The Influence of Entrepreneurial Action on Strategic Alignment in New Ventures

Introduction

The alignment of IT strategy with business strategy has been among the top concerns of business leaders for several decades (Kappelman et al. 2014; Niederman et al. 1991). This interest from practitioners has stimulated researchers to produce a voluminous body of literature where definitions and dimensions of alignment have been proposed, measures and models have been developed, and antecedents and outcomes have been identified (Chan et al. 2007). One specific area of interest within strategic alignment research has been the study of how alignment develops and changes in an organization over time. Researchers have described stages of growth in how firms strategically use IT (Burn 1993), phases in the pursuit of alignment (Street 2006), and a model of punctuated equilibrium where extended periods of stability with evolutionary change are interrupted by short periods of rapid transformation with revolutionary change (Sabherwal et al. 2001b).

In spite of this foregoing work, few if any have examined the genesis of strategic alignment and its related processes in new ventures. Some researchers have investigated the strategic role of IT in SMEs, an area of research closely related to new ventures (Bergeron et al. 2001; Bergeron et al. 2004; Cragg et al. 2002; Hussin et al. 2002; Levy et al. 2011; Raymond et al. 2009), others have discussed IT as a tool for innovation (Beckman et al. 2012a; Chen et al. 2010; Fichman et al. 2014), and still others have explored the role of the entrepreneur-leader in technology entrepreneurship (Beckman et al. 2012b). Nevertheless, strategic alignment in new ventures, and specifically the development of alignment from its very outset remains under investigated. .

The purpose of this paper is to explore the manner in which strategic alignment begins and evolves in a new venture. New ventures are an area of active research interest within the broader community of business scholars. Researchers studying new ventures have observed that there are discernible differences in the way that entrepreneurs build and grow their businesses and have therefore constructed several

1

theoretical perspectives to explain patterns of entrepreneurial action. These perspectives are an area of active interest, where "traditional" perspectives that emphasize strategic business planning and rational decision making are contrasted with "emerging" perspectives (Beckman et al. 2012a) where entrepreneurs take less formal approaches to launching a new venture. We seek to extend theoretical perspectives on entrepreneurial action into the realm of IT-business strategic alignment. In addition, we also seek to uncover the processes by which alignment is pursued, a response to calls for research into strategic alignment at levels of analysis below the firm level (Benbya et al. 2006; Chan et al. 2007; Tallon 2007). We therefore propose the following research question to help focus our efforts: "How does the pattern of entrepreneurial action exhibited in a new venture shape the development of strategic alignment?"

The paper is organized as follows. We first review relevant literature, beginning with a description of patterns of entrepreneurial action. Researchers observe a traditional perspective on entrepreneurial action, "causation", that is built on economic theory, rational decision making, and strategic business planning (Casson 1982; Kihlstrom et al. 1979). This perspective contrasts with two emerging perspectives, "effectuation" and "bricolage", that explain that entrepreneurs also often take less formal approaches where decisions are made in response to resource availability and near-term financial considerations, with relatively little long-term planning (Alvarez et al. 2007; Baker et al. 2005; Beckman et al. 2012a; Fisher 2012; Sarasvathy 2001; Shah et al. 2007). After describing these perspectives, we observe that each has particular implications for IT strategy development in new ventures, and ultimately for the way in which IT strategies can be aligned with those firms' business strategies. After the literature review, we describe two case studies that help us address our research question. In the case studies, we describe the patterns of entrepreneurial action at two new ventures. We note the differing ways in which strategic alignment is developed at each firm. In the Discussion section, we present a rationale for how the starting conditions of an organization may influence the route that entrepreneurs take in building a successful IT-enabled firm, presenting testable propositions for further study.

Literature Review

Entrepreneurial Strategy

Entrepreneurial strategy at one time referred to the means by which an organization set and periodically re-established its key relationships with the outside environment (Murray 1984). This term has since been refined to describe a deliberate process where individuals and teams create value by bringing together novel combinations of resources to exploit opportunities in the environment that results in new ventures, products, services, processes, and technologies (Morris 1998). Entrepreneurship also refers to a process of creating new means of production, opening new markets and new sources of supply, creating new organizations, and either doing new things or doing things that are already being done in a new way (Schumpeter 1934). Similar definitions refer to the ability to recognize and act on new opportunities (Kirzner 1973), the ability to engage in novel acts of innovation as part of a firm's core strategy (Drucker 1985), and as the process of taking on financial, psychic, and social risks in creating something new and valuable and receiving the resulting monetary and personal rewards (Hisrich et al. 1998). Researchers also recognize the limitations in defining entrepreneurship as a singular characteristic, and more practically view it as a continuum where firms exhibiting significant opportunity-seeking behavior anchor one end of the continuum, and firms with no opportunity-seeking behavior anchor the other (Barringer et al. 1999).

To the extent that an organization experiments with new ideas (Brown et al. 1997), co-evolves with emerging industries (Rindova et al. 2001), and follows experiential, flexible, improvisational strategies (Eisenhardt et al. 1995), that organization can be characterized as entrepreneurial. Entrepreneurial organizations are compelled to avoid – for as long as possible – the organizational inertia and institutionalism effects that inhibit fast response and experimentation in established firms (Dobrev et al. 2003). For entrepreneurial firms, the absence of well-understood business rules or models can be beneficial because there are fewer constraints. The more entrepreneurial the firm is, the less likely it is to be limited in its activities by established patterns of activity, and the more likely it is to pursue new opportunities that other firms miss (Ahuja et al. 2001). Thus, an entrepreneurial organization is one that has a deliberate strategic intent to create value by recognizing and exploiting opportunities in the environment by

3

developing novel combinations of resources and producing some valued outcome that can be applied to a practical problem.

Patterns of Entrepreneurial Action

How entrepreneurial strategies are sanctioned and enacted depends on the action[1] of entrepreneurs and the cumulative activities of their venture. By observing patterns of decision-making within new ventures, Fisher (2012) and others have examined, compared, and contrasted various theories of entrepreneurial action (Andries et al. 2013; Daniel et al. 2014; Nummela et al. 2014; Solesvik et al. 2013). These are often divided into either traditional theories, ones that Fisher (2012) refers to as the "causation" perspective on entrepreneurial action (Casson 1982; Kihlstrom et al. 1979), and emerging theories, which are referred to as the "effectuation" (Sarasvathy 2001) and "bricolage" (Baker et al. 2005) perspectives on entrepreneurial action.

