



# Strategic entrepreneurship and competitive advantage of established firms: evidence from the digital TV industry

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**Abstract** Although strategic entrepreneurship in established firms is recognized as a vital source of sustainable competitive advantage, this field has no clearly developed research paradigm. This study proposes a conceptual framework to investigate dimensions of strategic entrepreneurship and its function in sustainable competitive advantage of established firms in a modern volatile environment, through the lens of the dynamic capability view. By conducting a systematic literature review of previous research documents and considering conceptual interrelationships between strategic entrepreneurship and dynamic capabilities, we propose categories that comprise dimensions of a firm's strategic entrepreneurship: environmental sensing, opportunity seizing, strategic flexibility, entrepreneurial orientation and organizational learning. We establish a conceptual framework of strategic entrepreneurship in which entrepreneurs' managerial capabilities of environmental sensing, opportunity seizing, strategic flexibility and entrepreneurial orientation closely interact with organizational learning, thereby facilitating sustainable performance of established firms. Following empirical studies of established firms in the digital TV manufacturing industry, the proposed conceptual framework suggests that each dimension of strategic entrepreneurship plays a critical role in competitive advantage of firms. In addition, case study results indicate that a firm's position and evolutionary path form antecedent factors influencing entrepreneurs' managerial capabilities and organizational learning of established firms.

**Keywords** Strategic entrepreneurship · Dynamic capability view · Established firm · Digital TV industry

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## Introduction

The traditional concept of entrepreneurship, as in the Schumpeterian view, suggests the most innovative individuals can bring sustainable change and creative destruction to specific markets, acting alone or within large firms (Elia et al. 2016; Schumpeter 1961). Thus, the initiative of individuals is a core competence of firms to transform promising business ideas into successful new ventures. However, many entrepreneurs in the high-tech industry often ignore managerial aspect of organizations and fail to capitalize on connections in and outside the industry necessary to sustain market competitiveness (Zahra and Nambisan 2012). The global business environment demands that established firms adopt entrepreneurial strategies to revitalize existing organizations and create innovation (Ireland et al. 2009; McGrath and MacMillan 2000; Morris et al. 2010). Individual-level interpretations of business opportunities should be institutionalized as organizational-level strategies, linking individual-level cognition and organizational-level outcomes (Ireland et al. 2009). For this reason, entrepreneurship has become accepted as a firm-level phenomenon deserving scholarly attention (Brown et al. 2001).

Entrepreneurship as a firm-level, i.e., corporate entrepreneurship, is associated with a firm's growth, innovation and flexibility, which are desirable traits for the success of modern established firms (Stevenson and Jarillo 2007). Corporate entrepreneurship, by extending scope of entrepreneurship from individuals to organizations, can provide essential means of achieving organizational innovation and new business creation as well as strategic renewal of existing businesses within established firms (Elia et al. 2016; Zahra 1991). Studying corporate entrepreneurship in large established firms offers key insights for firms' survival and performance in a volatile environment (Ahuja and Lampert 2001; Barringer and Bluedorn 1999; Covin and Miles 1999; Hitt et al. 2001). Analyzing corporate entrepreneurship allows for a better understanding of value creation process and contribution to firms' capabilities (Ferreira et al. 2015).

Strategic entrepreneurship (SE), belonging to the realm of corporate entrepreneurship, can place corporate entrepreneurship within a broader field of strategic management, more than merely within the start of a new business (Kuratko and Audretsch 2013; Stevenson and Jarillo 2007). SE is concerned with a potential source of sustainable competitive advantage of established firms as a result of entrepreneurial and managerial activities (Ireland et al. 2009; Zucchella and Magnani 2016). SE integrates the concept of entrepreneurship and strategic management, focusing on entrepreneurial action with a strategic perspective (Hitt et al. 2001; Ireland et al. 2009). The field of entrepreneurship and strategic management are mutually supportive and thereby enhance the value of outcomes by creating synergy (Ireland et al. 2001). Entrepreneurship embraces identifying and exploiting external opportunities to create new economic activities, while strategic management embraces a set of actions to produce competitive advantage and maintain what has been created (Hitt et al. 2001; Sexton and Smilor 1997; Venkataraman and Sarasvathy 2001). Previous studies have suggested entrepreneurship and strategic management research can be synthesized to better understand how entrepreneurship functions for firms (Dhliwayo 2014; Hitt et al. 2001; Kor et al. 2007).

However, despite its importance, entrepreneurship research at firm-level lacks concrete, integrative theory and specific framework of SE has been elusive for scholars (Brown et al. 2001; Hitt et al. 2001; Ireland et al. 2009; Landstrom and Sexton 2000; Teece 2016). SE is built on multidisciplinary research and a complicated phenomenon of which scholars are striving to gain a better understanding (Mazzei et al. 2017). While much understanding about entrepreneurship has been achieved in the past decade, integrative approaches to SE have been rare (Antoncic and Hisrich 2003; Dhliwayo 2014; Luo et al. 2015; Ma and Tan 2006; Meyer and Heppard (2000)). Empirical research of established firms successfully adopting SE has seldom been practically applied. That is why we need a research that constructs a conceptual framework of SE by clarifying comprising dimensions and empirically studies cases of established firms appropriate to identify connections of SE and sustainable performances.

As a stepping stone towards integrative research on SE, our study develops conceptual research framework to clarify dimensions of SE and investigate its function in long-term success of established firms. For this purpose, we adopt a dynamic capability view (DCV) in the field of strategic management as a tool for concretizing a conceptual framework of SE. DCV, occupying a central place in the entrepreneurship and competitive strategy literature, is one of the most promising approaches in the strategy agenda especially in environmental volatility (Zahra et al. 2006; Zucchella and Magnani 2016). From a theoretical perspective, DCV is clearly linked to SE and can be regarded as the theoretical precursor of SE (Zucchella and Magnani 2016). DCV provides tissue to link strategic management and entrepreneurship, because of heterodox and interdisciplinary foundations (Teece 2016). For this reason, DCV has been recognized as a potential model of an entrepreneurial firm as it connects SE to firm performance, and can be useful for understanding functions of entrepreneurial managers in the context of ongoing dynamic competition (Teece et al. 1997; Teece 2016; Zahra et al. 2006). Starting from research on DCV as a path to conceptualizing SE and investigating its connection to performance can be better approached because the field of SE is nascent, and relevant studies that have been published are insufficient (Hitt et al. 2011; Mazzei et al. 2017).

This study establishes a conceptual framework of SE that includes constituting dimensions and a process of sustainable competitive advantage of established firms, through the lens of DCV. To begin with, we derive dimensions of SE as a set of dynamic capabilities by broad review of research on DCV, and further investigate an interrelationship between derived categories of dynamic capabilities and SE by additional review of research on SE. In sequence, we fortify the suggested conceptual framework and analyze the role of SE on competitive advantage of established firms by following empirical research on three established firms in the digital TV industry, including Samsung, Sony and Panasonic (owned by Matsushita). Content analysis of relevant media articles from 2005 to 2015 enabled us to analyze SE of each firm and sources of market performance.

The remainder of this study is organized as follows. The second section provides literature review of theoretical background and third section presents research methodology. In fourth section, development of conceptual research

framework is discussed and in fifth section, results of the case study are analyzed. Finally, in sixth section, we discuss findings and implications of this study.

## Literature review

### Corporate entrepreneurship: entrepreneurship as a firm-level

Entrepreneurship research has evolved remarkably in the last few decades (Ferreira et al. 2015; Shane and Venkataraman 2000; Zahra 2005). Entrepreneurship is defined as the process by which individuals, or inside organizations, pursue opportunities without regard to resources they control (Stevenson and Jarillo 2007). It involves creation of new economic activity, such as the introduction of new products and new production methods, or the opening of a new market (Gürbüz and Aykol 2009; Morris and Sexton 1996; Schumpeter 1961). Shane and Venkataraman (2000) suggested that entrepreneurship is about disequilibrium and upsetting the status quo, with focusing on the study of individuals with unique vision.

Although individuals exploiting new opportunities have been emphasized as central actors in traditional entrepreneurship research, organizations in large firms associated with entrepreneurial activities are also central actors according to recent corporate entrepreneurship research (Beer and Spector 1990; Tajeddini and Mueller 2012). Many scholars have agreed that entrepreneurship is an organizational process that contributes to firm survival and performance, and accordingly, entrepreneurial activities are vital for all firms in environmental volatility (Covin and Slevin 1989; Drucker 2014; Entrialgo et al. 2000; Lumpkin and Dess 1995; Miller 1983; Zahra 1993).

Therefore, corporate entrepreneurship research is receiving increasing attention because it is relevant to managers irrespectively of the size or age of their organization (Brown et al. 2001; Schendel 1990). Firms with corporate entrepreneurship are motivated by an opportunity, seize it irrespectively of resources they have, and hire these resources if required (Gürbüz and Aykol 2009). Corporate entrepreneurship is essential for established firms to survive and revitalize (Ferreira et al. 2015; Zahra and Covin 1995). Shepherd et al. (2010) explained how corporate entrepreneurship can be dynamically enhanced in organizations by suggesting the spirals model to bridge individuals and organizations. The spiral model indicates the entrepreneurial mindset of the individual can impact organizational culture by knowledge spillover and organizational success can also influence the individual by enhancing the individual's entrepreneurial mindset (Shepherd et al. 2010). Ireland et al. (2003) suggested that organizational culture and entrepreneurial mindset are inextricably interwoven.

### Strategic entrepreneurship (SE): entrepreneurship with strategy

Work on SE began early in the twenty-first century and conceptually belongs to domains of corporate entrepreneurship (Hitt et al. 2001; Kuratko and Audretsch 2013; Mazzei et al. 2017). SE involves both of entrepreneurial (i.e., new opportunity seeking) and strategic (i.e., best opportunity and advantage seeking) activities, and thereby attracting attention of scholars as a vital source of wealth creation and sustainable competitive advantage of a firm (Hitt et al. 2001; Ireland et al. 2003). Ireland et al.

(2003) argued that SE is a unique and distinctive construct through which established firms can continuously create wealth.

The two research areas of entrepreneurship and strategic management are mutually supportive, although they have been developed independently of each other (Hitt et al. 2001; Ireland et al. 2003). Focusing on either entrepreneurship or strategy excluding others increases a firm's ineffectiveness or risk of failure (Hitt et al. 2011; Ketchen et al. 2007). Thus, it is widely accepted that entrepreneurship and strategic management are necessary for a firm's sustainable superiority and wealth creation (Amit and Zott 2001; Ireland et al. 2003). Large, established firms must learn how to become more entrepreneurial as well as how to strategically manage organizations, by successfully using SE (Hitt et al. 2011). Volatile global environmental conditions demand that established firms adopt SE to revitalize and innovate existing organizations (Ireland et al. 2009; Meyer and Heppard 2000).

As SE integrates entrepreneurship and strategic management research, it includes a broad array of entrepreneurial initiatives adopted in pursuit of a firm's competitive advantage (Kuratko and Audretsch 2013). SE indicates a firm's strategic intent to continuously and deliberately leverage entrepreneurial opportunities for organizational growth and advantage (Ireland et al. 2009). It can institutionalize individual-level intuitions and business opportunities in the form of firm-level strategies (Ireland et al. 2009).

