism-dynamic capabilities nexus.
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22 The current study contributes to the literature of family firms and dynamic capabilities in
23 three aspects. Firstly, the empirical results of the study show that environmental dynamism
24 shapes dynamic capabilities of family businesses. This finding extrapolates Teece's (2007)
25 conclusion, that environmental dynamism is an important driving force of dynamic capabilities,
26 to the family business territory. Secondly, the paper examines the impact of environmental
27 dynamism on dynamic capabilities of family businesses and the role trust plays in this process. A
28 model of environmental dynamism, trust, and dynamic capabilities of family firms is
29 conceptualised based on the extant literature and examined via a quantitative survey. This
30 presents a new perspective on antecedents and moderator of dynamic capabilities of family
31 firms. Thirdly, guided by the stewardship theory, the paper recognises trust as a moderator,
32 moderating the relationship between environmental dynamism and dynamic capabilities. This
33 has never been articulated in the literature, though research on family-based asset specificity
34 attracts ascending attention from the family business research community (Gedajlovic and
35 Caney, 2010). The study therefore offers a perspective that helps appreciate the environment-
36 business relationship in the unique family business contexts. Given the identified distinctive role
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3 trust plays, the results also contribute to the broader debate as to why some family firms may
4 survive and prosper in the dynamic environment whereas others may not.
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8 The remainder of this article includes four sections. In the theoretical background section,
9 the literature in relation to dynamic capabilities, environmental dynamism, and trust is reviewed
10 to form the foundation of the study. On this basis, hypotheses are postulated. The subsequent
11 research methodology section describes the sampling method and data collection process.
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13 Research results arising from regression analysis are presented and this is followed by a
14 discussion of contributions of the study, managerial implications, limitations of the research, and
15 future directions.
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24 25 26 27 **Dynamic capabilities and their compositions**

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29 With the emergence of new information technologies and the accelerated globalisation, market
30 competition becomes intensified. In the competitive market, where the competitive territory is
31 shifting, managers cannot expect to develop long term solutions or routines for business
32 operations, but to consider continuously reconfiguring their resources and updating their
33 capabilities to address changes in the environment (Zahra et al., 2006). Researchers recognise
34 that the capabilities required to tackle changes and achieve competitive advantages in a turbulent
35 market are different from the notions such as distinctive competence (Learned et al., 1969),
36 combinative capability (Kogut and Zander, 1992), and core competence (Prahalad and Hamel,
37 1990). In their seminal work, Teece et al. (1997) coined this as dynamic capability.
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51 Despite the intense interest in dynamic capabilities, there is no universally accepted
52 definition (Easterby-Smith et al., 2009). Teece (2007) decomposed dynamic capabilities into
53 three elements: “the capacity a) to sense and shape opportunities and threats, b) to seize
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3 opportunities, and c) to maintain competitiveness through enhancing, combining, protecting, and,
4 when necessary, reconfiguring the business enterprise's intangible and tangible assets" (p.1319).
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6 Wang and Ahmed (2007) later on claimed that dynamic capabilities encapsulate three elements,
7 namely absorptive capability, adaptive capability, and innovative capability. Absorptive
8 capability reflects "the ability of a firm to recognise the value of new, external information,
9 assimilate it, and apply it to commercial ends... the ability to evaluate and utilize outside
10 knowledge is largely a function of the level of prior knowledge" (Cohen and Levinthal, 1990,
11 p.128). Adaptive capability refers to a firm's ability to recognise emerging market opportunities
12 (Chakravarthy, 1982) and to align firm resources and routines to the changing demand of the
13 external market (Alvarez and Merino 2003). Innovative capability represents a firm's
14 competence in engaging in new ideas, novel designs, original technologies, and creative
15 processes (Lumpkin and Dess, 1996). The three capabilities described in Wang and Ahmed
16 (2007) are conceptually distinct and each has an unambiguous focus, consequently this
17 decomposition of dynamic capabilities is adopted by the current paper.
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39 **Stewardship perspective and trust**

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41 Throughout history, family businesses have been a dominant form of enterprises in economies
42 around the world. Family businesses, compared with non-family firms, present distinctive
43 characteristics. These features are highlighted by Le Breton-Miller and Miller (2009) and Le
44 Breton-Miller et al. (2011) within the stewardship and agency perspectives. The stewardship
45 perspective holds that individuals in a family firm behave as stewards and treat the firm "as a
46 means to benefit all the stakeholders" (Chirico and Bau, 2014, p. 211). They serve the business
47 and devote effort to the collective good rather than maximizing their own utilities (Davis et al.,
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3 2010; De Massis et al., 2015). On the other hand, agency theorists claim that individuals often are
4 self-interested and are likely to consider the business as a vehicle to pursue their own benefits (Le
5 Breton-Miller and Miller, 2009). In the current study, a principal purpose is to investigate trust
6 and the impact of trust on dynamic capabilities. In this context, stewardship theory becomes an
7 ideal theoretical framework and is therefore adopted by the current study, on account of that trust
8 is concerned with an individual's willingness to be vulnerable and personal sacrifice, while these
9 characteristics tally with stewardship, a notion defined by Le Breton-Miller et al. (2011) as
10 "human caring, generosity, loyalty, and responsible devotion, usually to a social group or
11 institution" (p.705). Herein, the concepts of stewardship and trust are intertwined, in that,
12 stewardship behaviour such as commitment and devotion to an organisation results in trust
13 between individuals, whereas trust further fosters stewardship and enables congregation of
14 individual momentum. When individuals trust each other, they are more likely to subjugate
15 personal goals, behave as stewards of the business, and align their personal motives with
16 organisational objectives (Davis et al., 1997; De Massis et al., 2015; Hadjielias and Poutziouris,
17 2015). Davis et al. (1997) stated that a stewardship orientation is composed of three dimensions,
18 namely autonomous motivation, collective orientation, and high-trust climate, where trust is one
19 of the three key dimensions. De Massis et al. (2015) further showed the connection among the
20 three dimensions, that is, when staff members in a firm are autonomously motivated and
21 collectivistic, they are likely to trust each other. In essence, family businesses pay attention to the
22 longevity of the firm and are interested in trans-generational succession (Miller and Le Breton-
23 Miller, 2005). Their executives would like to see business development, parallel to the family
24 evolution. Stewardship as a result is often encouraged.
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Researchers generally agree that trust is a psychological state with features such as positive expectations and suspension of uncertainty during a period where individuals recognise their vulnerability (DeJong and Elfring, 2010). Rousseau et al. (1998) defined trust as “a psychological state comprising the willingness to be vulnerable under conditions of risk and uncertainty” (p.395). This definition regards trust as an individual-level concept which is in line with the focal point of the current study, hence it is adopted by the paper, though trust has also been viewed as a team-level (Langfred, 2004) or organisational-level concept (Pittino and Visintin, 2011). Steier (2001) indicated that family businesses are unique business organisations where, because of the added family dimension, transactions are not purely based on economic considerations. In these firms, key staff members are often connected through blood relationship or marriage and they often serve as stewards to the business. The stewardship viewpoint, kinships and history of interactions within the family (Corbetta and Salvato, 2004; Carney, 2005) usually kindle a high quality of interpersonal trust within the business (Davis et al., 2010). This trust can form the foundation for cooperation and proffer family firms “a key source of competitive advantage” (Steier, 2001, p.354). Researchers observe that family businesses, compared to their non-family counterparts, often enjoy stronger interpersonal bonds (Corbetta and Salvato, 2004; Chrisman et al., 2007), incomparable employee loyalty, sustainable commitment (Tagiuri and Davis, 1996) and advantaged transaction costs (Aronoff and Ward, 1995).