The *causation* perspective is the traditional perspective on entrepreneurial action. The entrepreneur identifies and evaluates opportunities, establishes goals, formulates a business plan, acquires resources, and generally takes a rational, deliberate, and intentional approach to new venture creation (Baker et al. 2003; Delmar et al. 2003; Katz et al. 1988; Sarasvathy 2001; Sarasvathy 2008; Shah et al. 2007; Shane et al. 2000). In contrast, the *effectuation* perspective explains that in uncertain and dynamic environments, the traditional *causation* model is inappropriate. The entrepreneur's goals develop and emerge over time rather than being planned beforehand, and the entrepreneur focuses on the means at his or her disposal rather than on goals (Sarasvathy 2001; Sarasvathy 2008; Sarasvathy et al. 2005). These means are the resources available to the entrepreneur, including knowledge, skills, and social networks. They also include physical,

---

[1] Some researchers adopt the term "entrepreneurial behavior" to describe the specific actions of the entrepreneur, the actions of his or her employees, and the overall strategic and tactical decision making of a new venture as they exploit market opportunities by developing novel combinations of resources and producing valued outcomes (e.g., Fisher 2012). Other researchers prefer the term "entrepreneurial action", meaning "behaviors through which firms recognize and exploit market opportunities through novelty in resources, customers, markets, or combinations of resources, customers, and markets" (Sambamurthy, Bharadwaj, and Grover 2003, p.242). We recognize the near-equivalence of these two terms [and note even that "action" is used to define "entrepreneurial behavior" (Fisher, 2012, pp 1019-1020), while "behavior" is used to define "entrepreneurial action"]. We nevertheless prefer and utilize the term "entrepreneurial action". We do so (1) based on the aforementioned precedent in IS literature, and (2) because the term "behavior" often carries the connotation of an individual's internal psychological processes. Our focus is not on the internal psychological processes of the entrepreneur, but on the pattern of activity within a new venture.

human, and organizational resources (Barney 1991), and the entrepreneur focuses on these means because they are relatively stable and under the entrepreneur's direct control, a key consideration in uncertain environments. The *bricolage* perspective on entrepreneurial action provides yet another contrast to *causation*. Bricolage means "making do by applying combinations of resources at hand to new problems and opportunities" (Baker & Nelson, 2005, p. 33). In penurious environments, the *bricoleur*-entrepreneur considers the available inputs, the regulatory and institutional constraints, the existing customers, and develops novel recombinations of these elements to create and build new markets in uncertain environments (Baker et al. 2003). Table 1 provides additional detail on these three perspectives.

<<<<<<   Insert Table 1 Here   >>>>>>

Given these three very different perspectives on building a new firm, it seems that there would be potentially far-reaching implications for the way that strategic planning processes and strategic alignment develop. One potentially fruitful area of inquiry is what implications the causation, effectuation, and bricolage perspectives have for IT in the new venture. As technology becomes ever more integral to firms, the study of IT takes on greater and greater importance. We now turn to a discussion of the strategic use of IT before presenting our case studies that indicate how a new venture's IT strategy and strategic alignment develop differently based on the pattern of entrepreneurial action in the young firm.

Strategic Alignment in New Ventures

In the modern era, every firm must consider the ways in which IT can be utilized. New ventures are no exception. Some may choose to use IT simply as a means to improve the efficiency of business processes, while others use IT as a way to directly enable innovation and value creation (Levy et al. 2001). Indeed, IT supports various aspects of new product and service development, differentiation, and diversification (Cragg et al. 2002; Garg et al. 2012). Furthermore, product innovation, market expansion, and network extension are facilitated by strategic deployment of IT (Raymond et al. 2006). Thus, IT can be used to support entrepreneurial activity.

The deliberate, focused use of IT capabilities to facilitate or enable a business's overall mission is known in strategic management and IS literature as *strategic alignment*. Formally, strategic alignment is

5

"…the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans" (Reich et al. 2000 p. 82). Others define it similarly as "applying IT in an appropriate and timely way and in harmony with business strategies" (Luftman et al. 1999 p. 109) and "using IT in a way consistent with the firm's overall strategy," (Palmer et al. 2000 p. 242). Strategic alignment thus exists when an organization's goals and activities and the information systems that support them remain in harmony (McKeen et al. 2003).

A variety of factors have been shown to promote strategic alignment in new ventures, entrepreneurially-oriented firms, and SMEs[2]. The IT sophistication of SMEs promotes strategic alignment (Chao 2009; Hussin et al. 2002; Ismail et al. 2007; Mohamad et al. 2010). The maturity of strategic planning processes also leads to strategic alignment (Chao 2009; Gutierrez et al. 2009). Senior managers' knowledge of and support for IT promotes alignment (Chao et al. 2012; Hussin et al. 2002; Ismail et al. 2007), and the availability of external IT expertise does the same (Hussin et al. 2002; Ismail et al. 2007). Furthermore, employees' trust in, commitment to, and awareness of business and IT strategies facilitates strategic alignment (Chong et al. 2011). Finally, the environmental context (Chao 2009; Raymond et al. 2008), the organizational structure (Garg et al. 2012; Jouirou et al. 2004), and organizational characteristics such as size and age of the enterprise (Ismail et al. 2007; Raymond et al. 2008) also support strategic alignment.

Strategic alignment is important because performance benefits can accrue for the organization whenever it exists. Performance benefits may take the form of growth, productivity, and profitability (Bergeron et al. 2004; Raymond et al. 2008), as well as improved firm image, increased client loyalty, reduced costs, improved efficiency, and improved decision making (Cragg et al. 2002). Of particular importance for new ventures, benefits may also take the form of strategic flexibility (Celuch et al. 2007), or the ability to pursue new business opportunities (Raymond et al. 2006). Thus, strategic alignment is an

---

[2] In an effort to be comprehensive in our literature review, we examined research on new ventures, entrepreneurial firms, and SMEs. We acknowledge substantive differences in these three types of firms, but still recognize that these firms do share some common characteristics (Zahra, 2005). Similarities include, for instance, the reality that most new ventures begin as small businesses, or that new ventures are by definition entrepreneurial. We therefore note that findings from one type may be relevant across all three.

enabler of improved business performance and a building block for competitive advantage, one that the new venture should not overlook.

Summary

The foregoing discussion suggests that new ventures are built in varying ways, with varying patterns of entrepreneurial action on display. Entrepreneurial action has potentially far-reaching implications for how the strategy of the firm is developed. To our knowledge, no research has yet explored the implications of these various patterns of entrepreneurial action for the development of IT strategy and capabilities – with strategic alignment being one of the key capabilities a firm may develop. It seems plausible that the IT strategy will develop in a manner that mirrors the overall pattern of entrepreneurial action at the firm. Specifically, new ventures that exhibit causation-style actions may be more likely to show traditional, planning-oriented IT strategy development and pragmatic, measured progress in pursuing strategic alignment. In contrast, new ventures that display effectuation or bricolage actions may take a more organic, emergent, experimental approach to developing strategy and pursuing alignment. We now search for evidence of these points in the following description of two in-depth case studies.