Although a growing number of scholars have begun research on diverse conceptualizations of SE, research specifying distinctive dimensions of SE is insufficient and empirical studies on established firms regarding successful SE has seldom been practically applied (Ireland et al. 2003; Mazzei et al. 2017). Entrepreneurial firms have differentiated strategic management modes, but how such strategies differ from traditional corporate strategies has only recently been the subject of broad discussion, and much more must be addressed (Ireland et al. 2009; Stevenson and Jarillo 2007).

### **Dynamic capability view (DCV): conceptualizing SE**

Teece et al. (1997) defined dynamic capabilities as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Eisenhardt and Martin (2000) suggested dynamic capabilities of a firm are organizational and strategic routines through which a firm achieves new resource configurations as markets change. Some scholars have named dynamic capabilities as higher-order capabilities with which a firm operates to extend, modify, and create first-order operational capabilities (Helfat et al. 2009; Winter 2003). The scope of dynamic capabilities has been established as including resource accumulation, organizational learning and innovative activities for maximum profit (Foss 1998; Schulze 1994).

DCV that evolved from the traditional resource based view is a useful approach to conceptualize SE (Teece 2016). Dynamic capabilities occupy a central place in research on entrepreneurship and competitive strategy, providing logic to link corporate entrepreneurship and strategic management areas (Teece 2016; Zahra et al. 2006). According to DCV, development of dynamic capabilities through management's non-routine strategizing and entrepreneurial activities around sensing, seizing, and transforming enables firms to sustain competitive advantage in volatile environments (Teece 2012). Therefore, identifying categories of dynamic capabilities provides useful information

about conceptualizing SE, because DCV can be considered as the theoretical precursor of SE (Zucchella and Magnani 2016).

In the preceding studies, Ireland et al. (2003) and Hitt et al. (2011) established a conceptual foundation of SE by adopting a tenet of the resource-based view from which DCV evolved. However, research has seldom been practically applied that provides detailed dimensions of SE based on DCV, followed by empirical studies of established firms. In this study, a conceptual framework of SE is established by adopting DCV that can provide appropriate logic for conceptualizing SE, to clarify constituting dimensions of SE and bridge between the complicated structure of SE and sustainable competitive advantage of established firms. Conceptualizing SE through DCV remains challenging, because the scope of dynamic capabilities is extensive, including process or routine as well as capabilities (Barreto 2010). Our conceptual study begins with conducting a systematic review of diverse documents on DCV to extract building blocks of a conceptual framework.

## Methodology

In this study, a mixed research methodology is used, comprising a conceptual study and a corresponding empirical study to further our understanding of conceptual study and to ensure reliability of the research (Morse 2016). The first part of this research is a conceptual study wherein the conceptual research framework is developed from systematic literature review, and an empirical study of established firms follows by conducting a qualitative content analysis to support results of the conceptual study. Figure 1 shows overall research procedure.

### Research design (conceptual study)

Dimensions of our research framework are obtained through a systematic review of literature from existing research in accordance with the procedure shown in Fig. 2 (Green 2005; Kitchenham 2004). We first derive categories of dynamic capabilities from literature on DCV and then, analyze an interrelationship between categories of dynamic capabilities and the nature of SE, by additional review of literature on SE.

To derive categories of dynamic capabilities, we identified research documents that include ‘dynamic capabilities’ as keywords published from 1990 to 2015 in SCOPUS, one of the largest bibliographic databases across all research fields. In addition to these documents, we identified further relevant research papers through snowball sampling

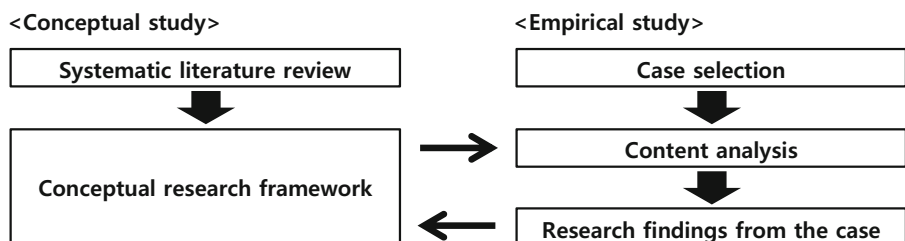


Fig. 1 Research methodology

1. Defining an appropriate question
  - Developing conceptual framework of SE (based on relevance of dynamic capabilities to SE)
2. Searching literature and selecting studies (with the most relevance) for inclusion in the review
  - Collecting 258 documents on DCV with keyword search and additional snowball sampling
  - Selecting 61 documents that propose a conceptual framework of dynamic capabilities or discuss successful firms through the lens of DCV.
3. Assessing and reporting the quality of included studies
  - Extracting key information (major categories) from selected documents on DCV
  - Bridging SE and dynamic capabilities by reviewing additional 29 literature on SE
4. Combining the results
  - Deriving conceptual framework by integrating extracted information

**Fig. 2** Systematic literature review

from the reference list of each document. Thus, we collected 258 research papers that discuss dynamic capabilities in a broad sense. We then selected 61 research papers by screening documents to find those with the most relevance, since they either propose a conceptual framework, e.g., comprised building-blocks of dynamic capabilities, or discuss cases of successful firms through the lens of DCV. Key concepts were extracted from each document, and developed into higher, more abstract level categories. Extracted concepts are grouped under more abstract categories by comparing similarities and differences (Corbin and Strauss 1990).

Derived categories of dynamic capabilities have been investigated from an angle of SE, by further review of 29 research documents on SE. Based on relevance of dynamic capabilities to SE, we established a conceptual framework that includes dimensions of SE and provides linkage to sustainable performance of established firms.

### Research design (empirical study)

Use of a case study provides rich insight into a complex phenomenon that is not clearly understood (Dodgson 1993; Yin 2013). Therefore, a qualitative case study design is suited to an in-depth study of the relationship between SE and firm performance as a long-term phenomenon.

In our empirical study, three cases were selected of established firms in the digital TV industry from 2005 to 2015, a period of rapid technological transition. The case of the digital TV industry in twenty-first century is a suitable subject for this study since it is a representative example of a dynamic environment characterized by market uncertainty, fierce competition among players, and rapid changes in technology with the advent of digital broadcasting.

The research cases are closely examined through content analysis of media sources based on research framework. Content analysis is a research technique that may be used to make relevant, valid inferences from context (Krippendorff 2012). Mass media such as newspaper and media websites were selected as the most significant sources in our case study as they comprise a sufficient inventory of news, product reviews and official interviews related to major industrial events and relevant firms' strategic activities for the period of interest. Entrepreneurship taken by a firm's manager is not easy to distinguish. Therefore, investigation of documents through secondary sources



over several years is adequate for researchers (Ireland et al. 2009). We focused on four media sources from which we could obtain a sufficient inventory of data for the case with representativeness and objectivity, as summarized in Table 1.

Content analysis procedure involves deriving the original idea or intention from text and developing a quantitative interpretation from analysis (Bos and Tarnai 1999). Content analysis that starts from the research outline develops and validates category scheme for research. From each article, key sentences or phrases are selected and classified into relevant categories that comprise conceptual research framework. If a group of content does not belong to any of established categories, new categories are created. We used a computer-assisted qualitative data analysis software package, Weft QDA, in this research for qualitative coding process for articles.

For reliability check of data coding results, inter-coder reliability of each author and two sufficiently trained coders was calculated using Cohen's kappa (Wood 2007). Two coders coded 10% of data randomly selected while the author coded the entire data set. Through a series of meetings and by adjusting categories, the resultant kappa value was above 0.8, considered in previous studies to be a good level of agreement (Wood 2007). Figure 3 illustrates basic content analysis procedure used in our study.

## Conceptual study results: research framework

This study proposes a conceptual framework of SE to explain sources of sustainable performance of established firms. We begin with extracting major categories of dynamic capabilities from literature on DCV and subsequently, investigate how those categories of dynamic capabilities are related to the nature of SE by additional review of literature.

### Categories of dynamic capabilities

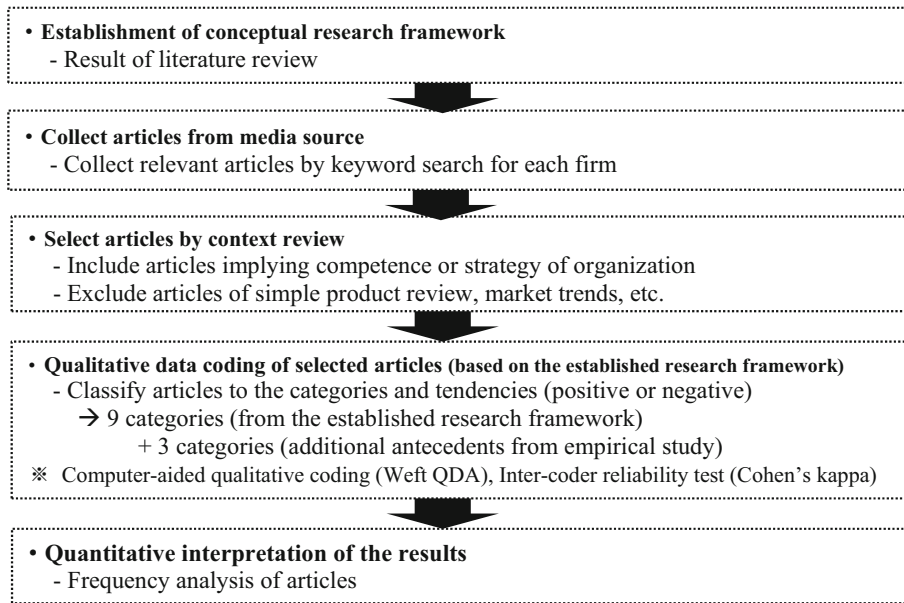
From the literature review, we derived five major categories of dynamic capabilities: environmental sensing, opportunity seizing, strategic flexibility, entrepreneurial orientation, and organizational learning. The identified categories and corresponding literature sources are summarized in Table 2.

Figure 4 indicates document counts in the 61 documents that discuss each of the major categories as a crucial dimension of dynamic capabilities (allowing repetition)

**Table 1** Media sources for content analysis

Source	Description and validity for selection of media sources	No. of articles selected
Financial Times	Influential international newspaper with special emphasis on business and economic news	190
Chosun Ilbo	Newspaper with the largest circulation in Korea	292
C-Net	Well-known American media website containing reviews and articles of worldwide electronic goods	149
Display search	Global institute of market information or analysis of the display industry	54





**Fig. 3** Content analysis procedure

by displaying relative significance of qualitative data quantitatively (Miles and Huberman 1994).