The moderating effect of trust on the environmental dynamism-absorptive capability relationship

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3 Environmental dynamism is a notion, concerning uncertainty, complexity and unpredictable
4 changes in the environment where businesses are involved (Chirico and Bau, 2014). When the
5 concept of dynamic capability was originated, environmental dynamism has been conceptualised
6 as a factor to be able to influence the development and evolution of dynamic capabilities of a
7 firm (Wang and Ahmed, 2007). In a low dynamic market, changes occur at a foreseeable rate
8 and in a predictable direction. The industry structure is relatively stable, market boundary
9 reasonably clear, and key players identifiable. Family businesses are therefore more likely to rely
10 on existing knowledge and expertise to manoeuvre. Although new technology, new business
11 structure and new pattern of operations occasionally emerge in the market, owner-
12 managers/CEOs often are able to use their tacit knowledge and market experiences to analyse
13 and make decisions (Chirico and Salvato, 2008). In a high dynamic market, on the other hand,
14 changes take place in a frequent, random, and turbulent pattern. Family businesses cannot count
15 on their existing knowledge and expertise to operate, but absorb new knowledge continuously,
16 since reliance on past experiences or existing knowledge often leads to obsolescence (Zahra and
17 George, 2002), mental rigidity (Konig et al., 2013), and barriers against long-term business
18 development (Miller and Le Breton-Miller, 2005).

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41 Stewardship philosophy often motivates family executives to build a collective culture
42 where all staff members are willing to contribute to business development. In addition,
43 stewardship often encourages business leaders to devote effort to constructing a team of
44 trustworthy, motivated, as well as competent employees to serve the business (Miller et al.,
45 2008). In a turbulent environment, family businesses need to actively engage in information
46 absorption, inspection and assimilation to maintain alignment with the high-velocity market. A
47 high level of interpersonal trust and mutual understanding under this circumstance may enable
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3 staff members to stand closer to each other and share their social networks (Salvato and Melin,
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5 2008; Davis et al., 2010). Family executives are then easier to acquire market information from a
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7 variety of directions. Interpersonal trust further helps information inspection and assimilation
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9 (Chirico, 2008). Individuals in a trustworthy environment are more likely to evaluate information
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11 garnered by others in an objective manner, rather than worrying about potential interpersonal
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13 conflicts or intension (Tsai and Ghoshal, 1998). Proper information evaluation ensures the quality
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15 provision of market information; as a consequence managers are apt to make efficient decisions
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17 that benefit business operations (Chirico and Salvato, 2008).
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22 Notwithstanding the positive impact of trust, the literature also reveals the dark side of
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24 trust. Sitkin and Stickel (1996) pointed out that family members may develop identification-based
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26 blind trust because of the repeated interactions. Inspection on market or technological
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28 information brought in by family members therefore may be neglected. Strategic decisions on
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30 this basis may then be misleading. In the literature researchers also highlight that family
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32 businesses can be fertile grounds for distrust due to family conflicts (Kaye, 1991), or sibling
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34 rivalry (Friedman, 1991). Silos may exist, where communication channels are blocked. In a
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36 hyper-competitive environment where extensive information absorption, inspection, and
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38 assimilation are expected, silos and blocked communication may cause operational dysfunctions.
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43 On the basis of the above discussion about the impact of trust, it is postulated:
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46 H1a: Environmental dynamism has a positive impact on family businesses' absorptive capability.
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48 H1b: Trust positively moderates the environmental dynamism-absorptive capability relationship.
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50 That is, the higher level of trust, the stronger the positive relationship between environmental
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52 dynamism and family businesses' absorptive capability.
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3 *The moderating effect of trust on the environmental dynamism-adaptive capability relationship*
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5 Family businesses in the low dynamic market are inclined to develop detailed routines to
6 operationalise, where existing tacit knowledge is often codified. These routines can be effective
7 because actions or even sequence of these actions are defined, leaving little space for ambiguity.
8 Businesses in the high dynamic environment, however, are likely to sketch simple operation
9 routines (Eisenhardt and Martin, 2000). The simplified routines allow flexibility for strategic
10 adaptations, while on the other hand show general operational rules, which enable family firms
11 to take confident actions. In fact, family businesses are often path-dependent and family
12 members are likely to stick to “firm-specific tacit knowledge” (Chirico and Salvato, 2008,
13 p.172). This operational pattern may work in the low-velocity market, but in the hyper-
14 competitive environment, family firms have to make swift adaptations from time to time. They
15 ought to keep close observation of actions of their competitors, and cope with uncertainties such
16 as threats from competitors or dysfunctional suppliers (Lumpkin et al., 2010). Lumpkin et al.
17 (2010) and Chirico and Bau (2014) found that family executives in the dynamic changing
18 environment are more likely to exhibit adaptive competence, and behave entrepreneurially to
19 sustain their competitiveness.
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41 In a turbulent market, owing to the change-related uncertainties and ambiguity, staff
42 members in family businesses are not clear what actions they should take. Stewardship and trust-
43 based collaboration in this context often become the principal rule of guidance (Russell and
44 Russell, 1992). Lansberg (1999) identified that trust-based norms such as teamwork, egalitarian
45 and collaboration are often pervasive in family businesses. These norms may ensure employees
46 take collective rather than individual actions under the radically changing circumstance. Trust
47 may further contribute to the construction of governance mechanisms (Puranam and Vanneste,
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3 2009). For instance, trust helps businesses develop transparent communication rules and policies.
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5 This is particularly useful for those businesses in the adaptation process, since the transparent
6 system facilitates communication, minimises opportunism (Eddleston et al., 2010), and reduces
7 interpersonal conflicts that are likely to occur during adaptations. Mayer and Gavin (2005)
8 recognized that when employees trust their leaders, they would commit themselves to value-
9 adding activities and corporate citizenship behaviour. They may subjugate their personal
10 interests, and perform for the collective good. In the context of strategic adaptation, employees'
11 stewardship, citizenship behavior, and subjugation of personal interests are vital, because they
12 allow businesses to channel individual momentum towards the same direction, rather than dealing
13 with divergent or even opposing actions. Under this circumstance, outcomes of strategic
14 adaptations are more likely to be positive.
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29 Axiomatically, not all family firms can enjoy the trustworthy interpersonal relationships
30 and some businesses even suffer from antagonism due to family conflicts, sibling rivalry, or
31 succession anxiety (Gordon and Nicholson, 2008). A low level of interpersonal trust may lead to
32 uncooperative behavior such as hostility or shirking (Chua et al., 2009). This causes difficulties
33 in adaptation, hindering businesses from aligning with the market. On the basis of the above
34 discussion, it is posited:
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43 H2a: Environmental dynamism has a positive impact on family businesses' adaptive capability.