Methodology

A retrospective case study methodology following an exploratory positivist approach (Dube et al. 2003; Yin 2009) was selected for this research. There were four reasons for choosing the case method. First, the literature comparing types of entrepreneurial action is still growing and case studies are a very useful technique for exploring and validating emerging research concepts (Yin 2009). Second, patterns of entrepreneurial action take shape through a complex process involving multiple influences within a single firm (Mintzberg et al. 1999), and since case studies involve in-depth interactions with founders and other key leaders, researchers gain valuable insights these leaders' perspectives, yielding a richer understanding of the phenomena of interest. Third, retrospective case studies, which have been useful in previous entrepreneurship research (Andries et al. 2013; Fisher 2012), were the only realistic and valid option for collecting data that describes a long period of an organization's history. Fourth and finally, a descriptive

7

positivist approach was used because it matched the purpose of our research: to describe the IT-specific implications of traditional as well as emerging models of entrepreneurial action.

Context and Cases

Site Selection. Two private firms that fit the characteristics of a new venture and display entrepreneurial activity (HealthCo and TechCo[3]) were identified as research sites from a pool of eight organizations. Table 2 shows the selection criteria and organizational demographics for the two selected firms. Owners and senior managers at both firms indicated that their company faced significant risk of the unknown when they started operations (Hisrich et al. 1998). Each firm started in an industry that had little regulation or legislation (Pavlou et al. 2010), created a new business model (Schumpeter 1934), and had, by the time of the data collection, demonstrated an ability to manage rapid change (Pavlou et al. 2010).

<<<<<< Insert Table 2 Here >>>>>>

For HealthCo (a home health care provider), the time period under consideration ran for 24 years, from the company's founding in 1984 to the end of 2005. During this time, the company experienced growth and expansion within its initial market. After making a decision to franchise, HealthCo witnessed several years of additional expansion and growth. During this time, their IT function shifted from being a small-scale, centralized IT function to a moderate-sized, decentralized function to better serve franchisees. Eventually, IT was re-centralized to standardize operations across the growing franchise network. HealthCo was chosen for this study because the entrepreneurial action of the firm as well as the growth and changes in the IT function were transparent.

At TechCo (a visual special-effects firm), we examined an eight-year time period stretching from the company's founding in 1997 to the end of 2005. During these years, the firm grew from a small high-tech start-up into a moderately diversified digital effects and film production company. Growth took place as this company was able to seize sometimes unexpected opportunities to expand their focus from TV

---

[3] Pseudonyms have been used for the company names at their request.

8

commercials to include TV miniseries and even major feature films. TechCo evolved from an unknown and under-capitalized startup that was forced to repurpose existing IT resources to complete each new project, to an award-winning boutique special-effects firm that learned how to deliberately and creatively reconfigure IT components to gain a cost and capability advantage over larger rivals. TechCo was chosen for similar reasons to HealthCo, namely that the entrepreneurial action of the firm as well as the IT management and strategic alignment were transparent and could be observed over time.

Data Collection. At each site, data was collected at the organizational, individual, and technological levels. Following established guidelines (Yin 2009), three types of data were collected during the study. Primary data was developed through interviews with managers; secondary data was generated from examination of internal sources, including IS department performance measures, user surveys, consultant reports, outsourcing contracts, service level agreements, and similar documents. External historical data was drawn from newspaper and magazine articles. Table 3 presents the types of data that were collected at each level of analysis.

<<<<<<   Insert Table 3 Here   >>>>>>

Constructing the Case Study Timelines and Narratives. The data collected from each case was synthesized into complete individual case narratives. ATLAS-ti software was used to assist in the data analysis, which followed a two-step process of data coding using a pre-existing set of codes, followed by a second step where the data points were organized chronologically from the start of the case timeline to the end. We followed the four-step data analysis strategy for retrospective case analysis described in Sabherwal et al. (2001). The HealthCo narrative describes the important events and the evolution of IT over a 24 year period. The TechCo narrative also highlights important events over an 8 year period while describing how its IT changed during that period. Edited summaries and timelines of the full HealthCo and TechCo case narratives are found in Appendix A[4].

---

[4] The summaries that appear in Appendix A are edited versions (approximately 6 pages for each company) of the full case narratives (each approximately 75 pages in length). These summaries present the salient information regarding business and IT strategy development and implementation at each firm. The full case narratives are available from the authors upon request.

9

Validity and Reliability. Several methods were used to ensure validity and reliability in the case study results (Benbasat et al. 1997; Sabherwal et al. 2001c; Yin 2009). Information was triangulated in the narratives through direct transcription from tape-recorded interviews, multiple examples and stories from the same person, corroboration by informants across the organization, personal field notes taken during the interviews, and comparison of field notes to transcripts. Company and public documents were used in the analysis to strengthen credibility and ensure authenticity. Internal validity was addressed by searching for consistent patterns of routines across interviews. These patterns were also confirmed through member checks. External validity was considered through the use of case studies of two different firms in different industries (home-based healthcare services and high-tech). Finally, longitudinal validity was assessed using the criteria of unit, boundary, and period validity (Street et al. 2012). Table 4 summarizes the validity criteria that were used.

<<<<<< Insert Table 4 Here >>>>>>

Reliability was evaluated through the use of structured interview protocols, the creation of an auditing trail for the methodology protocol, and the use of a qualitative analysis tool (ATLAS-ti) to assist in maintaining and structuring the data in an auditable fashion. Reliability was also assessed using content reviews (Reich et al. 1996), wherein the second author independently assessed the extent to which the raw data points matched the timeline and reporting of the events in the case narrative. A random selection of data sources was also independently coded by a research assistant (interrater reliability = 74.3%).

Matching Narratives to the Theoretical Criteria

Identifying Patterns of Entrepreneurial Action. Data analysis began with identifying the patterns of entrepreneurial action exhibited during the start-up period for the two cases we studied. After creating the case narratives, we followed Fisher's (2012) methodology for matching the data to the theoretical criteria derived through analysis of the three perspectives being compared. The first and third authors independently coded the case narratives to record apparent instances of causation-, effectuation-, or

10

bricolage-related activity. Table 5 presents a list of actions that are characteristic of each of the three types. These actions were used as codes to analyze full case narratives.