### *Environmental sensing*

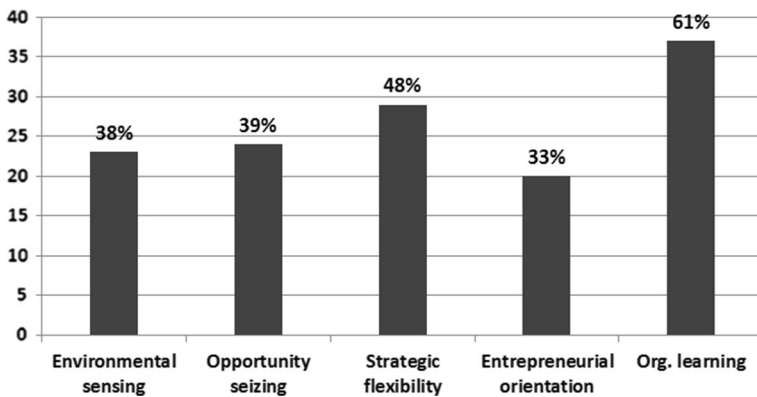
Environmental sensing is emphasized in 38% of the selected documents as a prerequisite dynamic capability to enable entrepreneurs' proper strategic action. This capacity involves detecting an opportunity or threat by exploring new knowledge and thereby taking appropriate measures for the situation (Li and Liu 2014; Nicholls-Nixon and Woo 2003; Roy and Khokhle 2011; Teece 2007). Such cognitive flexibility is a requirement of corporate entrepreneurs and becomes more significant with increasing market uncertainty (Sanchez and Heene 1997).

### *Opportunity seizing*

Opportunity seizing capacity is underscored in 39% of the selected documents. This category includes competence of value creation by commercializing technology into market-oriented products (Fahy and Smithee 1999; Herrmann et al. 2007; Kachaner and Deimler 2008; Menguc and Auh 2006; Wang and Ahmed 2007; Zhou and Li 2010). Strategic alliance is crucial in facilitating efficient development of technology and establishment of a business ecosystem (Cui and Jiao 2011; Dixon et al. 2014; Eisenhardt and Martin 2000; Lin and Wu 2014). An entrepreneur's timely decision-making with a clear strategic goal and leadership also fits within this category (Adner and Helfat 2003; Barreto 2010; Cepeda and Vera 2007; Jantunen et al. 2012; Li and Liu 2014).

**Table 2** Categories of dynamic capabilities and corresponding sources

Categories of dynamic capabilities		Corresponding sources
Environmental sensing		Menguc (2006), Helfat et al. (2009), Weerawardena (2007), Teece (2007), Wang (2007), Anand (2009), Barreto (2010), Hung (2010), Cui (2011), Kazozcu (2011), Martelo (2011), Pavlou (2011), Roy (2011), Jantuneu (2012), Chang (2012), Cheng (2012), Petit (2012), Martelo (2013), Dixon (2014), Lin (2014), Li (2014), Patterson (2015), Prince (2016)
Opportunity seizing	Market-oriented value creation	Eisenhardt (2000), Adner (2003), Menguc (2006), Helfat et al. (2009), Teece (2007), Wang (2007), Kachaner (2008), Anand (2009), Barreto (2010), Cui (2011), Evers (2011), Martelo (2011), Jantuneu (2012), Chang (2012), Cheng (2012), Petit (2012), Yung (2012), Steiber (2013), Martelo (2013), Lin (2014), Li (2014), Daniel (2014), Dixon (2014), Chassagnon (2015)
Strategic flexibility	Strategic alliancing	
	Entrepreneur's timely decision-making	
Strategic flexibility	Resource reconfiguration	Teece (1997), Eisenhardt (2000), Helfat (2003), Hobday (2005), Zahra (2006), Wu (2006), Teece (2007), Wang (2007), Kachaner (2008), Chirico (2010), Wu (2010), Zhan (2013), Barreto (2010), Roy (2011), Cui (2011), Evers (2011), Pavlou (2011), Kazozcu (2011), Cheng (2012), Jantuneu (2012), Petit (2012), Yung (2012), Chang (2012), Lin (2014), Li (2014), Daniel (2014), Dixon (2014), Sune (2015)
	Product diversification	
Entrepreneurial orientation	Innovativeness & Risk-taking	Ahuja (2001), Menguc (2006), Herrmann (2007), Wang (2007), Weerawardena (2007), Alegre (2008), Anand (2009), Chirico (2010), Hung (2010), Zhou (2010), Roy (2011), Chang (2012), Yang (2012), Steiber (2013), Wu (2013), Dixon (2014), Eriksson (2014), Chassagnon (2015), Prince (2016)
	Proactiveness & Competitive aggressiveness	
Organizational learning (Process of knowledge management)		Teece (1997), Eisenhardt (2000), Zollo (2002), Nicholls-Nixon (2003), Sher (2004), Zahra (2006), Wu (2006), Weerawardena (2007), Teece (2007), Wang (2007), Cepeda (2007), Alegre (2008), Liao (2008), Anand (2009), Chirico (2010), Hung (2010), Wu (2010), Zhan (2013), Alegre (2013), Pavlou (2011), Martelo (2011), Zheng (2011), Jantuneu (2012), Argote (2012), Chang (2012), Yung (2012), Yang (2012), Chien (2012), Steiber (2013), Mahroum (2013), Wu (2013), Martelo (2013), Lin (2014), Eriksson (2014), Patterson (2015), Schneckenberg (2015), Sune (2015)



**Fig. 4** Document counts by category (from 61 selected documents)

### *Strategic flexibility*

Strategic flexibility appears in 48% of the selected documents as a crucial category of dynamic capabilities in a highly volatile market. This capacity is vital for corporate managers to manage risk and optimize profit with strategic changes. Strategies of resource reconfiguration and product diversification are frequently highlighted and thus fit into this category (Anand et al. 2009; Christensen and Raynor 2013; Hobday et al. 2005; Jantunen et al. 2012; Lin and Wu 2014; Roy and Khokhle 2011; Steiber and Alänge 2013; Teece 2007).

### *Entrepreneurial orientation*

Entrepreneurial orientation is another core category of dynamic capabilities appearing in 33% of investigated papers. The concept of entrepreneurial orientation is based on the process of strategic choice of key decision makers regarding new market entries, and has recently emerged as a core component of success in new product development (Lumpkin and Dess 1996; Rauch et al. 2009). Existing studies have identified components of innovativeness, proactiveness, risk-taking, and competitive aggressiveness as forms of entrepreneurial orientation (Lumpkin and Dess 1996; Rauch et al. 2009). These components are essential for management in established firms to overcome organizational inertia, while facilitating innovative activities and accepting unfamiliar change.

### *Organizational learning*

61% of investigated documents classify organizational learning as a key driving force of dynamic capabilities (Cepeda and Vera 2007; Helfat et al. 2009; Zollo and Winter 2002). It involves how firms build, supplement and organize knowledge and routines around their activities (Dodgson 1993). The learning process mediated via experience accumulation and knowledge evolution cycle can nourish development of operating routines and can form dynamic capabilities (Anand et al. 2009; Filippini et al. 2012; Zollo and Winter 2002). Absorptive capability of scanning and absorbing external

**Table 3** Dimensions of SE and dynamic capabilities: conceptual bridge

Keywords from literature on SE	Relevant categories of dynamic capabilities
Entrepreneurial perception/alertness, Recognizing(detecting) entrepreneurial opportunities	Environmental sensing
Opportunity exploitation, Timely decision-making/actions, Entrepreneurial leadership, Bundling resources (into capabilities), Leveraging the capabilities (create value for customers), Social capital, Organizational networks, Strategic alliances	Opportunity seizing (Market-oriented value creation, Strategic alliances, Timely decision-making)
Strategic change/renewal/flexibility, Business model reconstruction, Structuring the resource portfolio/real options, (Transition between) exploration and exploitation, Creating/combining resources (in new ways)	Strategic flexibility (Resource reconfiguration, Product diversification)
Entrepreneurial orientation, Proactiveness/competitive aggressiveness, Risk-taking/innovative behaviors, Experimenting (with novel technologies), Reward system (for entrepreneurship), Growth orientation	Entrepreneurial orientation (Innovativeness/Risk-taking, Proactiveness/Competitive aggressiveness)
Organizational learning, Organizational networks/collaboration, Knowledge absorption/share/integration, Knowledge spillovers	Organizational learning (Process of knowledge management)

knowledge from diverse technology sources and development capability of creating new knowledge by integrating and sharing absorbed knowledge comprise the knowledge evolution cycle (Figueiredo 2014; Mahroum and Al-Saleh 2013; Zollo and Winter 2002).

### **SE and dynamic capabilities: conceptual bridge**

We further reviewed 29 research documents relevant to SE and established a conceptual bridge between SE and dynamic capabilities. Literature on entrepreneurship that conceptually discuss strategic entrepreneurship, or in broader scope, those literature that discuss corporate entrepreneurship, entrepreneurial strategy and management as a source of firms' wealth creation are included in the review.

As a result, we conclude that categories of dynamic capabilities derived in previous sections are highly correlated with the essence of SE. Table 3 summarizes keywords extracted from literature on SE and corresponding categories of dynamic capabilities relevant to them.

#### *Environmental sensing*

Environmental sensing is detection of the opportunity that constitutes the core of entrepreneurship, both individuals and corporate (Stevenson and Jarillo 2007). Recognizing entrepreneurial opportunities may create favorable circumstances that lead to positive entrepreneurial actions (George et al. 2016). Entrepreneurs' perception of undiscovered opportunities is a major driver of firm-level heterogeneity and superior absorptive capacity (Cohen and Levinthal 1990; Ireland et al. 2009; Kor et al. 2007; Wiklund and Shepherd 2003). Ireland et al. (2003) suggested that recognizing entrepreneurial opportunity is an essential component of entrepreneurial mindset and required to successfully engage in SE. Practice to analyze environmental events and trends facilitates opportunity recognition and entrepreneurial behavior (Entrialgo et al. 2000).

#### *Opportunity seizing*

Activities of opportunity seizing to exploit the opportunity are major components of SE (Brown et al. 2001; Ireland et al. 2003; Ireland et al. 2009). Ireland et al. (2003) proposed entrepreneurial action such as determining timing associated with launching strategy required to exploit an entrepreneurial opportunity comes into the framework of SE. In addition, resource orchestration process of bundling resources and leveraging capability of creating market-oriented value is an essential part of SE (Hitt et al. 2011; Song and Jing 2017).

The capability to connect an organization to the broader ecosystem, i.e., outside partners and experts, by strategic alliancing or expansion of network is also discussed as an essential component of opportunity seizing in literature (Aslan 2017; Hitt et al. 2001; Ireland et al. 2001; Zahra and Nambisan 2012). The relationship between external environment and the firm affects long-term survival (Dess and Beard 1984; Hitt et al. 2011). The firm can acquire resources necessary to seize opportunities by knowledge spillover effect, by interacting directly or indirectly, intentionally and unintentionally with other firms (Tavassoli et al. 2017).

### *Strategic flexibility*

Previous studies on SE also emphasize flexibility in resource use and organizational structure as requirements of entrepreneurial firms (Brown et al. 2001; Ireland et al. 2009). Strategic flexibility allows entrepreneurial firms to renew or adjust strategic plans to stay abreast of environmental changes and thereby minimize risk and maximize profit (Elia et al. 2016; Entrialgo et al. 2000; Kuratko and Audretsch 2013). In volatile environments, developing new combinations of resources and thereby creating sustainable economic value are at the center of entrepreneurial creativity (Kor et al. 2007; Schumpeter 1961; Zahra et al. 2006). Successful established firms may develop dynamic portfolios of opportunities with reconfigured resources and diversified products to minimize waste of resources (Hitt et al. 2011; Ireland et al. 2003). In addition, effective transition between exploration and exploitation processes is vital to a firm's successful engagement in SE (Ireland and Webb 2009).