44 H2b: Trust positively moderates the environmental dynamism-adaptive capability relationship.

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46 That is, the higher level of trust, the stronger the positive relationship between environmental
47 dynamism and family businesses' adaptive capability.
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3 *The moderating effect of trust on the environmental dynamism-innovative capability*
4 *relationship*
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8 The low dynamic environment “does not force” family businesses to perform better than their
9 competitors (Chirico and Bau, 2014). These firms are not under the pressure as urgently as their
10 counterparts in the high dynamic markets to initiate new products/services or new processes.
11 They are more likely to devote to maintaining their market positions and shun away from risky
12 activities (Casillas et al., 2010). Owner-managers under this circumstance do not overly concern
13 resource shortage (Bertrand and Schoar, 2006) or family relationship fluctuation (Kellermans
14 and Eddleston, 2004) in association with innovation. The high dynamic market on the contrary
15 often catalyses innovation. In the dynamic environment, top managers are apt to explore
16 opportunities vigorously and behave entrepreneurially (Lumpkin et al., 2010). In fact,
17 environmental dynamism often arouses family executives’ interest in innovation, since radical
18 changes in the market shorten the product life cycle (Kessler and Chakrabarti, 1996), and do not
19 allow family businesses to dwell on any specific products. Tripsas (1997), in a study of three
20 leading companies in the typesetter industry in the US which confronted radical, competence-
21 destroying technological changes over a history of 100 years, indicated technological innovation
22 is often a consequence of environmental dynamism.
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43 In the turbulent environment, “when rivalry is fierce, companies must innovate in both
44 products and processes....and examine how they will differentiate themselves from competitors”
45 (Zahra, 1993, p. 324). Chirico and Salvato (2008) claimed that knowledge and initiatives of
46 innovation usually reside within individuals. Nonaka and Takeuchi (1995) further indicated that
47 new products/processes often emerge “from the constant interaction of a multidisciplinary team”
48 (p.242), that is, innovation is an outcome of knowledge integration from individuals. This result
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3 shows the importance of trust and stewardship in the innovation process. Indeed, when businesses
4 face a high level of uncertainty, stewardship and trust-based collaboration often become the
5 principal rule of operations (Russell and Russell, 1992). When a high level interpersonal trust is
6 available, knowledge transfer and sharing among individuals become possible (Akgun et al.,
7 2005; De Massis et al., 2016). Family business managers are then able to reconfigure individuals'
8 specialized knowledge (Chirico and Salvato, 2008) and activate innovation. Researchers further
9 pointed out that trust can create an affable working environment (Davis et al., 1997; De Massis et
10 al. 2015), offer a sense of psychological safety in the innovation process (West, 1990), as well as
11 facilitate trials of new products/processes (Zheng, 2010).
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24 Family executives often form particularistic groups for decision-making and surround
25 them with "thick social wall" (Carney, 2005, p.520). Besieged by this barrier, owner-managers
26 may not be fully aware what resources to explore to initiate innovation, or what actions to take to
27 engage in new product/process development. Further, a low level of interpersonal trust on
28 individuals outside the "social wall" may result in superfluous disputes, uncomfortable
29 negotiations, and high transaction costs (De Long and Fahey, 2000), which disadvantage family
30 businesses in innovation. On the basis of the above debates about trust, it is postulated:
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40 H3a: Environmental dynamism has a positive impact on family businesses' innovative
41 capability.
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45 H3b: Trust positively moderates the environmental dynamism-innovative capability relationship.
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47 That is, the higher level of trust, the stronger the positive relationship between environmental
48 dynamism and family businesses' innovative capability.
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Research methodology

The principal purpose of this study is to investigate the interrelationships among environmental dynamism, trust and dynamic capabilities. To empirically examine the posited relationships, a quantitative questionnaire survey was implemented so that if meaningful research results are generated, they can be generalised to a wider research context.

Sample and data

The sample businesses were selected from the Hemscott Company Guru database, which offers valuable integrated information of businesses in the UK. Hemscott contains information of 300,000 British limited companies. For each company, not only does Hemscott possess financial information, it also embraces information on board directors as well. To ensure all the businesses participating in the research are family businesses, the study only sampled those businesses that had two or more managers sharing the same surname (this type of firms was assumed to be family businesses; cf. Sanchez-Bueno and Usero (2014) and Basco and Rodriguez (2011)). Then, in the questionnaire, a question “would you describe your company as a family business” was presented, followed by a definition of family business based on Leach et al., (1990) (*i.e. a business in which more than 50 per cent of the voting shares are controlled by one family, and/or a single family group effectively controls the business, and/or a significant proportion of the senior management is members from the same family*). Businesses, by referring to this definition, could judge whether they were family firms, and if not, they were not required to respond to the study. Other sampling criteria utilised were that the businesses should be private, small and medium sized (fewer than 250 employees), as well as independent. In the literature, there has been a debate in relation to the cut-off point of 50 percent. Astrachan and Kolenko (1994) argued

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3 that in those listed businesses the cut-off point can be as low as 10 percent. The current study
4 targeted primarily at small and medium sized private family firms, not listed companies, hence
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6 Leach et al.'s (1990) definition was adopted. Via a random sampling approach, finally a group of
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8 996 businesses was chosen. The questionnaires with cover letters were posted to
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10 executives/managing directors of these businesses in Apr. 2012. Four weeks after the initial
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12 mailing, a second wave was sent to the non-respondents. From the two waves of posts, a total of
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14 161 responses were received, leading to a response rate of 16.2 percent. Out of the 161
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16 responses, 137 (13.8 percent) were useful and the rest 24 (2.4 percent) responses were either
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18 uncompleted or blank. A number of apologies were received, attributing the reason of non-
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20 response to the company's data protection policy. Some posts were returned blank due to wrong
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22 addresses or business liquidation.
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29 Table 1 presents the profile of the sample companies. In terms of sectoral distribution, the
30
31 companies involved are more prolific in traditional manufacturing, retailing and wholesaling,
32
33 construction, and professional service sectors, and less prolific in transport and distribution, and
34
35 agriculture domains. 53.1 percent of the responding companies are relatively young and do not
36
37 have a long history. With respect to business size, there is a fairly even distribution across
38
39 different size bands, with a skew towards medium sized (33.6 percent). This shows the feature of
40
41 the Hemscott database where incorporated firms are more likely to be established larger firms.
42
43 Finally in terms of generation control agenda, majority of the responding businesses are
44
45 governed either entirely by the first generation (44.5 percent) or jointly by the first and second
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47 generations (22.6 percent). Only 32.9 percent of the firms are directed completely by family
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49 members beyond the founder generation.
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55 **Insert Table 1 here**
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3 To assess the possible non-response bias, checks for differences in demographic
4 characteristics, such as business size, business age and business sector, were conducted. The
5 results indicate no significant differences between early and late respondents at the 0.05 level
6 (Armstrong and Overton, 1977).
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14 *Variables and constructs*