<<<<<<   Insert Table 5 Here   >>>>>>

Assessing Strategic Alignment. Strategic alignment examines the degree of fit or congruence between business strategy and IS/IT strategy (Luftman et al. 1999; Palmer et al. 2000; Reich et al. 2000). Business strategy is commonly assessed using the Miles and Snow (1987) typology of (1) prospector, (2) analyzer, and (3) defender (Sabherwal et al. 2001a). IS/IT strategy can be categorized by assessing whether a firm has (a) a low-cost strategy; (b) a strategy of IT for differentiation, growth, alliance, and innovation; or (c) a hybrid strategy where a low-cost emphasis is combined with a focus on differentiation, growth, alliance, and innovation. The theoretically ideal pairings are that a prospector strategy should be paired with an IS/IT strategy for differentiation, growth, alliance, and innovation; an analyzer strategy should be paired with the hybrid low-cost plus IT for differentiation, growth, alliance, and innovation; and a defender strategy should be paired with a low-cost IS/IT strategy. Each of these theoretically-ideal pairings represent a high degree of strategic alignment (Sabherwal et al. 2001a).

To assess strategic alignment at HealthCo and TechCo, we identified whether the firm had a prospector, analyzer, or defender-type business strategy. The characteristics that we searched for in our case narratives appear in Table 6. To assess IT strategy, we looked for the ways that IT was being used to develop the organization and grow the business according the characteristics listed in Table 7.

<<<<<<   Insert Table 6 Here   >>>>>>

<<<<<<   Insert Table 7 Here   >>>>>>

Results
Causation

Causation-type actions were found primarily in the HealthCo case. Every causation-type indicator was found to be moderately or strongly evident. In particular, evidence of business plans, the creation of a vision for the new venture, and the development of project plans were strongly evident. This provides support that HealthCo was deliberate in its planning activities to achieve the goals it had set. It also implies

11

that during the period studied, HealthCo applied rational decision making processes to determine what they needed to do in the long run.

In addition, strong evidence was found for HealthCo implementing control processes to support their planning initiatives. Also, moderately strong evidence was found for environmental scanning activities such as gathering information about market size and competitors. All this appeared to support processes to identify and assess long-run opportunities. This indicates that HealthCo perceived itself to be in a relatively stable environment which allowed it to rationally consider longer term initiatives to move the firm forward.

TechCo, on the other hand, provided limited evidence of causation-type entrepreneurial actions. Only two indicators were strongly evident. Most of the indicators were not found, and instead much evidence revealed that this firm's actions contrasted with the causation approach. This indicates that TechCo responded to their rapidly changing environment by adapting resources that they had, and developing plans on a short term basis.

Effectuation

Interestingly, strong evidence was found for effectual actions at HealthCo. As HealthCo developed and became a franchise organization, it used a number of "experiments" to test its products, its services, and the way it would deliver those services. This appears to be a result of the business switching to a franchise structure as it attempted to find the right mix of services and pricing to enable it to be successful. In addition, as HealthCo became a franchisor, it exhibited flexibility in adapting to opportunities as they presented themselves, but at the same time entered into the necessary structured agreements with franchisees and suppliers. All these activities are indicative of a new venture that experienced a degree of uncertainty as it developed.

At TechCo, there was relatively little evidence of effectual action. There was no evidence of experimentation or precommitments. There was strong evidence of responding to unplanned opportunities, including when opportunities to work on Hollywood feature films presented themselves, but not evidence of changing what they were doing based on the resources they had. Where effectual action occurred at all, it was seen as TechCo entrepreneurs were cautious in committing relatively few resources to the firm until

the firm had a better sense of its opportunities. This indicates again that TechCo was facing a significant degree of uncertainty but was unwilling to commit major resources until prospects appeared more certain.

Bricolage

At HealthCo, there was virtually no evidence of bricolage-type activity. There was no evidence of combining or recombining resources for new purposes. There was no evidence of using only resources at hand rather than acquiring needed resources from outside. HealthCo exhibited no evidence that the firm was in a bricolage situation. Physical inputs, labour inputs and skills inputs were either acquired or developed using normal suppliers. HealthCo worked within a highly-regulated health care environment, limiting the opportunities for improvisation or bricolage. There was some moderate evidence that HealthCo "took action to solve problems", but overall, it is clear that HealthCo did not exhibit many bricolage-type actions.

On the other hand, the evidence strongly indicated the presence of bricolage activities at TechCo. Our analysis indicated that all bricolage-type indicators but one were strongly evident (all but "rejected the limitations of the environment - worked around rules and standards"). TechCo was proactive in solving problems, configured existing resources to solve problems, adapted resources for purposes other than those for which the resources were originally intended, and typically used resources on hand rather than seeking to acquire new resources from outside the firm. TechCo also took pride in, and actively sought to use old physical inputs for new solutions, used customers and suppliers when needed as labor inputs, and encouraged its employees to provide skills they had to the tasks at hand. All this evidence indicates a new venture that took a bricolage approach to its development.

Table 8 summarizes these results. When strong evidence for an indicator was present, this was indicated with "**". When moderate evidence was present, this was indicated with "*". When activity did not fit a given type, this was indicated with an "-". Finally, when it was not possible to infer from the data whether the new venture's actions aligned with the theoretical perspective, this was indicated with a "?". Full coding instructions, sample coding tables and examples of how actual codes were applied are provided in Appendix B. The evidence from Table 8 indicates that HealthCo exhibited both causation- and effectuation-type

13

entrepreneurial activities with almost no evidence of bricolage. In contrast, TechCo strongly exhibited bricolage, but only slight evidence of causation or effectuation.

<<<<<<   Insert Table 8 Here   >>>>>>

Strategic Alignment

With regard to strategic alignment, HealthCo displays a Prospector stance, takes on some characteristics of an Analyzer in the middle of the time frame we examined, and then returns to the Prospector stance. After assessing business strategy, we assessed the IS/IT strategy, finding that HealthCo began with a low-cost strategy, shifted to one of differentiation, growth, alliance, and innovation towards the middle of the case timeline, then took on a hybrid strategy, and ultimately reverted to a low-cost strategy. In summary, HealthCo maintained a moderate degree of strategic alignment throughout the time period that we examined the company, achieving a high degree of alignment during the time they combined their Prospector business strategy with an IS/IT strategy of differentiation, growth, alliance, and innovation. TechCo consistently displayed a Prospector strategy and consistently maintained a hybrid IS/IT strategy of low cost plus IS/IT for differentiation, growth, alliance, and innovation. This resulted in a moderate degree of strategic alignment. High or moderate alignment, which was observed at both firms in all time periods, represents definitive evidence of strategic alignment and indicates that these two new ventures had both congruence in strategies as well as processes and practices that supported and promoted strategic alignment.