### *Entrepreneurial orientation*

Entrepreneurial orientation corresponds to entrepreneurial culture as a category of entrepreneurship (Brown et al. 2001; Ireland et al. 2009; Stevenson and Jarillo 2007). Ahuja and Lampert (2001) suggested that experimenting with novel, emerging, and pioneering technologies may enable established firms to overcome bureaucracy and create breakthrough inventions. Entrepreneurial culture, in which new innovative ideas are expected with an appropriate reward system and failure is tolerated, can facilitate continuous searching for entrepreneurial opportunities and sustainable competitive advantage of firms (Brown et al. 2001; Ireland et al. 2003; Kanter 1985). A study of Gürbüz and Aykol (2009) indicated entrepreneurial orientation achieves better results when supported by strategic management of the firm.

### *Organizational learning*

Organizational learning is also among emphasized competences of established firms in existing literature on SE. Knowledge sharing and organizational learning are associated with motivation, opportunity, and ability to act within the corporate entrepreneurial context (Turner and Pennington 2015).

Organizational learning occurs in a form of knowledge spillovers among individuals or across departments with different functions within firms (Kanter 1985; Kor et al. 2007). The more knowledge spillover takes place within a firm or among different firms, the more outcomes at the organization level can be brought (Tavassoli et al. 2017). Collaboration and coordination to integrate knowledge with external partners or within a firm should be encouraged for successful organizational learning and new knowledge creation, reducing likelihood that a firm's competences will become outdated (Aslan 2017; Ireland et al. 2001; Zahra and Nambisan 2012).

### **Proposed conceptual framework**

We construct an initial framework of SE, adopting five major categories of dynamic capabilities described in “Categories of dynamic capabilities” section, strongly

associated with the nature of SE. Of these categories, those of ‘environmental sensing, opportunity seizing, strategic flexibility, and entrepreneurial orientation’ can be grouped under entrepreneurs’ managerial capabilities corresponding to how entrepreneurs act to achieve their goals (Stevenson and Jarillo 2007).

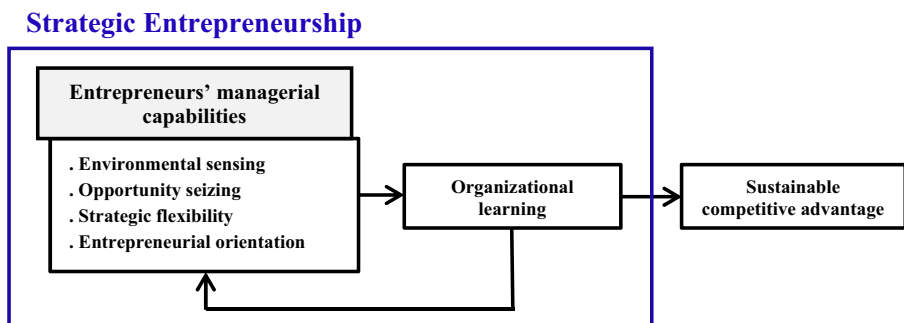
Entrepreneurs’ managerial capabilities closely interact with organizational learning of established firms. Organizational learning process of knowledge absorption and creation is promoted when an entrepreneur senses potential opportunity and proactively behaves for resolving a new type of challenge (Kor et al. 2007; Penrose 1959; Prahalad and Bettis 1986; Zahra 2012). Those entrepreneurial activities clarify types of knowledge that an organization requires to create wealth and activate organizational learning (Zahra et al. 2006). Organizational learning also stimulates entrepreneurs’ managerial activities by creating new opportunities and nourishing the entrepreneur’s perceptive knowledge (Kor et al. 2007; Zahra 2012).

Such a process of continuous searching for entrepreneurial opportunities and dynamic development of idiosyncratic capabilities is one of the sources of a firm’s sustainable competitive advantage (Barney 1991; Ireland et al. 2003). SE is concerned with how a firm creates its initial performance, and, more importantly, how established firms sustain advantage over time as a result of entrepreneurial and managerial posture (Zucchella and Magnani 2016). Consequently, we initially propose the conceptual framework of SE in Fig. 5.

## Case analysis

### Case description

In the case study, we focus on sources of competitive advantage of major players in the digital TV industry based on the proposed conceptual framework of SE. The digital TV industry is capital-intensive and technology-integrated demanding a large amount of investment in R&D and facility resources. The industry has a ripple effect on broadcasting services, display technologies and semiconductor components. Since around 2000, the digital broadcasting service was introduced in many countries, and this has sharply accelerated development of the digital TV industry. Transition to digital broadcasting has brought a drastic change in display technology and TV products,



**Fig. 5** Conceptual framework of SE: initial construct



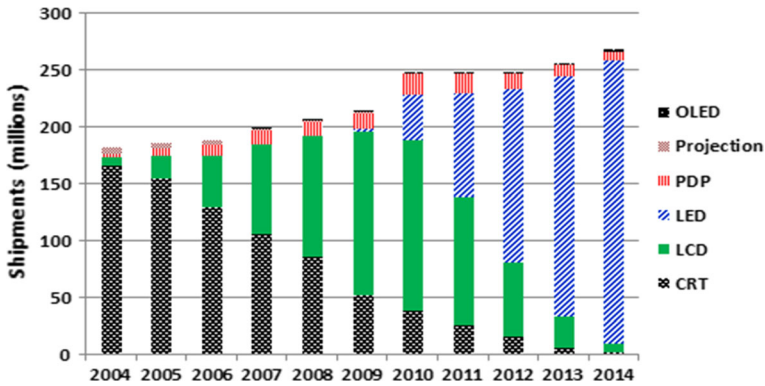


Fig. 6 Changes in shipments by display technology. Source: IHS Markit (<https://technology.ihs.com>)

from analogue CRT TVs to latest products such as UHD LED TVs and OLED TVs. Figure 6 shows changes in shipments due to display technologies described above.

Major firms in the industry have struggled under volatile circumstances since the beginning of the twenty-first century. However, distinct differences in performance among players can be observed during the period of technology transition (Fig. 7). Our empirical study focuses on three established firms – Samsung, Sony, and Panasonic – since they have performed differently as a result of different entrepreneurial behavior. Samsung has maintained its position as a global leader in the volatile digital TV industry since 2006. Sony has been an existing dominator in the analogue TV market, but its market share has fallen with the advent of the digital era. Panasonic has been a successful pioneer in the early digital era, demonstrating many competitive PDP TVs. However, the firm has gradually lost its competitive power in the digital TV market and completely withdrew from the PDP TV business in 2013. Each firm can be studied in the perspective of the proposed conceptual framework of SE.

For an in-depth case analysis of Samsung, Sony and Panasonic, we conducted content analysis of media articles from 2005 to 2015, during which major players fiercely competed under rapid, technological changes. Through a rigorous

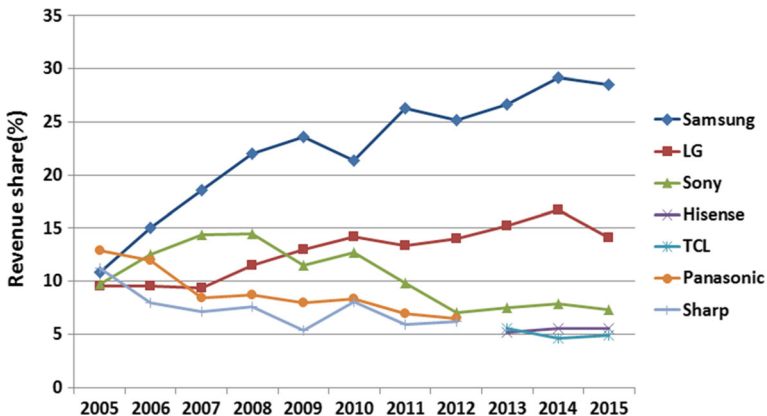


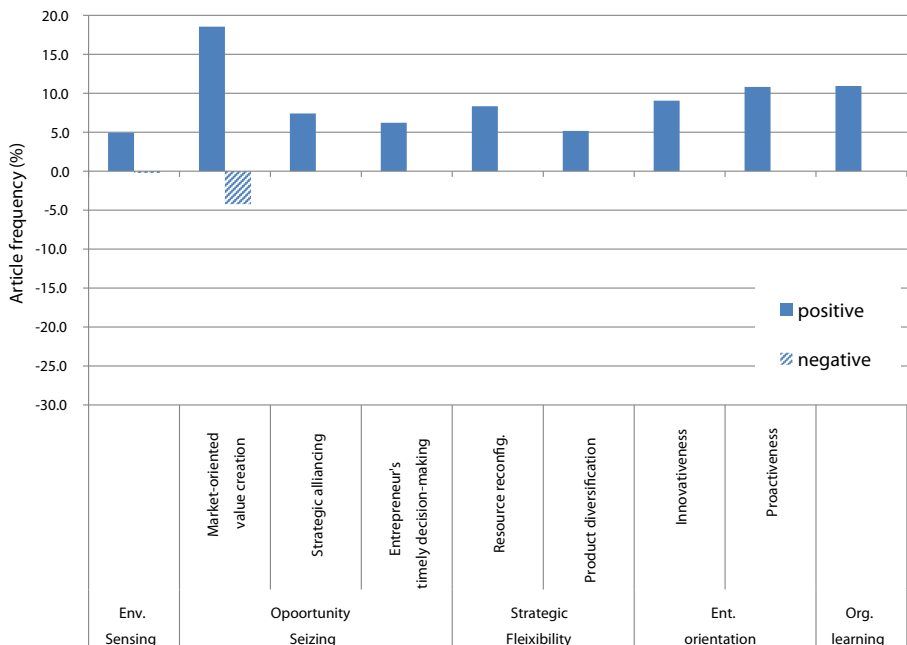
Fig. 7 Worldwide brand ranking by revenue share. Source: IHS Markit (<https://technology.ihs.com>)

investigation of collected articles, we identified articles comprising significant events corresponding to categories detailed in Table. 2, “Categories of dynamic capabilities” section. Each phrase in the articles is qualitatively coded into a corresponding category and classified according to tendency – positive or negative – towards each firm.

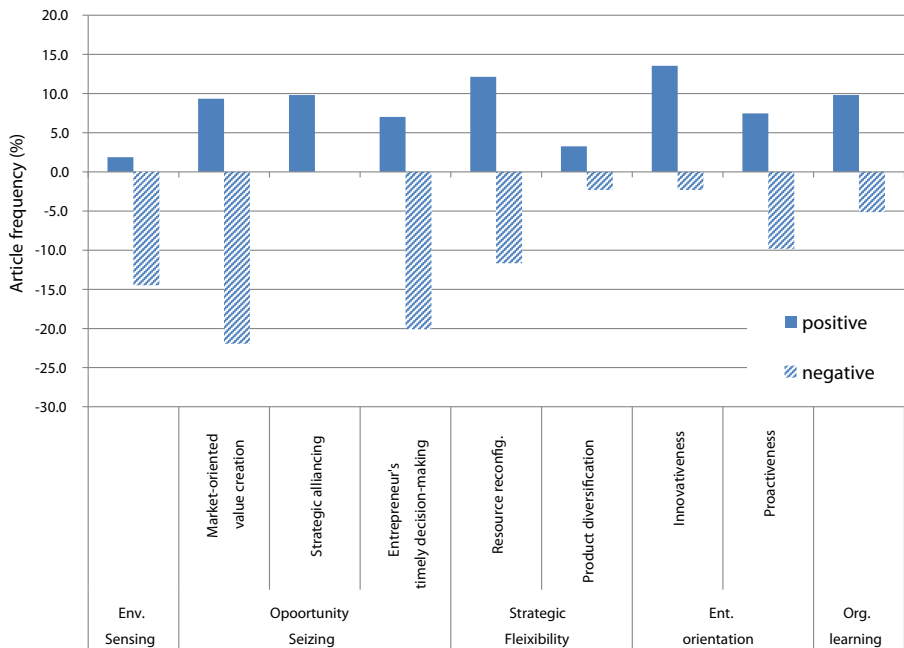
### Research findings: frequency analysis results

Figures 8, 9 and 10 illustrate the result of content analysis, revealing frequency distribution of the articles according to categories in respective cases of Samsung, Sony, and Panasonic. Frequency percentage is calculated from the number of articles corresponding to the category divided by the total number of articles relevant to each firm.