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17 The dependent variables in this study were captured by three constructs, respectively absorptive,
18 adaptive and innovative capability. The development of the dynamic capability constructs was
19 based on prior studies. The absorptive capability construct was derived from Lichtenthaler
20 (2009), which had scales of “recognise” and “assimilate”. Both scales were deemed as relevant
21 to absorptive capability due to the definition adopted by the current study. Five items were
22 selected based on their appropriateness and modified within the family business context (see
23 appendix 1). For each item, a five-point Likert scale was used, enabling respondents to indicate
24 the extent to which their businesses agree to these items. The adaptive capability construct was
25 developed based on Ma et al. (2009) and Zhou and Li (2010). Both studies were implemented in
26 the transitional economy context and the constructs developed featured idiosyncratic changes in
27 the institutional environment. As such, a modified five-item scale was created, shifting the focus
28 towards changes of product, process and market. The development of the innovative capability
29 construct referred to Hurley and Hult (1998) and Calantonea et al. (2002). Hurley and Hult’s
30 (1998) “innovativeness” construct anchored though on organisational culture rather than a firm’s
31 capability. Calantonea et al.’s (2002) measurement was more relevant to the current study,
32 assessing the business capability in attempting new business ideas, developing new products, and
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3 updating internal processes. A revised version of Calantonea et al.'s (2002) scale was developed
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5 with seven items.
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8 The independent variable was environmental dynamism. The construct in the current
9
10 study was developed based on Westhead et al. (2004). Their study had a focal point on exporting
11
12 and internationalisation where the environmental turbulence variable was partly to measure the
13
14 commotion experienced as a result of different political governance, environmental hostility, or
15
16 technological uncertainty. This was inconsistent with the current study, hence items in relation to
17
18 these elements were removed, whilst statements relevant to market competition, technological
19
20 evolution, and customers demand were retained and contextualised.
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25 The construct of the moderating variable trust was established on the basis of Robinson
26
27 (1996), Nahapiet and Ghoshal (1998), and Pearson et al. (2008). Robinson's (1996) study
28
29 investigated the relationship between psychological contract breach and employees' trust in their
30
31 employers. The trust construct incorporated key elements such as honesty, integrity, individual's
32
33 motive and intention, yet it emphasised on the dyadic employer-employee relationship. With
34
35 reference to Nahapiet and Ghoshal (1998) and Pearson et al. (2008), a six-item construct in spirit
36
37 of Robinson's (1996) was developed, but reflected multidimensional relationships among staff
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39 members in family businesses.
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44 This study controlled four demographic variables, i.e. business size, age, sector, and
45
46 generation in control. For instance, business size may have an impact on adaptive capability. A
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48 larger firm often constructs bureaucratic operational systems due to its functional complicity, and
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50 this may become barriers against strategic manoeuvre (Sathe, 2003). In this paper for the
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52 operation purpose, firm size was measured by the total number of full-time employees. Further,
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54 mature firms are more likely to own affluent network capital, enabling them to garner
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3 commercial and technological information and show superior absorptive capability. In the
4
5 current paper, business age was measured by the number of years a business had been in
6
7 existence. In addition, business sector may have an association with a firm's innovative
8
9 capability. For instance, innovative activities often occur in manufacturing sector, but rarely in
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11 agricultural sector. Dummy variables were used in the study to represent sectors. For example, 1
12
13 and 0 were used to represent manufacturing and non-manufacturing sector respectively and the
14
15 same coding was applied to other industries. Finally, generation in control may have an impact
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17 on dynamic capabilities of family firms. Founders of family businesses often possess special
18
19 expertise and techniques, which enable business establishment and early development. Family
20
21 firms with descendants at the helm comparatively have more established infrastructures
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23 (McConaughy and Phillips, 1999). They are consequently legitimate to own more competitive
24
25 dynamic capabilities, and their business functions are more comprehensive. In the current paper,
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27 generation in control was measured by an ordinal scale, where 1-6 represented the businesses
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29 governed by first, first and second, second, second and third, third, and third plus generations.
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36 **Insert Table 2 here**
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41 *Exploratory and confirmatory factor analyses*

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43 In this study, an exploratory factor analysis (EFA) was initially utilised to examine the structure
44
45 of the constructs employed in the research. The KMO value of 0.769 exceeded the recommended
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47 0.6 level, while the result of Bartlett's Test of Sphericity was significant at the 0.001 level,
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49 indicating the factor analysis used was appropriate (Hair et al., 2010). The results did show that
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51 five factors arose from the EFA, standing for absorptive capability, adaptive capability,
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53 innovative capability, environmental dynamism, and trust respectively. The five factors
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3 explained a total of 53.598% of the variance. Appendix 1 shows the composition of the
4 constructs and loadings of items on constructs. Only those items which had a loading of .3 or
5 above on a factor, and the difference between the current loading and other cross-loadings more
6 than .3, were retained in a factor (Howell, Shea and Higgins, 2005). Further, a confirmatory
7 factor analysis (CFA) was applied to validate the operationalisation of the five constructs. This
8 was performed based on AMOS SPSS (Version 20). The fit indices indicated that the model
9 provided an acceptable fit for the data: A Chi-square statistic of 555.539 ($df = 419$, $\chi^2 / df =$
10 1.326 , $p = .000$) showed a good fit, as the normed Chi-square was less than two times of the
11 degrees of freedom (Kline, 2004). Good fit was also demonstrated by a RMSEA value of 0.049
12 (with below 0.080 normally considered as acceptable fit and less than 0.050 as good fit) and a
13 CFI of .911 (Hair et al., 2010). Other fit indices, such as GFI and NFI, were slightly below the
14 value of 0.900, which is usually expected for good model fit. This might be due to the sample
15 size of 137, which was lower than normally used for CFA (Hair et al., 2010).
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36 *Reliability and validity*

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38 This study utilised Cronbach alpha to evaluate variable reliability. As Appendix 1 showed that
39 the Cronbach alpha scores of the variables were all above the threshold 0.7, suggesting that the
40 constructs were reliable (Hair et al., 2010). The high scores also implied the internal consistency
41 of respective items in each construct. The constructs in this study were further believed to
42 possess content validity because of the twofold reasons: (1) the items incorporated in the
43 dynamic capability, environmental dynamism, and trust constructs were developed based on
44 Lichtenthaler (2009), Ma et al. (2009), Zhou and Li (2010), Hurley and Hult (1998), Calantonea
45 et al. (2002), Westhead et al. (2004), Robinson (1996), Nahapiet and Ghoshal (1998), and
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3 Pearson et al. (2008); (2) the items encapsulated were filtered through extensive discussions with
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5 researchers in the domain. For the subsequent regression analysis, the mean values of items in a
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7 construct were used to represent the five constructs, i.e. absorptive, adaptive, and innovative
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9 capability, environmental dynamism, and trust.
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12 13 14 15 *Endogeneity*