Tables 9a and 9b summarize these results. At HealthCo, virtually the entire spectrum of Prospector-type indicators were observed, with many observed in multiple time periods (Table 9a). Table 9a shows the number of periods that each indicator was in evidence. The more periods in evidence the stronger the indicator. For instance, indicator P21, "flexible, prototypical technologies" was observed in 3 time periods. Analyzer indicators were observed less frequently, with Defender indicators observed the least frequently of all. At TechCo, a consistent Prospector stance is observed, particularly with regard to TechCo's entrepreneurial characteristics, with Defender and Analyzer indicators only rarely observed (Table 9b). Table 10 indicates the number of time periods in which each IS strategy was observed, again with HealthCo demonstrating a low-cost strategy, a hybrid strategy, and ultimately reverting to a low-cost strategy, and

14

with TechCo consistently demonstrating an IS strategy of differentiation, growth, alliance, and innovation. Comparing Tables 9a, 9b, and 10 reveals a moderate to high level of alignment at both firms, documenting definitive evidence of strategic alignment.

<<<<<<   Insert Tables 9a and 9b Here   >>>>>>

<<<<<<   Insert Table 10 Here   >>>>>>

DISCUSSION

Theoretical Implications

The causation perspective on entrepreneurial action is grounded in the assumption that the competitive environment is relatively stable, with predictable linear changes. Entrepreneurial opportunities are thus discernable before a new venture is launched (Sarasvathy 2001; Sarasvathy 2008). In relatively stable or benign competitive environments and industries, causation-type entrepreneurial action can lead to the success and growth of a new venture, as our HealthCo case evidence indicates. In these settings, deliberate business planning will also likely entail a deliberate approach to IS/IT planning, one that can yield the infrastructure, systems, and capabilities that the new venture needs to execute its business strategy.

In contrast, the effectuation perspective is grounded in the assumption that the environment is less predictable. Entrepreneurial opportunities are created through a process of enactment and iterative learning, a process that is shaped by the means available to the entrepreneur, the entrepreneur's network of strategic relationships, and his or her degree of experimentation (Sarasvathy 2001; Sarasvathy 2008) . Effectuation is well-suited to firms that are among the earliest entrants into a market. Effectuation-type activities, too, can lay the groundwork for successful ventures that are enabled and supported by IT. Under the guidance of the entrepreneur, IT capabilities, including strategic alignment, will be developed in a similar manner to the overall business, with experimentation and emergent outcomes dictated by the challenges an early market entrant faces. We see evidence for this in HealthCo as they developed customized IT solutions to address needs in the nascent home healthcare market. With HealthCo, we see an example of a new venture displaying effectuation-type activities that was able to formulate an IT strategy and implement it in a way that enabled and supported its overall business strategy.

15

And finally, the bricolage perspective assumes that a new venture is being developed in a penurious environment. Given these constraints, entrepreneurs will be forced to "make do", recombining and repurposing the limited resources that are available to them. As we have seen in our case evidence, such an environment led to the repurposing and reuse of servers and software to meet challenges and complete specific projects at TechCo. TechCo's IT, while developed in a challenging, resource-constrained environment, supports the needs of this new venture and helps it to grow and succeed in its chosen industry.

One clear implication from this analysis and case evidence is that strategic alignment can be achieved in a variety of entrepreneurial contexts. Whether the starting conditions of the firm are stable and benign, unpredictable, or resource-constrained, and whether the activities of the firm are traditional and rational, experimental and flexible, or improvisational and frugal, the end goal of alignment is nevertheless achievable. We therefore suggest equifinality in outcome. Formally,

P1: Each type of entrepreneurial action (causation, effectuation, or bricolage) can lead to strategic alignment.

This initial proposition leads to the question, "If strategic alignment can be achieved in varying contexts and with varying patterns of activity, are the means by which it is achieved the same for all contexts?" Based on our case evidence, we suggest that strategic alignment at each type of new venture – causation-, effectuation-, and bricolage-type – will develop through a variety of different mechanisms and activities, but will nevertheless follow consistent and recognizable patterns. When strategic alignment is pursued in a new venture that displays causation-type activity, we suggest that it will likely be pursued through strategic IS planning (SISP). Traditional top-down strategy formulation is more likely to be seen in these type ventures and IT strategy development will likely follow the development of the overall IT strategy. To enact strategy, appropriate IT infrastructure will be acquired through environmental scanning and measured against industry benchmarks. Capabilities will be robust, standardized, and keyed to best practices.

In contrast, when strategic alignment is pursued in a new venture that displays effectuation-type activity, it will be pursued through experimentation, iterative learning, and strategic co-evolution. In

16

effectuation-type new ventures, agility and adaptation will be evident, and strategic alignment will be more dynamic and flexible than in causation-type firms. The end result, strategic alignment, may be the same as with causation-type action, but the mechanisms by which it is pursued will be different.

Finally, when a bricolage-type firm pursues strategic alignment, it will be pursued through creative recombination and repurposing of resources – almost the antithesis of the planned, rational approach of SISP at the causation-type firm. The end goal of alignment is nevertheless achievable. IT innovation and creative re-use will most likely be on display in bricolage-type firms. In such settings, the desire to do more with less makes it imperative that novel IT solutions are developed.

Thus, we believe that the entrepreneurial action at each of these three types of firms will lead to consistent, identifiable patterns of IT strategy development and IT resource deployment. This leads to our second proposition:

P2: The processes that support and enable strategic alignment at new ventures of each type (causation, effectuation, and bricolage), will differ from one another, but will follow a predictable, consistent pattern that is distinct for each type.

Following from our idea that strategic alignment can be achieved through a variety of mechanisms, we argue that these mechanisms depend on the environment in which the firm operates and the actions that environment elicits from the entrepreneur. This leads us to propose a contingency perspective on entrepreneurial action and strategic alignment. Entrepreneurs are advised to consider the environment in which they are planning to launch their new venture (Fisher, 2012). In dynamic environments or when an entrepreneur is a very early entrant into a market, causation-type entrepreneurial action may not position the entrepreneur for success as well as effectuation-type action. We suspect that speed and agility will be among the keys to success in a dynamic environment and causation-type activity limits the development of these attributes. We suggest that causation-type activity will limit not only the overall ability of the firm to develop and respond to the environment, but will also limit the development of strategic alignment that will help the firm execute its strategy and build competitive advantage in a challenging environment.

Conversely, we suggest that severe resource constraints could render any plans developed in a causation-style approach irrelevant. Restated, carefully-developed plans could become merely a "wish list"

17

in resource-constrained settings. A bricolage perspective seems best-suited to such an environment. A realistic examination of resource constraints should promote innovation and recombination to facilitate IT capability development for strategic alignment and ultimately, for strategy execution.

Finally, while causation may be unsuited to dynamic or penurious environments, the emergent approaches of effectuation and bricolage may not be ideal for stable environments. We argue that in a stable setting, the agility, creativity, and re-configurability of effectuation and bricolage is unneeded. The advantage that these attributes might convey may be only an advantage when other firms cannot react quickly to environmental changes. When the environment is stable, agility confers little advantage.