Samsung, a leading firm in the digital TV industry for 10 consecutive years, has demonstrated a broad variety of positive SE, particularly in the capability of ‘market-oriented value creation’. Organizational leaders in this case ‘detected market change’ and initiated ‘proactive and innovative actions’ in advance of competitors with ‘timely decision-making’ and ‘strategic alliancing’. ‘Reconfiguring resources’ to cope with volatile environments enabled the firm to create customer value with diverse, innovative, market-oriented products. ‘Organizational learning and knowledge development process’ through extensive networks have followed entrepreneurial strategies, solidifying competitive superiority.



**Fig. 8** Frequency distribution of the articles according to the categories (case of Samsung)



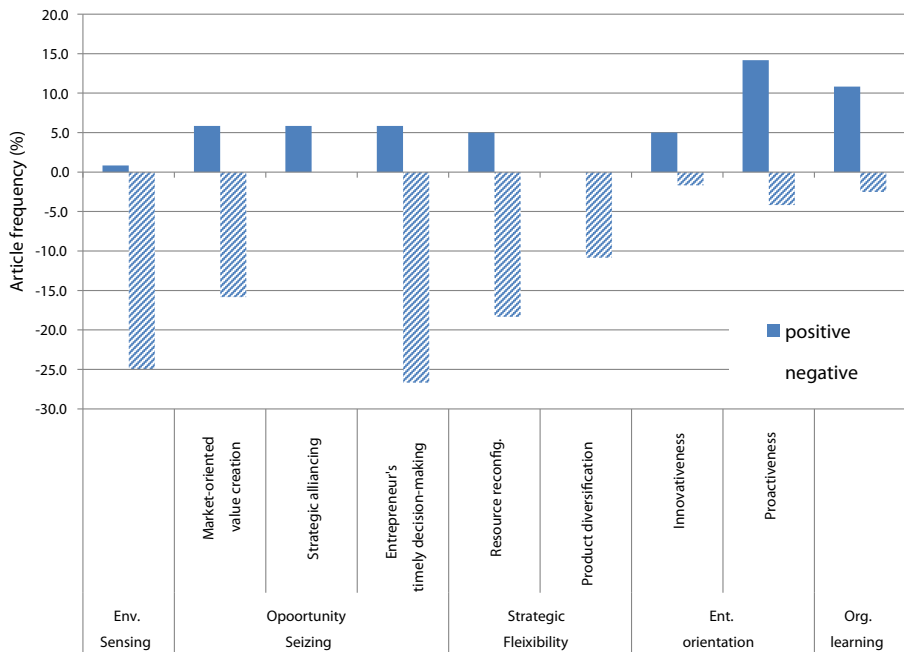
**Fig. 9** Frequency distribution of the articles according to the categories (case of Sony)

Our study also found that the Sony and Panasonic cases reveal evidence of more negative results related to dimensions of SE in the period of research, resulting in market share decline during the digital revolution. In the case of Sony, analysis indicates negative capabilities particularly in the categories of ‘environmental sensing’, ‘market-oriented value creation’, ‘entrepreneur’s timely decision-making’, ‘resource reconfiguration’, and ‘proactiveness’. However, the firm displayed higher positive capability in the category of ‘innovativeness’ because Sony has pioneered new technologies, although it failed to predict technology transition and initiate timely strategic decisions.

The case of Panasonic indicates a similar trend of negative capabilities in terms of SE. Although the firm was very positive in ‘proactiveness’, it was highly negative in ‘product diversification’. Panasonic invested heavily in plasma technology to preoccupy the digital TV market. Consequently, the firm became a top manufacturer of PDP TVs, with increase in revenue, prior to diversification of other product lines by other firms as a contingency plan to gain dominance in the market.

### Research findings: evidence for categories

Evidence for each category in the three established firms is extracted from media articles and described as follows. Strengths and weaknesses of each firm relevant to dimensions of SE can be investigated in detail from evidence. Major events corresponding to evidence are summarized in the [Appendix](#).



**Fig. 10** Frequency distribution of the articles according to the categories (case of Panasonic)

## Case of Samsung

### *Environmental sensing*

Empirical evidence reveals that entrepreneurial capability to identify environmental opportunities by monitoring markets leads to precise planning and successful product release in the market. Samsung established the ‘Design Institute of Europe’ in London, to conduct research on Europeans’ life and consumption trends since 2005. According to results by the institute, decision makers discussed preliminary strategy of product development. (*Event ID: 1*).

The firm has also monitored the U.S. government’s policy that mandated switching from analogue to digital broadcasting in 2009, forecasting considerable potential demand in the nation. Samsung established large distribution channels, e.g. Best Buy in the U.S., as a consequence of precise environmental sensing. (*Event ID: 2*).

In addition, Samsung’s executives guaranteed success of the winning move by focusing on premium LED TVs with a higher price as a result of customer-related surveying. Market analysis indicated that middle- or upper-income consumers are willing to pay more to purchase premium LED TV products with ultra-slim size and higher definition screen. (*Event ID: 3*).

### *Opportunity seizing*

Samsung has successfully seized opportunities of market-oriented products that create value for customers. Development of specialized products in accordance

with characteristics of the region reveals the firm's strategy. For example, a surge-safe TV was introduced in the African region, where sharp growth of digital TV market was expected, to adapt to instability of electrical power in outskirts of the region. (*Event ID: 4, 5*).

However, according to analysts, for Samsung as well as other firms, content is more crucial than technology. Samsung's state-of-the-art products fail to create satisfactory value owing to insufficient amount of content for 3D TV and UHD. (*Event ID: 6, 7*).

The firm's strategic alliance has been an efficient approach to acquiring complementary assets needed to support successful commercialization of innovative technology. In 2014, Samsung initiated alliances with broadcasters and content providers for more broadcast content, joining with Netflix to launch a 4 K UHD streaming service and expand 4 K content partnership with twentieth Century Fox. (*Event ID:8*).

All strategic decisions by leaders should be made promptly to capitalize on opportunities. The vice-president of marketing of Samsung stated that the firm's investment was timely as it was initiated when industrial technology was expanding rapidly towards the digital paradigm. Accelerating the supply chain and decision-making process with firm leadership by top management has been the driving force behind successful seizing of opportunity. (*Event ID: 9*).

### *Strategic flexibility*

Repetitive reconfiguration of resources to cope with environmental change plays a key role in sustainable performance of the established firm. Samsung's vertical integration in owning part of its affiliates in the supply chain is a strategy to diversify product lines, broaden its eco-system and increase strategic flexibility by initiating product planning. For example, Samsung, as an end-product manufacturer, has introduced the Backlight + Module + System (BMS) model, whereby the firm directly produces the LCD module, while in the past the entire module was purchased from module makers such as Samsung Display, AUO, etc. In 2014, the firm acquired SmartThings – a rapidly growing home automation start-up – to create the “smart apps” function that allows various electronic devices, including Smart TVs, to sync and communicate with each other. (*Event ID: 10, 11, 12*).

The firm has diversified its products across four main fields - PDP TVs, LCD (LED) TVs, Rear Projection (RP) TVs and CRT TVs - setting them apart from competitors by spreading risk and helping reinforce the firm's control over the market. As a result, Samsung can maximize earnings from a variety of products. Even when there was a decline in CRT TVs, RPTVs, and PDP TVs, that damaged several established firms in the industry, the firm maintained its bottom line by reallocating resources to maximize profits. (*Event ID: 13, 14*).

### *Entrepreneurial orientation*

Samsung has revealed its innovativeness by unveiling a number of innovative products to focus public attention on international electronics shows such as the Consumer Electronics Show (CES) and International Funk Ausstellung (IFA). Samsung demonstrated their wafer-thin OLED TVs and 85-in. UHD TVs, highly appraised by the foreign press at CES, in 2012. Gesture controlled TVs and curved

TVs unveiled in 2013 are also outcomes of the firm's innovativeness beyond stereotypes. (*Event ID: 15, 16*).

Samsung's strategy has been future-oriented and an aggressive investment was initiated in market pre-emption before actual market demand, even in a time of global business depression. The firm prepared for the digital revolution with early investment of receiver chips for digital TVs and proactively launched the first LED TV globally simultaneously while competitors hesitated to engage in risk during a global economic recession. To initiate producing panels of larger screen size, Samsung standardized products in terms of panel size to seize an advantageous position. Hence, the firm could manage the world's first 7th and 8th generation lines to enable mass production of a panel larger than 40", holding a dominant position in the underselling race. (*Event ID: 17, 18, 19*).

### *Organizational learning*

Samsung acquired advanced technology (i.e. image technology) of Sony from a joint venture with Sony started in 2004 and created a technology cooperation network with leading LCD panel makers, such as AUO and Sharp, in 2006. This enabled Samsung to secure external fundamental technologies with ease, focusing on producing a more differentiated technology for the firm. Through extensive cross-licensing agreements, the firm could take advantage of the knowledge of other leading firms while avoiding potential lawsuits. (*Event ID: 20, 21*).

In addition, knowledge share with business partners through win-win management has been a significant path in developing new knowledge. Cooperation with its business partners from the early stage of project planning enabled development of Transparent Opaque Color (TOC) technology in 2008, which combines a differentiated external color for TV products by implementing a dual injection method. (*Event ID: 22*).

### **Case of Sony**

#### *Environmental sensing*

Sony's officials dismissed LCD technology, considering that the technology was insufficient, and invested in premature technology such as organic Electroluminescence (EL), while Samsung predicted market transition to digital TV and emphasized product commercialization in advance of competitors. (*Event ID: 23*).

Sony's executives underestimated competitors in technological aspects and neglected market trends, placing themselves within boundaries of inherent standards. An electronics analyst in Tokyo stated, "Sony has missed the market, because its former products were so successful that it was unable to move forward". (*Event ID: 24, 25*).

#### *Opportunity seizing*

Sony's executives have expressed the firm must make products consumers most desire. Although Sony recognized new opportunity and released the world's first OLED TV with an 11-in. screen in 2007, the firm failed to create customer value in the real market.

Sony discontinued the innovative product in 2010, because of a technical barrier associated with mass production and screen enlargement. The price was not affordable for most customers. (*Event ID: 26, 27*).