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17 Trust may influence, as hypothesised in the study, dynamic capabilities via the moderating
18
19 effect, but also a reverse logic is possible: dynamic capabilities may have impacts on trust.
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21 Simultaneous causality is a source of endogeneity that can lead to biased and inconsistent results.
22
23 To check the possible endogeneity issue, the Hausman test was employed (Chua et al., 2011;
24
25 Poutziouris et al., 2015). The instrumental variable selected was owner-manager's age, since this
26
27 variable was identified to be correlated with trust but not with dynamic capabilities. The
28
29 residuals of the reduced-form regression against the suspected endogenous variable were
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31 extracted and captured in a residual variable. Then the main regression including the residual
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33 variable was run, but this variable did not show any significant result. This suggests that
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35 endogeneity does not pose a serious problem.
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44 *Common method variance assessment*

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46 Because the data for this study were collected in a cross-sectional manner and via self-
47
48 administered questionnaire survey, the common method bias resulting from multiple sources
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50 such as consistency and social desirability might exist (Podsakoff et al., 2003). This bias might
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52 inflate or deflate relationships among variables, leading to flawed research findings (Podsakoff et
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54 al., 2012).
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3 To evaluate the severity of common method bias, this study followed the procedure
4 recommended by Liang et al. (2007). First of all, the Harman one-factor test was conducted
5 (Podsakoff and Organ, 1986) with five variables including absorptive capability, adaptive
6 capability, innovative capability, environmental dynamism, and trust. Unrotated factor analysis
7 showed no single factor arose from the factor analysis and no dominant factor emerged to
8 explain most of the variance. This implied that the common method bias might not be a
9 significant issue in the current study. Further, a common method factor, whose indicators
10 consisted of all the principal construct indicators, was added. Calculation was then implemented
11 to explore how much of each indicator's variance was explained by the principal construct and
12 the method factor. Table 3 showed that on average each indicator's variance was explained
13 substantially by the principal constructs at 51.8 percent, and trivially by the method factor at 1.3
14 percent. The ratio of substantive variance to method variance was about 40:1. In addition, most
15 of method factor loadings were insignificant, whilst the substantive factor loadings were all
16 significant at the 0.01 level. It was legitimate therefore to claim that the common method bias
17 was unlikely to be a serious issue in the current study.

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Insert Table 3 here

Descriptive statistics and correlations for the variables

Table 4 showed the means and standard deviations of dependant, independent, moderating and control variables. The correlations among all these variables were presented. Relatively low inter-correlations among variables suggested that multicollinearity should not be a major problem. Further the low VIF values in the regression analyses (the maximum VIF value in all regression analyses is 1.650) endorsed this conclusion.

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Insert Tables 4 and 5 here

Results

To test hypotheses postulated in this paper, i.e. H1a-H3b, regression analyses were utilised (see table 5). In model 1, control variables, i.e. business size, age, sector, and generation in control were included to regress against the dependent variable; in model 2, environmental dynamism was added as the independent variable; in model 3, trust and the interacted variable were further added (when interaction was performed, variables were mean-centred to avoid multicollinearity problem). For absorptive capability, the results showed that environmental dynamism was not significantly related to the dependent variable. Further when the moderating effect was concerned, only trust was identified to have a significant impact on absorptive capability. Therefore hypotheses H1a and H1b were rejected.

For adaptive capability, the regression analysis results in model 2 indicated that environmental dynamism did have significant and positive impact on the dependent variable. Hence hypothesis H2a was supported. This finding corroborates the perspectives of Lumpkin et al. (2010) and Chirico and Bau (2014). In a turbulent market, changes occur frequently and in a random pattern. Family firms have to continuously assess their strategic positions, as well as keep close observation on uncertainties such as threats from competitors or dysfunctional suppliers. They have to be alerted and be prepared to make adjustments on a regular basis. Moreover, trust was observed to be able to moderate the environment dynamism-adaptive capability relationship (model 3). Hence hypothesis H2b was supported (Figure 1 shows the moderating effect). The finding in essence is in line with Sundaramurphy (2008) and Lansberg

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2
3 (1999). A high level of interpersonal trust may demonstrate distinctive value in a turbulent
4 environment in easing the communication between the top management and subordinates,
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6 facilitating accessing to capital market, distribution channels, and labour force, and encouraging
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8 employees to collaborate and contribute to the firm while subjugating their personal interests
9
10 during adaptations.
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15 Finally for innovative capability, the regression results in model 2 confirmed that
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17 environmental dynamism significantly influenced businesses' innovative capability. Therefore
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19 hypothesis H3a was accepted. This endorses the findings of Lumpkin et al. (2010) and Tripsas
20
21 (1997). In a high velocity market, new products/services emerge rapidly and technology updates
22
23 are on the fast track. To maintain legitimacy, family businesses in this environment have to
24
25 demonstrate superior innovative capability; otherwise they can be wiped out by the market
26
27 competition. Interestingly, trust was recognised to be able to moderate the environmental
28
29 dynamism-innovative capability relationship (model 3). Figure 2 was further drawn to illustrate
30
31 the moderating effect, which supports the hypothesis H3b. This result is consistent with the
32
33 perspectives of Ling and Kellermanns (2010), Chirico and Bau (2014), and Michie et al. (2006).
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35 In a turbulent environment, when mutual trust is available in the firm, family executives are
36
37 more likely to share their knowledge and expertise to explore creative initiatives (Chirico and
38
39 Salvato, 2008); staff members are more willing to engage with the firm (Hoffman et al. 2006);
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41 innovative efforts are more likely to be intensive and outcomes are more positive (Ling and
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43 Kellermanns, 2010).
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51 **Insert Figures 1 and 2 here**