In sum, we propose that entrepreneurs who consider the characteristics of the environment in which they are planning to launch their new venture will be best-positioned to develop capabilities within their firm – both IT capabilities such as strategic alignment as well as other organizational capabilities – that will help their new venture to grow and thrive.

P3: Different starting conditions that a new venture faces will influence the types of entrepreneurial action that will be exhibited and the manner in which strategic alignment can be achieved.

Our observations on entrepreneurial action and the alignment of IT strategy with business strategy are summarized in Table 11.

<<<<<<   Insert Table 11 Here   >>>>>>

Practical Implications

The primary practical implication of our research is rooted in the contingency perspective on entrepreneurial action that we have described above in the development of P3. We suggest that entrepreneurs should consider the environment in which they are planning to launch their new venture. Stable, benign environments allow the use of well-established business planning methods. The precision and detail of such plans may be required to break into established markets. Additionally, the planning that is undertaken should certainly include the development of IT strategy, structure, and capabilities. This option of careful planning is not open to all entrepreneurs, but those in established and stable markets should

18

take advantage of it. Knowing at the outset how they plan to leverage IT to execute strategy will be a boon to the new venture.

Dynamic environments and developing markets, in contrast, require speed and agility if the new venture is to thrive. Detailed, rigorous, carefully considered strategic planning and IT planning may be to the detriment of the firm. A sense-and-respond approach, or at least a commitment to flexibility and experimentation will serve such firms well. Similarly, resource constraints present a challenging situation. For IT to enable strategy execution, creativity and innovation will be required. Entrepreneurs who resist this challenge are inviting failure.

Limitations and Future Research

The primary limitation of our research is that our conclusions and theorizing are based on two in-depth case studies. Although these cases provided an extremely rich source of evidence for entrepreneurial action and strategic alignment, a larger number of cases, and cases from multiple industries would provide a more secure foundation from which to generalize our results. Additionally, while case study research is well-suited to emerging research concepts (Yin 2009), is ideal for complex processes with multiple actors (Mintzberg et al. 1999), and is common in entrepreneurship research (Andries et al. 2013; Fisher 2012), other methodological approaches might provide additional insights into the development of strategic alignment and the development of IT capabilities in various types of new ventures. We specifically suggest large-scale survey research to find whether firms that have taken a causation, effectuation, or bricolage-style approach have discernable constellations of IT capabilities, and whether one or another type has an advantage in developing strategic alignment. Such research would empirically validate the assertions we have made in this Discussion section.

Future research could examine how entrepreneurial action impacts an entire range of IT capabilities beyond strategic alignment. Based on the conclusions we have reached in this study, we conjecture that differing types of entrepreneurial action lead to differing IT capability profiles.

19

Conclusion

Entrepreneurial action varies from firm to firm. How this action shapes the development of strategic alignment in new ventures is the focus of this paper. What we found was that different patterns of entrepreneurial action could result in a high or moderately high degree of strategic alignment between the business and IT. Our analysis of results indicate that not just one type of entrepreneurial action leads to strategic alignment but that all three, causation, effectuation, and bricolage, support the new venture's efforts to align strategies. What our analysis also indicates is that the starting conditions that a new venture faces impacts the type of action that will be exhibited and the manner in which strategic alignment will be developed. We look forward to additional work to develop a deeper understanding of how different patterns of entrepreneurial action affect strategic alignment and different types of IT capabilities in new ventures.

References

Ahuja, G., and Lampert, C. M. 2001. "Entrepreneurship in the Large Corporation: A Longitudinal Study of how Established Firms Create Breakthrough Inventions," *Strategic Management Journal* (22:6-7), pp 521-543.

Alvarez, S. A., and Barney, J. B. 2007. "Discovery and creation: Alternative theories of entrepreneurial action," *Strategic entrepreneurship journal* (1:1-2), pp 11-26.

Andries, P., Debackere, K., and Looy, B. 2013. "Simultaneous experimentation as a learning strategy: business model development under uncertainty," *Strategic entrepreneurship journal* (7:4), pp 288-310.

Baker, T., Miner, A. S., and Eesley, D. T. 2003. "Improvising Firms: Bricolage, Account Giving and Improvisational Competencies in the Founding Process," *Administrative Science Quarterly* (50:3), pp 329-366.

Baker, T., and Nelson, R. E. 2005. "Creating Something from Nothing: Resource Construction through Entrepreneurial Bricolage," *Administrative Science Quarterly* (50:3), pp 329-366.

Barney, J. B. 1991. "Firm Resources and Sustained Competitive Advantage," *Journal of Management* (17:1), pp 99-120.

Barringer, B. R., and Bluedorn, A. C. 1999. "The relationship between corporate entrepreneurship and strategic management," *Strategic Management Journal* (20:5), pp 421-444.

Beckman, C., Eisenhardt, K., Kotha, S., Meyer, A., and Rajagopalan, N. 2012a. "Technology entrepreneurship," *Strategic entrepreneurship journal* (6:2), pp 89-93.

Beckman, C. M., Eisenhardt, K., Kotha, S., Meyer, A., and Rajagopalan, N. 2012b. "The Role of the Entrepreneur in Technology Entrepreneurship," *Strategic entrepreneurship journal* (6:3), pp 203-206.

Benbasat, I., Goldstein, D. K., and Mead, M. 1997. "The Case Research Strategy in Studies of Information Systems," *MIS Quarterly* (11:3) September, pp 369-386.

Benbya, H., and McKelvey, B. 2006. "Using Coevolutionary and Complexity Theories to Improve IS Alignment: A Multilevel Approach," *Journal of Information Technology* (21), pp 284-298.

Bergeron, F., Raymond, L., and Rivard, S. 2001. "Fit in Strategic Information Technology Management Research: An Empirical Comparison of Perspectives," *Omega* (29:2), pp 125-142.

Bergeron, F., Raymond, L., and Rivard, S. 2004. "Ideal Patterns of Strategic Alignment and Business Performance," *Information & Management* (41), pp 1003-1020.

Brown, S. L., and Eisenhardt, K. M. 1997. "The Art of Continuous Change: Linking Complexity Theory and Time-Paced Evolution in Relentlessly Shifting Organizations," *Administrative Science Quarterly* (42:1), pp 1-34.

Burn, J. M. 1993. "Information Systems Strategies and the Management of Organizational Change - A Strategic Alignment Model," *Journal of Information Technology* (8:4), pp 205-216.

Casson, M. 1982. *The entrepreneur: An economic theory*, (Rowman & Littlefield.