However, Sony boosted its market share of LCD TVs with its Bravia series equipped with state-of-the-art functions. A joint venture with Samsung, named S-LCD, enabled Sony to provide the required number of LCD panels for Bravia TVs. Such a joint venture can allow the entrepreneurial firm to quickly acquire resources and capabilities necessary to embark on strategic renewal (Espinosa and Suanes 2011). In addition, Howard Stringer, Sony's former chief executive, announced a series of content partnerships, including an agreement with CBS, allowing Sony's Bravia owners to watch Internet-based CBS content with an internet module. (*Event ID: 27, 28*).

Experts have long criticized Japanese executives for clinging to businesses long after changes in technology or markets have left them unable to earn profits. Critics have suggested that Sony has been too bureaucratic and unable to make timely decisions in the fast-changing market, owing to a reluctance to relinquish outdated technologies. Sony planned to sell 7.2 million of the bulky old-style CRT-TV sets, even when the market had collapsed amid rapid shift to flat panel TVs at the end of 2005. Later, Mr. Hirai, Sony's chief executive, replaced many of its senior management team and operating heads, noting that if Sony was known for not acting quickly, this sense of urgency was important. (*Event ID: 29, 30, 31, 32*).

### *Strategic flexibility*

In the high-volume, low-margin digital TV business, Sony failed to reallocate resources efficiently because production resources were scattered among the country's many companies, none of which built sufficient scale. The ratio of vertical integration, directly affecting profitability, was approximately 10% for Sony's LCD TVs. While Sony won attractive profit margins by manufacturing 50% of the product's components in-house for CRT TVs, the ratio of in-house procurement became much lower for LCD TVs. (*Event ID: 33*).

However, under intensified low-profit competition, the strategy of vertical disintegration as well as vertical integration is critical in large, established firms. In 2011, the TV manufacturing business of Sony was split into three distinct groups, focusing on LCD TVs, outsourcing operations, and next-generation TVs for efficient resource allocation. In 2015, Sony planned to produce TV products outside of Japan, to minimize overhead and adapt to the changing consumer landscape. Currently, Samsung stands a crossroad in solving the management issue of massive in-house organization. (*Event ID: 34*).

### *Entrepreneurial orientation*

Sony has been a pioneer of new technology, developing world-first innovative products. An electronics analyst at Morgan Stanley in Tokyo stated, "In the past, Sony created products that didn't previously exist". The firm introduced its first OLED TV, most notable for a paper-thin screen and crystal LED display that used miniature light-emitting diodes instead of pixels. Glass-free 3D TVs and 84-in. ultra HD TVs were showcase at CES, exhibiting cutting-edge technology. (*Event ID: 35, 36*).



Conversely, in 2008, several analysts expressed that Sony's culture of focus on innovativeness of new technology has diminished and the firm currently has few technology entrepreneurs. They are struggling with an entrenched business culture that resists change as with Japan's technology advances, of which reputation and relationships are critical and delicate. (*Event ID: 37, 38*).

While entering a digital era, Sony's impaired balance sheets have hindered proactive investment of risk taking. For example, although Sony planned to ramp up its OLED TV factories through 2010, it needed to downsize efforts in OLED TV due to financial issue as well as technical limitations. Nevertheless, since 2010, Sony has continued to significantly contribute to the future of 3D LCD TV and Ultra HD TV market by using its advantage in content development. (*Event ID: 39*).

### *Organizational learning*

To protect Sony's intellectual property, their policy of knowledge management was made exclusive. 'Trinitron' technology, enhancing color and brightness of CRT TVs, is an example of intellectual property that was extremely lucrative as it facilitated significant increase in popularity of products. However, entering the digital era, Sony was not active in new learning and was unable to develop new products based solely on its knowledge base, and failed to achieve vertical integration. (*Event ID: 40, 41*).

In addition, Sony's organizational structure of separate business units, described as its "silo" business units, hindered organizational learning by blocking knowledge share and integration, resulting in duplicated efforts, according to an analyst at Morgan Stanley. Poor communication between the corporate office and Sony's far-flung operations is directly responsible for Sony's failure to move effectively into new markets. Recently, Sony has struggled to improve its organizational structure to enhance its communication and learning efficiency by connecting business units under direct leadership of a CEO. (*Event ID: 42, 43*).

## **Case of Panasonic**

### *Environmental sensing*

Panasonic's strategy has been narrowly focused on plasma technology, as a result of managers' false perception that PDP TVs will be dominant in the digital TV industry. Although Panasonic earlier forecasted market change to digital TVs with shutdown of analogue broadcasting in many countries, it expected that the global PDP market would expand from 10 million panels in 2008 to 25 million by 2010, dominating the large-sized market. In 2004, Masaaki Fujita, director of Panasonic's TV business unit, forecasted that even if LCD TVs expand in the market, PDP TVs will comprise 90% of the global market for TVs with screens larger than 37-in., later proven to be an erroneous perception. (*Event ID: 44, 45, 46, 47*).

### *Opportunity seizing*

Panasonic had been launching new PDP TVs annually, until the firm decided to end PDP production in 2013, judging that technology they had been manufacturing was no

longer profitable. While Panasonic has superior plasma technology, it could not generate sufficient value because of high power consumption, overheating, and cost issues of plasma technology, although the chronic post-image issue of LCD has been overcome. Analysts have stated that best technology does not always win because consumers purchase products based on benefits offered such as cost or user convenience, not based on technology. (*Event ID: 48. 49*).

As evidence of Panasonic's strategic alliances, in 2008, the firm teamed up with other TV manufacturers – Sony, Hitachi, and Sharp - for a free portal service that linked users to websites with news, weather, games, and shopping. In 2012, Panasonic considered joint development of OLED panels with Sony, parlaying use of respective technologies, reducing total cost of production, potentially making OLED panels more affordable in future TVs. These alliances promoted efficient product development, although not every product was successful. (*Event ID: 50. 51*).

While the former CEO of Panasonic always improved organizational efficiency for prompt decision-making, he overlooked the timely opportunity to change the decision to heavily invest in a new PDP production line. When the factory building was completed in 2009, LCD technology had dominated the market and Panasonic's new factories were rendered inoperable. (*Event ID: 52*).

### *Strategic flexibility*

Panasonic, the leading maker of PDP TVs, boosted capacity of plasma panels in factories without reconfiguring its product mix, even though LCD TVs were dominant in the market. The move was geared at boosting overseas sales, primarily in the crucial U.S. market. As a result, Panasonic has been unable to overcome loss of market share with LCD as it exited PDP soon afterwards, while other major players managed the transition from PDP to LCD TV to avoid considerable loss in market shares. (*Event ID: 53*).

While Panasonic developed many LCD TVs in an effort towards product diversification, no TVs were larger than 37-in.. In 2010, when PDP technology struggled to compete with LCD, Panasonic launched only two product lines of PDP TVs, while Samsung released a total of fifteen product lines, including eight LED TVs, one LCD TV, and six PDP TVs. (*Event ID: 54. 55*).

### *Entrepreneurial orientation*

Panasonic has been devoted to innovation of production technology to compete against the LCD TVs market. According to an executive of Panasonic's PDP TV business unit, the new 147,000 square meter plant that opened in 2007 is more efficient through process innovations and the implementation of a new multi-panel production system that yields eight panels per glass sheet, an increase from the original six panels per sheet for 42-in. screen. Moreover, the weight of the panels was reduced, with glass thickness reduced from 2.8 mm to 1.8 mm, and panel power consumption was reduced by 48%. However, Panasonic's innovation did not extend beyond the area of plasma technology where the firm is currently advantageous. (*Event ID: 56. 57*).

The former CEO of Panasonic took proactive action of digital TV development by concentrating its resources on advanced technology at the time of technology transition in the early twenty-first century. Panasonic could thus develop PDP TVs with the best quality and that were sufficiently competitive with the single product line, immediately before LCD technology emerged as the display standard. The firm's strategy has always been aggressive towards market dominance, building the world's largest plant for production of PDP TVs in 2009. (*Event ID: 58, 59*).

### *Organizational learning*

Previously, Panasonic was criticized for imitating Sony's new products. Kuniwo, nominated as the CEO of Panasonic in 2000, attempted to integrate knowledge from all departments of the firm as well as Sony, leading to the creation of new knowledge. It is believed that Panasonic's up-to-date PDP TVs with advanced technologies is the outcome of knowledge integration and creation. (*Event ID: 60*).

### **Research findings: additional dimensions (antecedents)**

From content analysis, we derived several significant antecedents of our conceptual framework – financial/human resources, brand reputation, and firm's experience – that influence SE of established firms. Supporting evidence from our research case and relevant existing studies are described as follows.

#### *Financial/human resources*

A combination of resources and the creation of economic value activities are at the heart of entrepreneurial creativity and development of dynamic capabilities (Zahra et al. 2006). A firm's valuable resources, including sufficient financial asset and talented human resource with experience or extensive social network, influence future entrepreneurial strategy and have beneficial outcomes (Baron and Tang 2009; Hitt et al. 2011; Kor et al. 2007; Tavassoli et al. 2017). Although resources such as financial and human assets cannot improve a firm's performance directly, valuable resources support organizational orientations so that they can drive SE (Eriksson 2014; Lin and Wu 2014).

Industry experts have forecasted that market dominance of leading firms with sufficient resources could be further solidified by entering fierce underselling competition. Samsung's earnings have allowed investment of billions of dollars in future technology development as well as in production facilities, fueling rapid growth in capacity and efficiency. (*Event ID: 61, 62*).

Human resources of Samsung obtained by recruiting global experienced talent with broad networking skills have also fueled momentum to the firm's competitiveness and comprise its future growth engine. Samsung's chief executive stated, "One genius can feed millions of others". (*Event ID: 63*).

Panasonic's proactive strategy of expanding production capability of PDP TVs could be enabled by exploiting massive resources. Panasonic's plasma panel factory, the world's largest PDP TV factory, cost \$3 billion USD. (*Event ID: 64*).

### *Brand reputation*

Brand reputation of established firms, accumulating over many years through reliable product quality and service, is positively working towards product sales by building customer loyalty.

Samsung was transformed into Asia's most valuable technology company with its reputation and cachet, from its beginning as a low-quality mass producer. In 2010, Samsung was awarded the most rapidly rising brand in 'BrandZ Top 100' research. A director at the BrandZ institute stated, "The TV business is strongly branded and Samsung has the strongest brand in LCD TVs". As promotion for the premium brand, the firm demonstrated premium LED TVs at the Etro fashion show to attract Italian consumers and at the Louvre Museum to attract French citizens. A vice-president of marketing of Samsung stated that, "We realized we could no longer compete on price at the low end of the market. We had to improve our brand, design and technology". (Event ID: 65, 66, 67).

Sony and Panasonic have also won considerable reputation and loyalty from global consumers for decades, as manufacturers of high-tech electronics with prominent quality. Brand name has significant meaning for these established firms since it guarantees product quality and service, thereby attracting customers. Sony launched 'Bravia' as an exclusive brand of its LCD TVs. It clarified a will to regain market power in the LCD TV market with massive investments in promotion of the new brand. 'Panasonic' is an integrated brand name of Matsushita Electronics, changed from the 'National' brand. Panasonic strategically focused on the most profitable industry and won global popularity. Viable brand reputation enables established firms to improve customer loyalty and boost product sales. (Event ID: 68, 69).