52 53 **Discussion**

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3 The current study builds on the work of prominent scholars such as Chirico and Nordqvist
4 (2010) and Chirico and Bau (2014) to seek insights into dynamic capabilities of family
5 businesses. In the literature of dynamic capabilities, extant knowledge is primarily related to
6 non-family businesses, whereas family firms to a large extent are overlooked, though family
7 controlled businesses have been the most common economic organisations across different
8 economies. The current study examines whether the external environment influences dynamic
9 capabilities of family businesses in a way similar to non-family businesses (Li and Liu, 2014).
10 Research results arising from the study confirm that environmental dynamism does shape
11 dynamic capabilities of family firms. Therefore, it may be safe to claim that family firms,
12 compared with their non-family counterparts, are not idiosyncratic and cannot avoid the
13 moulding of environmental forces.
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29 Research in the family business capability domain often maintains an inward focus,
30 primarily unfolding the influence of family and other family-based dynamics (Zahra et al., 2007;
31 Chirico and Nordqvist, 2010; Hoffman et al., 2006). The current study delves beyond this focus
32 and intends to shed light on the impact of external environmental dynamism on dynamic
33 capabilities of family businesses. Results offer evidence that environmental dynamism directly
34 influences dynamic capabilities of family firms, in particular adaptive and innovative capabilities
35 respectively. This is appealing, in that, it may shift the traditional foci of family business
36 research towards a more balanced locus which takes account of both internal and external
37 dynamics, when business capabilities are concerned.
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50 More importantly, the research delves into a field how family-based asset specificity
51 influences business capabilities (Gedajlovic and Caney, 2010), by building on previous studies
52 that concentrate on the distinctive nature of family businesses such as trust (Sundaramurthy,
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3 2008; Steier, 2001; Eddleston et al., 2010) and stewardship (Davis et al., 2010). Trust is likely to
4 form the foundation for cooperation and enable family firms to achieve competitive advantages
5
6 (Steier, 2001). The finding derived from the current study demonstrates that trust moderates the
7
8 relationships between environmental dynamism and adaptive and innovative capabilities
9
10 respectively. This finding on the one hand is in line with Steier (2001) and Sundramurthy (2008),
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12 and empirically substantiates that trust adds to business operations because of its nature
13
14 conducive to amicable relationship and collaborative spirit (Lansberg, 1999). On the other hand,
15
16 it offers a perspective that trust may create value in a more subtle way in fostering business
17
18 capabilities. Teece (2007) pointed out the positive connection between dynamic capabilities and
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20 a firm's competitive advantages. In this context, the value of interpersonal trust for family
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22 businesses, in particular those involved in the dynamic environment, becomes axiomatic.
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32 *Contributions to literature*

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34 The current study offers contributions to the literature of dynamic capabilities and family firms.
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36 It adds to the literature of dynamic capabilities by examining the impact of environmental
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38 dynamism on dynamic capabilities in the family business context. The study shows that
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40 environmental dynamism directly influences dynamic capabilities of family firms, in particular
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42 adaptive and innovative capabilities respectively. Therefore it extrapolates the claims that have
43
44 been made about non-family businesses (Teece, 2007; Eisenhardt and Martin, 2000) to the
45
46 family business domain. Family firms are conventionally depicted as inward looking,
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48 conservative (Miller and Le Breton-Miller, 2005; Aronoff and Ward, 1997), and resistance to
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50 change (Hall et al., 2001). The current study however suggests no matter whether they are
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3 willing or not, family firms are shaped by the environment, and they have to continuously renew,
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5 reconfigure, and recreate their capabilities to tackle market changes.
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8 The study further adds to the family business literature by examining the impact of trust
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10 on dynamic capabilities of family firms. The research builds upon the stewardship theory, which
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12 holds that individuals in a firm may behave as stewards, and serve the business for the collective
13
14 good rather than individual gains (Davis et al., 2010). Guided by the stewardship perspective,
15
16 staff members are likely to trust each other and show commitment to an organisation. The study
17
18 examines the moderating effect of trust on the relationship between environmental dynamism
19
20 and dynamic capabilities. Based on the research, the nexus among environmental dynamism,
21
22 trust, and dynamic capabilities of family firms is confirmed. This is original that has never been
23
24 articulated in the family business literature, though trust and trust-related topics have recently
25
26 attracted increasing attention (Hadjielias and Poutziouris, 2015; Shi et al., 2015; Eddleston et al.,
27
28 2010; Davis et al., 2010). This may add to the literature by manifesting the impact of internal as
29
30 well as external factors on family firms' capabilities.
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36 The findings of this study also contribute to the broader debate as to why some family
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38 firms may survive and prosper in the dynamic environment whereas others may not. Family
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40 businesses have been playing an important role and making considerable contributions to GDP
41
42 and employment across economies. It is essential to understand how these firms are able to
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44 survive healthily and thrive in the competitive market. Prior studies recognise the salience of
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46 dynamic capabilities in contributing to business survival and development (Ambrosini and
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48 Bowman, 2009). The results from the current study that interpersonal trust plays an important
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50 role in nurturing dynamic capabilities offer a new perspective complementary to the previous
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52 thoughts.
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Implications for practice

The current study has managerial implications. Given business environment is becoming relentlessly competitive, family businesses, though many of which only attempt to maintain their status-quo, have to develop dynamic capabilities to survive. Trust in the study is identified as being conducive to the development of adaptive and innovative capabilities. It is therefore legitimate that owner-managers/CEOs consider nurturing trust and stewardship culture in their firms. A trust fostering and developing charter can be considered addressing the following issues: Why should the family business be committed to trust and stewardship culture construction? What role can family members play in fostering this culture? What function can non-family members exert in developing this culture? How will the family business resolve various trust-related conflicts? How should the business's trust profile be reviewed and evaluated periodically? What schemes should be available to promote trust?

Limitations of the study

The study is an empirical exploration and contains some limitations. Firstly, this study confronts the sample size limitation. Dennis and William (2003) observed the decline of the response rate in small business survey since 1990s. They further indicated that the high response rate is not easy to achieve exclusively via mails, but may occur by using the mixed mail and telephone methodology, or under special circumstances such as government-sponsored projects. Secondly, the study relied on a cross-sectional survey, which captured a static profile of dynamic capabilities, trust and environmental dynamism of family businesses around the recession period. Longitudinal studies may be considered to portray an evolutionary long-term picture and avoid

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3 the short-term effects. Finally, the study was limited to incorporated firms, available from the
4 Hemscott Company Guru database. Non-incorporated companies were pre-exempted.
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6 Conclusions generated from the current study therefore cannot be generalised to those non-
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8 incorporated family firms.
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12 13 14 15 *Directions for future research*

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17 Research on environmental dynamism, trust, and dynamic capabilities is at its infancy stage,
18 although effort has been channelled towards the domain of dynamic capabilities since Teece et
19 al. (1997). Following the current study, some areas of future research can be envisaged. Firstly, it
20 is worthwhile to examine the role of trust at different levels, i.e. individual, intra-firm (especially
21 between family and non-family employees), and inter-firm, in fostering dynamic capabilities.
22 Family businesses are a ripe context of trust, in that, on the one hand families create a long-term
23 horizon for people to interact in the context of the family as a group, as well as individual family
24 members (Goel et al., 2013); on the other hand family businesses are a unique venue where
25 greater latitude of ambiguity and uncertainty is tolerated because of the longevity concern.
26 Detailed analysis of trust at different levels may offer a holistic and insightful understanding of
27 the family-specific asset and its impact on family businesses. Secondly, research into micro-
28 foundations of dynamic capabilities, the notion initiated by Teece (2007) about procedures,
29 organisational structures, and disciplines that unpin the business-level sensing, seizing and
30 reconfiguring capabilities, may have the potential to inform the origins and nature of dynamic
31 capabilities. Further exploration on how micro-foundations interact, within or across categories,
32 may shed light on how heterogeneity of dynamic capabilities arises (Felin et al., 2012). Thirdly,
33 future research may explore how trust facilitates the creation of micro-foundations and catalyses
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3 their functioning. This is an extra inward-moving step towards the heart of family firms that
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5 probes into the nexus between family-specific asset and the foundation of capabilities.
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8 In conclusion, this study provides empirical evidence that environmental dynamism is a
9
10 driving force of family firm's dynamic capabilities. Additionally it confirms that the family-
11
12 specific asset, namely trust, serves as a moderator on this effect. For future endeavour, the author
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14 believes research in this field will benefit from the inclusion of different levels of trust and
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16 micro-foundations of capabilities. Indeed, the whole realm has remarkable space for future
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18 development and warrants substantial effort before one can expect to develop domain-specific
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20 theories.
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Table 1
Profile of the Sample Family Businesses