Celuch, K., Murphy, G. B., and Callaway, S. K. 2007. "More Bang for Your Buck: Small Firms and the Importance of Aligned Information Technology Capabilities and Strategic Flexibility," *Journal of High Technology Management Research* (17), pp 187-197.

Chan, Y. E., and Reich, B. H. 2007. "IT Alignment: What Have We Learned?," *Journal of Information Technology* (22:6), pp 297-315.

Chao, C.-A., and Chandra, A. 2012. "Impact of Owner's Knowledge of Information Technology (IT) on Strategic Alignment and IT Adoption in US Small Firms," *Journal of Small Business and Enterprise Development* (19:1), pp 114-131.

Chao, C. A. 2009. "IT Use and Strategic Alignment in Financial Services and Small Manufacturing Businesses: Organizational Characteristics of Aligned and Unaligned Businesses," *Information Technology, Learning, and Performance Journal* (25:2), pp 42-54.

Chen, D., Mocker, M., Preston, D. S., and Teubner, A. 2010. "Information Systems Strategy: Reconceptualization, Measurement, and Implications," *MIS Quarterly* (34:2) June, pp 233-259.

Chong, A. Y.-L., Chan, F. T. S., Ooi, K.-B., and Darmawan, N. 2011. "Does Employee Alignment Affect Business-IT Alignment? An Empirical Analysis," *Journal of Computer Information Systems* (51), pp 10-20.

Cragg, P., King, M., and Hussin, H. 2002. "IT Alignment and Firm Performance in Small Manufacturing Firms," *Journal of Strategic Information Systems* (11:2), pp 109-132.

Daniel, E. M., Di Domenico, M. L., and Sharma, S. 2014. "Effectuation and Home-based Online Business Entrepreneurs," *International Small Business Journal* (online pre-publication version).

Delmar, F., and Shane, S. 2003. "Does Business Planning Facilitate the Development of New Ventures?," *Strategic Management Journal* (24), pp 1165-1185.

Dobrev, S. D., Kim, T.-Y., and Carroll, G. R. 2003. "Shifting Gears, Shifting Niches: Organizational Inertia and Change in the Evolution of the U.S. Automobile Industry," *Organization Science* (14:3) May-June, pp 264-282.

Drucker, P. F. 1985. *Innovation and Entrepreneurship*, (Harper and Row: New York.

Dube, L., and Pare, G. 2003. "Rigor in Information Systems Positivist Case Research: Current Practices, Trends, and Recommendations," *MIS Quarterly* (27:4) December, pp 597-635.

Eisenhardt, K., and Tabrizi, E. 1995. "Accelerating Adaptive Processes: Product Innovation in the Global Computer Industry," *Administrative Science Quarterly* (40:1), pp 85-110.

Fichman, R. G., Dos Santos, B. L., and Zheng, Z. E. 2014. "Digital Innovation as a Fundamental and Powerful Concept in the Information Systems Curriculum," *MIS Quarterly* (38:2), pp 329-343.

Fisher, G. 2012. "Effectuation, causation, and bricolage: a behavioral comparison of emerging theories in entrepreneurship research," *Entrepreneurship Theory and Practice* (36:5), pp 1019-1051.

Garg, A., and Goyal, D. 2012. "Striving Towards Strategic Alignment in SMEs: An Empirical Analysis," *Journal of Advances in Management Research* (9:1), pp 77-95.

Gutierrez, A., Orozco, J., and Serrano, A. 2009. "Factors Affecting IT and Business Alignment: a Comparative Study in SMEs and Large Organisations," *Journal of Enterprise Information Management* (22:1/2), pp 197-211.

Hisrich, R. D., and Peters, M. P. 1998. *Entrepreneurship: Starting, Developing, and Managing a New Enterprise*, (4th ed.) Irwin: Chicago, IL.

Hussin, H., King, M., and Cragg, P. 2002. "IT Alignment in Small Firms," *European Journal of Information Systems* (11:2), pp 108-127.

Ismail, N. A., and King, M. 2007. "Factors Influencing the Alignment of Accounting Information Systems in Small and Medium Sized Malaysian Manufacturing Firms," *Journal of Information Systems & Small Business* (1:1-2), pp 1-20.

Jouirou, N., and Kalika, M. Year. "Strategic Alignment: a Performance Tool (an Empirical Study of SMEs)," Proceedings of the Tenth Americas Conference on Information Systems, New York, New York, 2004.

Kappelman, L., McLean, E., Johnson, V., and Gerhart, N. 2014. "The 2014 SIM IT Key Issues and Trends Study," *MIS Quarterly Executive* (13:4), pp 237-263.

Katz, J., and Gartner, W. B. 1988. "Properties of Emerging Organizations," *Academy of Management Review* (18:3), pp 429-442.

Kihlstrom, R. E., and Laffont, J.-J. 1979. "A general equilibrium entrepreneurial theory of firm formation based on risk aversion," *The Journal of Political Economy*), pp 719-748.

Kirzner, I. M. 1973. *Competition and Entrepreneurship*, (University of Chicago Press: Chicago.

Levy, M., Powell, P., and Yetton, P. 2001. "SMEs: aligning IS and the strategic context," *Journal of Information Technology* (16:3), pp 133-144.

Levy, M., Powell, P., and Yetton, P. 2011. "Contingent Dynamics of IS Strategic Alignment in Small and Medium-Sized Enterprises," *Journal of Systems and Information Technology* (13:2), pp 106-124.

Luftman, J., and Brier, T. 1999. "Achieving and Sustaining Business-IT Alignment," *California Management Review* (42:1), pp 109-122.

McKeen, J. D., and Smith, H. 2003. *Making IT happen: critical issues in IT management*, (Wiley Chichester.

Mintzberg, H., and Lampel, J. 1999. "Reflecting on the Strategy Process," *Sloan Management Review* (40:3), pp 21-30.

Mohamad, R., and Ismail, N. A. Year. "Aligning Internet Capabilities in Small and Medium-Sized Enterprises (SMEs): An Exploratory Survey," International Conference on Business and Economics Research, Kuala Lumpur, Malaysia, 2010.

Morris, M. H. 1998. *Entrepreneurial Intensity: Sustainable Advantages for Individuals, Organizations, and Societies*, (Praeger.

Murray, J. A. 1984. "A concept of entrepreneurial strategy," *Strategic Management Journal* (5:1), pp 1-13.

Niederman, F., Brancheau, J. C., and Wetherbe, J. C. 1991. "Information Systems Management Issues for the 1990s," *MIS Quarterly* (15:1) December, pp 475-500.

Nummela, N., Saarenketo, S., Jokela, P., and Loane, S. 2014. "Strategic Decision-Making of a Born Global: A Comparative Study from Three Small Open Economies," *Management International Review* (54:4), pp 527-550.