### *Firm's experiences*

A firm's previous experience shapes their current position and constrains future behavior, related to path dependencies, recognizing that 'history matters' (Teece et al. 1997). Successful experience of an established firm can enhance an entrepreneur's diverse knowledge about environments and capability foundation, thereby positively influencing entrepreneurial activities and performance under environmental volatility (Cheng et al. 2012; Entrialgo et al. 2000). Although a firm formed by copious experiences has a viable background in organizational learning and innovation, managers' knowledge inertia to resist changes may undermine the firm's adaptation to environmental change (Liao et al. 2008).

Samsung, starting in the 1970s as a manufacturer of analogue CRT TVs, has accumulated core technologies required for the digital era from experiences of almost half a century. Success in the in-house R&D of display modules and semiconductor chips centering on digital TV development enabled the firm to lead the digital TV market. An executive of the firm stated that although it is difficult to win incumbents that are so experienced, Samsung could create a new path while selecting a different technology field. (Event ID: 70, 71).

Sony also has an advantage in experience inertia from the analog era, but strong knowledge inertia of managers hindered their ability to sense new knowledge,

inducing them to resist organizational learning of digital technology. If a firm grows overconfident with previously profitable knowledge, it can easily be in an unfavorable position for SE. The legacy of Sony's past success has hindered management's ability to understand market trends and experience accumulated for decades as leading manufacturers of TV products placed them within boundaries of inherent standards, neglecting market trends. (*Event ID: 72, 73*).

## Discussion and implication

### Discussion

This study established a conceptual framework of SE through the lens of DCV, as a process of sustaining competitive advantage of established firms. Empirical study conducted for three established firms in the digital TV industry complements and finalizes the proposed research framework. Empirical results reveal the distinct difference in degree of SE, yielding different performances in the era of technology transition. As we show in Figs. 8, 9 and 10, a firm with higher revenue share demonstrates higher frequency of positive articles relevant to dimensions of SE in the period of research. Therefore, a firm with a higher level of SE can better develop dynamic capabilities and it is easier to sustain competitive advantage in highly volatile environments.

In addition, dimensions of antecedents described in “[Research findings: additional dimensions \(antecedents\)](#)” section - financial/human resources, brand reputation and the firm's experience - influence an entrepreneur's cognitive capability,

### Strategic Entrepreneurship

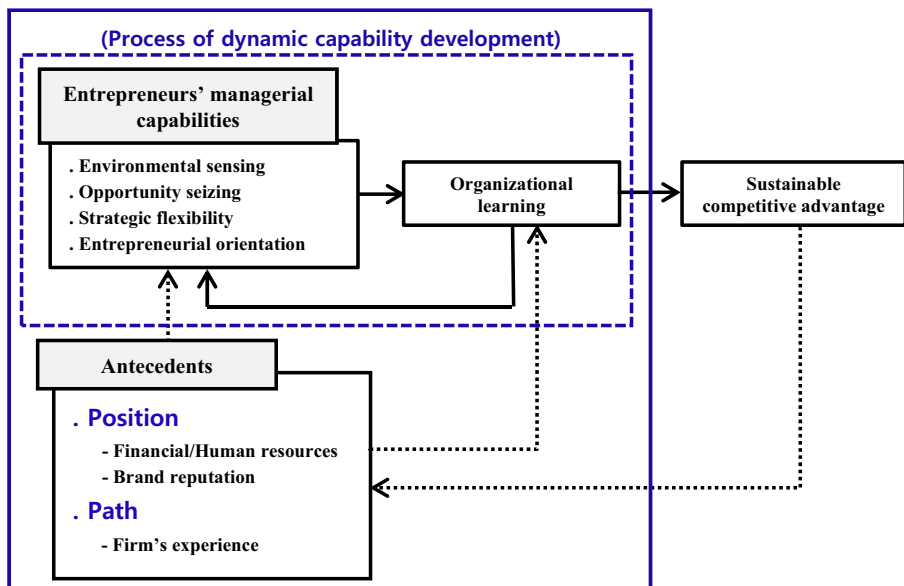


Fig. 11 Conceptual framework of SE: final construct

strategy, and organizational learning capability, impacting a firm's performance. Specific resources or experience accumulated by an established firm over time enable development of inherent managerial and organizational capabilities. These antecedents can be promoted as a consequence of sustainable superiority of a firm.

Our initial framework of SE shown in Fig. 5 can be complemented by adopting the notion proposed by Teece et al. (1997) previously suggesting that three categories of 'process, position and path' determine a firm's distinctive dynamic capabilities and sustainable performance. The firm's asset position and evolutionary path are antecedents to shape organizational processes (Teece et al. 1997). Initial framework of SE includes 'process of dynamic capability development' that focuses on entrepreneurial management and organizational learning, while dimensions of antecedents form the 'position' (i.e., financial/human resources and brand reputation) and 'path' (i.e., a firm's experience).

Therefore, this study finalizes the framework of SE by adding antecedents including position and path factors (Fig. 11). The final construct of conceptual framework provides a substantial cycle of dynamic capability development steered by SE, leading to sustainable performance of established firms in a volatile environment.

### Theoretical implication

Our study contributes to existing research of SE by establishing the conceptual framework that suggests dimensions of SE linked to sustainable competitive advantage of established firms and thereby bridging the gap between entrepreneurship and strategic management studies. Broad review of studies on DCV, enriched by multiple case research, could facilitate conceptualizing the multifaceted nature of SE as a core capability to a firm's sustainable performance. Conceptual framework interprets five dimensions of SE that activate a substantial cycle of a firm's sustainable performance. Process of dynamic capability development in which entrepreneurs' managerial capabilities interacts with organizational learning comprises the main part of SE, while financial/human resources, brand reputations and experiences of established firms boost a process of dynamic capability development and thereby leading to sustainable performance. This study validates that high degree of SE considerably contributes to sustainable competitive advantage of established firms by applying the suggested framework of SE to three established firms in the digital TV manufacturing industry.

As the scope of this study is extensive and integrative platform of SE is unsettled, further conceptual study to refine our research framework must be conducted. We suggest several future research themes: how experiences of a firm enable shaping the entrepreneur's managerial capability, how entrepreneurs of established firms can seek appropriate balance between exploration and exploitation, and how entrepreneurs' managerial capabilities can promote organizational capability and vice versa. Follow-up case studies of firms in diverse industries and environmental dynamism, and of different sizes or ages, based on the proposed conceptual framework of this study, should enhance our research outcomes and thereby shed light on the research fields of entrepreneurship and strategic management.

## Managerial implication

Conceptual framework of SE proposed in this study can enable decision-makers of established firms to diagnose a firm's degree of SE and set future managerial directions by judging strengths and weaknesses of the firm. Each dimension of SE can be quantitatively measured by interviewing organizational managers, that can be further discussed in future studies. Findings from this study also provide several managerial implications for a top management team regarding how an established firm can survive for lengthy period in a modern volatile environment by promoting SE as follows.

First, a firm's top management must continuously scan customer needs and market trends based on accurate customer-related surveying, e.g., by institute for market research in the case of Samsung. As revealed in the empirical study, successful entrepreneur's strategic decision and market-oriented products have been measured by precise market analysis, while established firms fail to sustain revenue share when they only demonstrate advanced technologies without a broad view of customer information and knowledge of what the general market needs.

Second, evidence from established firms in the digital TV industry reveals that top management should be prepared to initiate timely decisions for successful exploitation of recognized opportunities. In a highly volatile environment, top managements' decision can be obsolete unless they match the speed of technology transitions. The empirical study indicates that strategic alliance for mutual benefit, including joint ventures or technology cross-licensing, is an efficient path to successfully implementing such decisions in a short period.

Third, risk management through product diversification and resource reallocation is required to market uncertainty. The case of Panasonic indicates why established firms must diversify product lines to minimize risks and maximize profits amid uncertainty. Top management must have a contingency plan ready if managerial decisions fail.

Fourth, organizational culture of entrepreneurial orientation and learning should be encouraged. This organizational culture can be cultivated with a reward system to promote innovative and experimental thinking. To activate organizational learning in large organizations of established firms, barriers among departments interrupting communication and knowledge shared within the firm should be removed. Recently, more established firms have adopted the collective intelligence system enabling knowledge integration/creation within firms.

Finally, top management of established firms should overcome knowledge inertia and use the firm's experience to create a future path. The case of Sony reveals that how knowledge inertia and resistance to change accumulated from past success can hinder entrepreneur's perception and place them within inherent boundaries. Top management should not rely on technology or standards successful in the past. Valuable experience of new technology/product/process development can be used to create successful future paths in volatile environments, through the firm's SE, i.e. environmental sensing, opportunity seizing, strategic flexibility, entrepreneurial orientation and organizational learning.

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## Appendix

**Table 4** This appendix summarizes part of the evidence described in empirical research findings

Event ID	Summary of events	Source	Category
1	President of Samsung's TV business expects that almost every U.S. household will upgrade to flat panels from analogue TVs next year, when the U.S. government mandates a switch to the digital broadcasting.	Financial Times (2008)	Environmental sensing
2	Samsung's 'Design Institute of Europe' in London has conducted research on Europeans' life and consumption trends since 2005.	Chosun Ilbo (2013)	
3	The market analysis of Samsung indicated that middle or upper-class consumers are willing to pay more to purchase premium LED TV products with an ultra-slim set and a higher definition screen.	Chosun Ilbo (2009)	
4	"The company will do well to communicate very clearly with consumers what is the value proposition of these new technologies," says an analyst at Technology Business Research.	Financial Times (2005)	Opportunity seizing
5	A surge-safe TV is a market-oriented product specifically for the African region where electrical power is unstable. The digital TV market growth is expected to be more than 30% in the region.	Chosun Ilbo (2013)	
6	As well as price, a lack of content recorded in Ultra HD is likely to put off consumers. Broadcasters also worry that they do not have the bandwidth to transmit in the format.	Financial Times (2013)	
7	These and other fruits of Samsung's fevered techno-imagination prompted an inevitable question: Why is the technology required? The response to that question will be "because we can develop it."	Financial Times (2014)	
8	Samsung and twentieth Century Fox today revealed so called 'New UHD Content Ecosystem'. The partnership will also explore additional collaboration opportunities in multiple areas of innovation.	CNET (2014)	
9	Samsung aims to accelerate the supply chain and decision-making	Financial Times (2005)	

**Table 4** (continued)

Event ID	Summary of events	Source	Category
	processes. In fact, it was busy making difficult strategic choices as the industry was expanding rapidly in the late 1990s.		
10	Introduction of BMS system allowed Samsung more flexibility in module and TV design, which can enable greater product differentiation.	Displaysearch (2012)	Strategic flexibility
11	Samsung now appears to be as vertically integrated with all key components under its roof, as a strategy to pursue uniqueness in the future.	Displaysearch (2008)	
12	In 2014, Samsung acquired SmartThings to create “smart apps” that allow its various electronic devices, including Smart TVs, to sync and communicate with each other.	Chosun Ilbo (2014)	
13	“We have tripled our lineup,” a Samsung spokesperson announced. Its stable of curved TVs now stands at 17 models, including 4 K, full HD and LED variants, ranging from 48- to 105-in..	CNET (2014)	
14	“Samsung has done a great job of reducing earnings volatility from their cyclical business through product diversification.” says Dan Heyler, an analyst at Merrill Lynch in Hong Kong.	Financial Times (2005)	Entrepreneurial orientation
15	Samsung will unveil an 85-in. UHD TV in the new year, which has bagged one of the technology world’s most prestigious innovation awards.	CNET (2012)	
16	There were also some stunning screen technologies. Samsung’s booth at CES was studded with an array of wafer-thin 55-in. OLED TVs.	Financial Times (2012)	
17	Samsung could operate the world’s first 7th and 8th generation line to enable mass production of a panel larger than 40”, thereby holding a dominant position in the underselling race.	Chosun Ilbo (2005)	
18	Keeping ahead of the game is the top priority of Samsung. “In a high-tech business, we have to develop next-generation products before competitors.” says Mr. Yun, chief executive of Samsung.	Financial Times (2005)	