Demographic Variable	Percentage
<i>Sectoral distribution</i>	
Agriculture	2.9
Manufacturing	27.0
Construction	19.7
Retailing and wholesaling	25.5
Professional service	19.7
Transport and distribution	5.1
<i>Age of business (years)</i>	
0-9	11.7
10-19	23.4
20-29	18.0
30+	46.9
<i>Size of business (number of employees)</i>	
0-9	26.7
10-19	19.8
20-49	19.8
50-249	33.6
<i>Generation in control</i>	
1 st	44.5
1 st +2 nd	22.6
2 nd	11.7
2 nd +3 rd	7.3
3 rd	8.0
3 rd +	5.8

Table 2 Variable description

Variable	Description
<i>Dependent variable</i>	
Absorptive capability	“The ability of a firm to recognise the value of new, external information, assimilate it, and apply it to commercial ends... the ability to evaluate and utilize outside knowledge is largely a function of the level of prior knowledge” (Cohen and Levinthal, 1990, p.128). The variable is measured by a five-item construct.
Adaptive capability	A firm’s ability to recognise emerging market opportunities (Chakravarthy, 1982) and to align firm resources and routines to the changing demand of the external market (Alvarez and Merino 2003). The variable is measured by a five-item construct.
Innovative capability	A firm’s competence in engaging in new ideas, novel designs, original technologies, and creative processes (Lumpkin and Dess, 1996). The variable is measured by a seven-item construct.
<i>Independent variable</i>	
Environmental dynamism	“The amount of uncertainty, complexity, and change emanating from the external environment” (Chirico and Bau, 2014, p.212). The variable is measured by an eight-item construct.
<i>Moderator</i>	
Trust	“A psychological state comprising the willingness to be vulnerable under conditions of risk and uncertainty” (Rousseau et al., 1998, p.395). The variable is measured by a six-item construct.
<i>Control variables</i>	
Business size	The total number of full-time employees
Business age	The number of years a business has been in existence
Generation in control	The variable is measured by an ordinal scale, where 1-6 represent the businesses governed by first, first and second, second, second and third, third, and third plus generations
Agriculture	A binary variable that takes the value of 1 if the firm is in the agricultural industry and 0 otherwise
Manufacturing	A binary variable that takes the value of 1 if the firm is in the manufacturing industry and 0 otherwise
Construction	A binary variable that takes the value of 1 if the firm is in the construction industry and 0 otherwise
Professional service	A binary variable that takes the value of 1 if the firm is in the professional service industry and 0 otherwise
Retailing and wholesaling	A binary variable that takes the value of 1 if the firm is in the retailing and wholesaling industry and 0 otherwise
Transport	A binary variable that takes the value of 1 if the firm is in the transport industry and 0 otherwise

Table 3 Common Method Variance Analysis

Construct	Indicator	Substantive factor (R1)	R ¹²	Method factor (R2)	R ²²
Absorptive capability	ABC1	.720**	.518	-.095	.009
	ABC2	.752**	.566	-.023	.001
	ABC3	.870**	.757	-.097	.009
	ABC4	.785**	.616	.026	.001
	ABC5	.601**	.361	.196*	.038
Adaptive capability	ADC1	.625**	.391	-.132	.017
	ADC2	.855**	.731	-.089	.008
	ADC3	.797**	.635	.035	.001
	ADC4	.686**	.471	.100	.010
	ADC5	.777**	.604	.075	.006
Innovative capability	IC1	.853**	.728	-.071	.005
	IC2	.808**	.653	.014	.000
	IC3	.674**	.454	.087	.008
	IC4	.724**	.524	-.052	.003
	IC5	.785**	.616	-.019	.000
	IC6	.630**	.397	-.114	.013
	IC7	.477**	.228	.187	.035
Environmental dynamism	ENVDY1	.563**	.317	.390**	.152
	ENVDY2	.600**	.360	.039	.002
	ENVDY3	.657**	.432	-.089	.008
	ENVDY4	.754**	.569	-.180*	.032
	ENVDY5	.592**	.350	-.067	.004
	ENVDY6	.798**	.637	-.105	.011
	ENVDY7	.568**	.327	-.045	.002
	ENVDY8	.469**	.220	.029	.001
Trust	TRU1	.673**	.453	.009	.000
	TRU2	.731**	.534	.071	.005
	TRU3	.838**	.702	.082	.007
	TRU4	.758**	.575	-.095	.009
	TRU5	.833**	.694	.027	.001
	TRU6	.791**	.626	-.085	.001
Average		.711**	.518	.000	.013

Note: * $p < .05$, ** $p < .01$

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Table 4
Means, Standard Deviations and Correlations

	Mean	St.Dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1) Absorptive capability	3.006	.822	-													
2) Adaptive capability	3.771	.692	.293**	-												
3) Innovative capability	3.461	.727	.388**	.421**	-											
4) Environmental dynamism	3.103	.611	.078	.222**	.337**	-										
5) Trust	4.316	.641	.064	.255**	.204*	.074	-									
6) Business size	51.210	62.672	.029	.182*	.126	-.113	.000	-								
7) Business age	34.141	25.893	-.028	.065	.092	-.050	.090	.265**	-							
8) Generation in control	2.290	1.563	-.055	.004	-.073	-.049	.106	.163	.578**	-						
9) Agriculture	.030	.169	.105	-.131	-.025	-.012	-.018	-.111	-.126	.079	-					
10) Manufacturing	.270	.446	.073	.031	.194*	.063	-.053	-.081	-.012	-.082	-.105	-				
11) Construction	.200	.399	-.026	.064	-.202*	-.096	.214*	.095	-.062	.049	-.086	-.301**	-			
12) Professional service	.200	.399	.050	-.011	-.159	-.005	-.131	-.218*	-.246**	-.164	-.086	-.301**	-.245**	-		
13) Retailing and wholesaling	.260	.438	-.140	-.033	.153	.056	.038	.068	.233**	.105	-.102	-.356**	-.290**	-.290**	-	
14) Transport	.050	.221	.006	.010	-.024	-.051	-.098	.332**	.241**	.105	-.040	-.141	-.115	-.115	-.136	-

Note: * $p < .05$, ** $p < .01$

Table 5
Regression Analysis of Environmental Dynamism, Trust and Dynamic Capabilities

	Absorptive Capability			Adaptive Capability			Innovative Capability		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Business Size	.001	.001	.001	.002	.002*	.002*	.002	.002*	.002*
Business Age	.000	.000	-.001	.000	-.001	-.002	.001	.001	.000
Generation in Control	-.014	-.009	-.014	.016	.023	.017	-.048	-.032	-.037
Agriculture	.757	.777	.788	-.412	-.391	-.377	-.109	-.102	-.091
Manufacturing	.312	.325	.329	.172	.171	.169	.148	.139	.142
Construction	.205	.254	.171	.019	.086	-.015	-.500*	-.405*	-.487*
Professional Service	.235	.253	.272	.071	.092	.123	-.286	-.295	-.283
Transport	.176	.196	.333	-.055	-.024	.157	-.354	-.285	-.178
Environmental Dynamism		.215	.128		.294**	.150*		.421**	.367**
Trust			.319*			.429**			.253*
Environmental Dynamism x Trust			.247			.432*			.091*
R ²	.039	.061	.111	.061	.124	.256	.141	.251	.289
Adjusted R ²	-.032	-.017	.018	-.007	.052	.180	.077	.188	.214
F Change	.547	2.548	2.972	.899	7.775**	9.536**	2.211*	15.750**	2.768*
ANOVA F	.547	.777	1.199	.899	2.035	3.354	2.211	3.984	3.871
Sig. F	.818	.638	.297	.520	.042*	.001**	.032*	.000**	.000**

Note: * $p < 0.05$; ** $p < 0.01$

Appendix 1: Questions on Environmental Dynamism, Trust, and Dynamic Capabilities of Family Businesses

	Standardised factor loading
Absorptive Capability (Cronbach $\alpha=.802$)	
Our employees regularly approach external institutions to acquire managerial/technological knowledge (ABC1)	.617
Our family business often transfers expertise/technological knowledge acquired to internal processes (ABC2)	.684
Our family business frequently scans the environment for new expertise/technologies (ABC3)	.803
Our family business observes in detail the external environment for new expertise/technologies (ABC4)	.782
Our family business has information on the state-of-art of external expertise/technologies (ABC5)	.654
Adaptive Capability (Cronbach $\alpha=.793$)	
Our family firm can easily match our expertise/technologies with new products/services emerging in the market (ADC1)	.472
Our existing competency can cope with changes in the market (ADC2)	.784
Our family business frequently makes adjustments in internal processes to respond to market changes (ADC3)	.797
Our employees are capable of using their expertise to develop new products/services (ADC4)	.686
We are proficient in updating expertise/technological knowledge (ADC5)	.783
Innovative Capability (Cronbach $\alpha=.836$)	
Our family business continuously introduces new products/services to our customers (INC1)	.781
The rate of developing new products/services in our family business has been high (INC2)	.777
The rate of introducing new changes to the internal processes in our family business has been high (INC3)	.711
In new product/service introductions, our family firm is often first-to-market (INC4)	.630
Our family business continuously improves our business processes (INC5)	.746
Compared with our major competitors, our overall new product/service development programmes are more successful (INC6)	.510
The overall performance of our new product/service development programme has met our objectives (INC7)	.550
Environment Dynamism (Cronbach $\alpha=.745$)	
Customers in our markets are very receptive to new product/service ideas (ENVDY1)	.460
In the market our family business is engaged to, customers' preference changes quickly over time (ENVDY2)	.790
New customers tend to have product-related needs that are different from those of existing customers (ENVDY3)	.662
Products/services become obsolete quickly in our industry (ENVDY4)	.707
The consumers' demand in our family business's market is unpredictable (ENVDY5)	.534

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9	In the market our family business is engaged to, competitors change their product/service profiles rapidly (ENVDY6)	.594
10	Actions of competitors in the market are unpredictable (ENVDY7)	.538
11	Our family business frequently changes its operating procedures to catch up with competitors (ENVDY8)	.570
12	Trust (Cronbach $\alpha=.853$)	
13	Family members in the business trust each other (TRU1)	.657
14	Non-family employees, even those who are not close friends of the family, are trusted and respected as co-workers (TRU2)	.734
15	Overall, the motives and intentions of staff members in the family firm are good (TRU3)	.857
16	Family and non-family members in our family business rely on each other (TRU4)	.719
17	Staff members solve daily problems through cooperation (TRU5)	.840
18	Staff members in our family business are always honest and trustworthy (TRU6)	.727
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Figure 1
The Relationship between Business’s Adaptive Capability and Environmental Dynamism for Low and High Levels of Trust

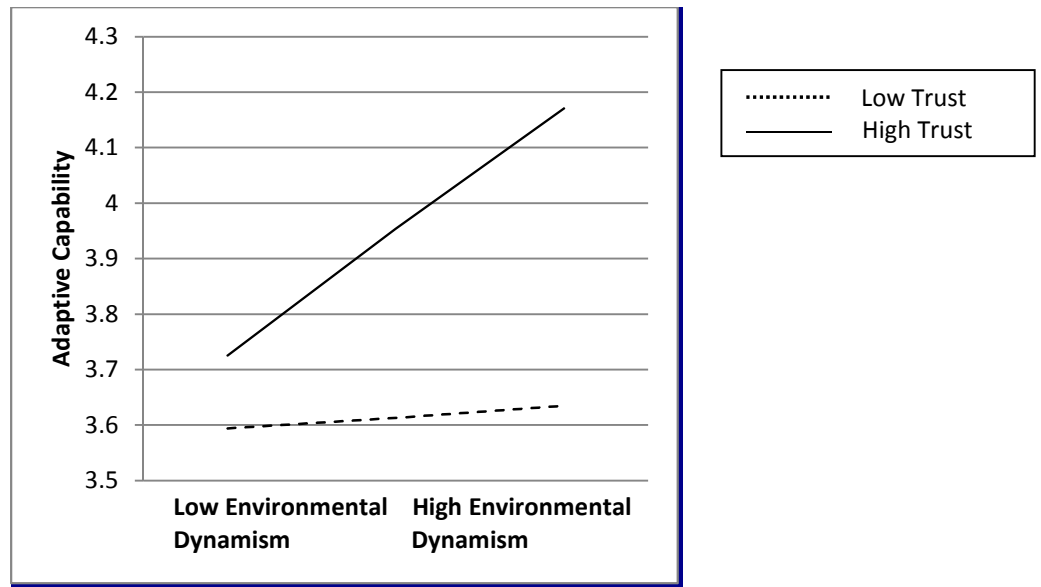


Figure 2
The Relationship between Business's Innovative Capability and Environmental Dynamism for Low and High Levels of Trust