**Table 4** (continued)

Event ID	Summary of events	Source	Category
19	“Although the global economy is still uncertain, we have to increase investment to take global business opportunities,” says Mr. Lee, chairman of Samsung.	Financial Times (2010)	Organizational learning
20	Samsung could acquire advanced technology, i.e., image technology of Sony, from the joint company with Sony started in 2004.	Chosun Ilbo (2005)	
21	Samsung made technology cooperation network with AUO and Sharp in 2006, which facilitates advanced technology acquisition in a short period, avoiding potential lawsuits.	Chosun Ilbo (2006)	
22	Transparent Opaque Color (TOC) technology developed in 2008 is a successful example of knowledge development, cooperating with business partners through win-win management.	Chosun Ilbo (2009)	
23	When TVs using LCD technology came along in the early twenty-first century, Sony officials dismissed them and invested in the premature technology such as organic EL (Electroluminescence).	Chosun Ilbo (2005)	Environmental sensing
24	“Threat of Samsung is definitely overestimated. In particular, nothing to worry about technological perspective,” says one former executive of Sony.	Chosun Ilbo (2009)	
25	“Sony has missed the market trend because its former products were so successful that it was unable to move forward,” says Yasuo Nakane, electronics analyst at Deutsche Securities in Tokyo.	Financial Times (2005)	Opportunity seizing
26	Mr. Chubachi says, “Sony needs to make products that consumers really want, rather than getting carried away by cutting edge technology for which there may be no real market.”	Financial Times (2006)	
27	Sony released the world’s first OLED TVs, an 11-in. costing \$2500 in 2007, promising they would become bigger and cheaper. However, Sony failed to bring the product into the market.	Financial Times (2009)	
28	Sony’s LCD TVs under a new brand called ‘Bravia’ boosted its market	Chosun Ilbo (2005)	

**Table 4** (continued)

Event ID	Summary of events	Source	Category
	share of LCD TVs. The joint company with Samsung supplied sufficient amount of LCD panels for Bravia.		
29	Sir Howard Stringer, Sony's chief executive, announced a series of content partnerships, including an agreement with CBS, allowing Bravia owners access to watch Internet-based CBS content.	Financial Times (2008)	
30	"Sony is slow and heavy" says Kazuharu Miura, analyst at Daiwa Research Institute. Many critics also believe Sony has a bureaucratic business structure mix reluctant to let go of ancient technologies.	Financial Times (2008)	
31	Sony still plans to sell 7.2 m of the bulky old-style sets CRT-TVs this year, even though the market has collapsed amid the rapid shift to digital flat panel TVs.	Financial Times (2005)	
32	Mr. Hirai noted, "I reassigned or replaced Sony's senior management team and its operating heads. If Sony was known for not acting very quickly, then this sense of urgency is very strong to me."	Financial Times (2013)	Strategic flexibility
33	While Sony could reap attractive profit margins with making 50% of the product's components in-house for CRT TVs, the ratio of in-house procurement became much lower for LCD TVs.	Financial Times (2005)	
34	According to Reuters, Sony's TV business is split the three units of LCD TVs, outsourcing operations, and next-generation TVs to enable the company to enhance profitability and efficiency.	CNET (2014)	
35	The world's first OLED TV of Sony, referring to its ultra-thin and flexible screen technology, is just 3 mm thick and the innovative product will sell for \$1740 beginning this year.	CNET (2007)	Entrepreneurial orientation
36	"Sony has been a pioneer to create products that didn't previously exist," says Masaharu Ono, electronics analyst at Morgan Stanley in Tokyo.	Financial Times (2005)	
37	Sir Howard Stringer, Mr. Hirai's predecessor, also struggled with	Financial Times (2008)	

**Table 4** (continued)

Event ID	Summary of events	Source	Category
	strong internal resistance to change and a conservative business culture as Japan's technology is advancing.		
38	Critics said, "Sony's innovative style has diminished". Short-term performance is more emphasized than long-term development of innovative products.	Chosun Ilbo (2012)	
39	While Japan has scaled down its efforts on OLED, South Koreans will continue leading the charge. Sony's impaired balance sheets have hampered its proactive investment with taking risks.	CNET (2014)	
40	Sony had developed the Trinitron technology, which made its TVs so popular, and made more than half the components that go into its CRT TVs.	Financial Times (2005)	Organizational learning
41	"Our existing advantage like Trinitron technology left us inactive to learning new things and made our transition to flat TVs slower than we expected," concedes one Sony official.	Financial Times (2005)	
42	Sony plans to improve efficient communication and learning by removing obstacles among business units and connecting them under the direct leadership of CEO, as organizations of Samsung do.	Chosun Ilbo (2005)	
43	Sony's organizational structure hampers co-operation across different organizations what Sir Howard calls 'silo' business units. "Sony's separate business units are really independent," says Mr. Ono.	Financial Times (2005)	
44	Toshihiro Sakamoto, president of Panasonic's audio-visual business, noted, "Take the U.S., Next week the analogue signal will be stopped so people have to change to digital TVs."	Financial Times (2008)	Environmental sensing
45	Panasonic believes that the global PDP market will expand from 10 million panels this year to 25 million by 2010. It plans to maintain the 40% market share.	CNET (2008)	
46	"Even if LCD TVs expand in this market, PDP TVs will make up 90% of the global TV market with screens larger than 37-in.", says	Financial Times (2005)	

**Table 4** (continued)

Event ID	Summary of events	Source	Category
	Masaaki Fujita, director of Matsushita's PDP TV Business Unit.		
47	Hirotoishi Uehara, the head of Panasonic's TV business told, "Our plasma panel factory is at full capacity but we've increased 3D panel production by 30% compared to our original plan."	Financial Times (2010)	
48	Plasma's biggest problem was that far more companies had committed to LCD. The best technology doesn't always win. Consumers buy benefits, not technology.	Displaysearch (2013)	Opportunity seizing
49	Plasma technology could not overcome its chronic issue such as high power consumption, overheating and cost issue, while LCD has overcome its afterimage issue.	Chosun Ilbo (2013)	
50	Panasonic has recently teamed with Sony, Hitachi and Sharp to start a free portal that links users to web sites that provide consumer-oriented services, such as news, weather, and shopping.	CNET (2008)	
51	Panasonic plans to pool resources to bring down the cost of state of the art OLED TVs, by working with Sony to develop technology to make OLED sets more affordable.	CNET (2012)	
52	Decision-makers of Panasonic missed the opportunity, instead they heavily invested to new PDP production line. Even after the new factories were completed in 2009, they were rendered inoperable.	Chosun Ilbo (2014)	
53	While the general market appears to be driven more by pricing than display technology, Panasonic has been unable to replace its loss of market share with LCD as it exited PDP.	CNET (2014)	Strategic flexibility
54	Samsung and LG produce many plasmas but both are also well-committed to LCD. Panasonic makes LCD TVs as well, but nothing larger than 37 in..	CNET (2009)	
55	Panasonic launched only two product lines of PDP TVs, while Samsung released 15 product lines including 8 LED TVs, 1 LCD TV and 6 PDP TVs.	Chosun Ilbo (2010)	

**Table 4** (continued)

Event ID	Summary of events	Source	Category
56	Hiroynki Nagano of Panasonic said, "The new plant will be more efficient through material and process innovations, implementing a new multi-panel production system."	CNET (2008)	Entrepreneurial orientation
57	It's a drastic change of Panasonic's plasma panel. It's now lighter, with glass thickness reduced from 2.8 mm to 1.8 mm, and panel power consumption has been cut by 48% in same time frame.	CNET (2008)	
58	Panasonic has restructured more aggressively than competitors and focused firepower around its most profitable lines, such as plasma panels.	Financial Times (2005)	
59	Panasonic built the world's largest plant for production of PDP TVs in 2009, to occupy the digital TV market with massive production and thereby standardize products.	Chosun Ilbo (2012)	
60	Kuniwo, nominated as CEO of Panasonic in 2000, has integrated capacities from the whole of the group as well as Sony, leading to creation of new technology for upcoming products.	CNET (2005)	Organizational learning
61	Samsung's earnings have allowed it to invest more in production facilities than most rivals, fueling rapid growth in capacity and efficiency. It plans a further \$8940 billion this year.	Financial Times (2005)	Financial/ human resources
62	Samsung invested the highest amount ever, \$40 trillion in R&D and facilities last year. According to the report, the firm's investment in R&D runs to 6.5% of total sales.	Chosun Ilbo (2014)	
63	Samsung's chief executive says: "One genius can feed millions of others. Creativity will be the most important driver of business success for the upcoming era. We need to hire the best."	Financial Times (2005)	
64	Panasonic's new plasma panel factory, the world's biggest PDP TV factory, cost \$3 billion, more than double the total property, plant and equipment owned by Pioneer.	Financial Times (2009)	
65	Samsung takes the prize for fastest-rising brand in 2010,	Financial Times (2010)	Brand reputation



**Table 4** (continued)

Event ID	Summary of events	Source	Category
	‘BrandZ’ research. A director at the institute adds, “The TV business is strongly branded, Samsung has the strongest brand in LCD TVs.”		
66	A vice-president of marketing of Samsung says, “We realized we could no longer compete on price at the low end of the market. We had to improve our brand, design and technology.”	Financial Times (2005)	
67	The firm has demonstrated premium LED TVs at the Louvre Museum and Centre Pompidou to draw the attention of French citizens as a promotion of the brand.	Chosun Ilbo (2008)	
68	Sony launched ‘Bravia’ as an exclusive brand of its LCD TVs. It clarified its will to regain market power in LCD TV markets with enormous investment in promotion of the new brand.	Chosun Ilbo (2005)	
69	‘Panasonic’ is an integrated brand name of Matsushita Electronics, changed from ‘National’ brand. Panasonic strategically focused on the most profitable industry and won global popularity.	Chosun Ilbo (2006)	
70	Samsung successfully constructed in-house R&D process for production of digital TV’s core components, i.e., display module and semiconductor chip, from accumulated experience.	Chosun Ilbo (2012)	Firm’s experience
71	“It was nearly impossible for a newcomer to win incumbents with so much experience. But digital technology was a blank canvas, so we created a new path,” says an executive of Samsung.	Financial Times (2005)	
72	The experience Sony has accumulated over more than half a century as a leading manufacturer of TV products places them within boundaries of inherent standards.	Financial Times (2005)	
73	One critical factor behind Sony’s current issue is the legacy of its past success, which has hampered management’s ability to understand market trends.	Financial Times (2005)	

a <https://www.ft.com>, b <http://www.chosun.com>, c <https://www.cnet.com>, d <https://technology.ihs.com>

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