Palmer, J. W., and Markus, M. L. 2000. "The Performance Impacts of Quick Response and Strategic Alignment in Specialty Retailing," *Information Systems Research* (11:3) September, pp 241-259.

Pavlou, P. A., and El Sawy, O. A. 2010. "The "Third Hand": IT-Enabled Competitive Advantage in Turbulence through Improvisational Capabilities," *Information Systems Research* (21:3), pp 443-471.

Raymond, L., and Bergeron, F. 2008. "Enabling the Business Strategy of SMEs through E-business Capabilities: A Strategic Alignment Perspective," *Industrial Management & Data Systems* (108:5), pp 577-595.

Raymond, L., and Croteau, A.-M. 2006. "Enabling the Strategic Development of SMEs through Advanced Manufacturing Systems: A Configurational Perspective," *Industrial Management & Data Systems* (106:7), pp 1012-1032.

Raymond, L., and Croteau, A.-M. 2009. "Manufacturing Strategy and Business Strategy in Medium-Sized Enterprises: Performance Effects of Strategic Alignment," *IEEE Transactions on Engineering Management* (56:2), pp 192-202.

Reich, B. H., and Benbasat, I. 1996. "Measuring the Linkage Between Business and Information Technology Objectives," *MIS Quarterly* (20:1) March, pp 55-81.

Reich, B. H., and Benbasat, I. 2000. "Factors that Influence the Social Dimension of Alignment Between Business and IT Objectives," *MIS Quarterly* (24:1), pp 81-113.

Rindova, V., and Kotha, S. 2001. "Continuous Morphing: Competing through Dynamic Capabilities, Form and Function," *Academy of Management Journal* (44:6), pp 1263-1280.

Sabherwal, R., and Chan, Y. E. 2001a. "Alignment Between Business and IS Strategies: A Study of Prospectors, Analyzers, and Defenders," *Information Systems Research* (12:1), p 11.

Sabherwal, R., Hirschheim, R., and Goles, T. 2001b. "The Dynamics of Alignment: Insights from a Punctuated Equilibrium Model," *Organization Science* (12:2) March-April, pp 179-197.

Sabherwal, R., Hirschheim, R., and Goles, T. 2001c. "The Dynamics of Alignment: Insights from a Punctuated Equilibrium Model," *Organization Science* (12:2) March-April, pp 179-197.

Sarasvathy, S. D. 2001. "Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency," *Academy of Management Review* (26:2), pp 243-263.

Sarasvathy, S. D. 2008. *Effectuation: Elements of Entrepreneurial Expertise. New Horizons in Entrepreneurship Research*, (Edward Elgar Publishing: Cheltenham, UK.

Sarasvathy, S. D., and Dew, N. 2005. "New Market Creation as Transformation," *Journal of Evolutionary Economics* (15:5), pp 533-565.

Schumpeter, J. A. 1934. *The Theory of Economic Development: An Inquiry into Pofits, Capital Credit, Interest, and the Business Cycle*, (Harvard University Press: Cambridge, MA.

Shah, S. K., and Tripsas, M. 2007. "The accidental entrepreneur: The emergent and collective process of user entrepreneurship," *Strategic entrepreneurship journal* (1:1-2), pp 123-140.

Shane, S., and Venkataraman, S. 2000. "The Promise of Enterpreneurship as a Field of Research," *Academy of Management Review* (25:1), pp 217-226.

Solesvik, M. Z., and Gulbrandsen, M. 2013. "Partner Selection for Open Innovation," *Technology Innovation Management Review* (3:4).

Street, C. T. 2006. "Evolution in IS Alignment and IS Alignment Capabilities Over Time: A Test of Punctuated Equilibrium Theory," Unpublished Doctoral Dissertation, Queen's University.

Street, C. T., and Ward, K. W. 2012. "Improving Validity and Reliability in Longitudinal Case Study Timelines," *European Journal of Information Systems* (21), pp 160-175.

Tallon, P. P. 2007. "A Process-Oriented Perspective on the Alignment of Information Technology and Business Strategy," *Journal of Management Information Systems* (24:3) Winter2007/2008, pp 227-268.

Yin, R. K. 2009. *Case Study Research: Design and Methods*, (4th ed.) Sage: Thousand Oaks, CA.

Table 1
Perspectives on Entrepreneurial Action

	Causation	Effectuation	Bricolage
Overview	The entrepreneur takes advantage of low levels of uncertainty by defining a desired outcome, then determining the means that will be selected to achieve that outcome.	The entrepreneur responds to high levels of uncertainty by considering the set of available means at his or her disposal, then determining the possible outcomes that can be pursued.	The entrepreneur responds to a penurious environment by recombining existing resources to assemble new resources, create new products and services, and develop new markets.
Actions	Formed by starting with the desired end, analyzing expected returns, conducting competitive analysis, and controlling the future as much as possible.	Formed by starting with available means, calculating affordable losses, leveraging strategic relationships, and leveraging contingencies.	Formed by considering resources at hand, combining them for new purposes and to address immediate needs.
Settings	Well-suited to environments with low levels of uncertainty, and for entrepreneurs who are later entrants into a market.	Well-suited to environments with high levels of uncertainty, and for entrepreneurs who are early entrants into a market. If a new venture displaying effectuation-type action fails, it will do so early and cheaply.	Well-suited to penurious environments. Bricolage in selective domains can lead to efficient routines and growth (whereas bricolage in multiple domains limits growth and prevents the development of routines and competencies).
Rationale	Entrepreneurs facing a predictable and stable future will systematically gather information and formulate plans to achieve strategic business goals.	Entrepreneurs facing an unpredictable environment will respond with experimentation and iterative learning to limit losses as they move into the future.	Entrepreneurs operating under resource constraints will need to recombine existing resources to overcome their constraints and develop new products, services, and markets.

adapted from Fisher (2012)

24

Table 2

Site Selection And Characteristics

Characteristic	HealthCo	TechCo
Uncertainty and risk in starting new venture?	Yes	Yes
Building new business model?	Yes	Yes
Opportunity for novel/unpredictable environmental situations? (e.g. low/no existing industry regulation)	Yes	Yes
Observed capability in managing rapid change?	Yes	Yes
Centrality of IT to business strategy and success	Yes	Yes
Employees (2005)	~70 (~20 corporate and ~50 franchise managers)	70
Annual Revenue (2005)	~$80M ($CDN)	$5-6M ($CDN)
Sector	Healthcare	Digital Post-Production

25

Table 3

Examples Of The Types Of Data Collected At Each Level Of Analysis

Level of Analysis	Examples of Data Collected	Key Informants
Organization	Organizational processes (as they may relate to planning and managing goals and objectives) and performance/quality attributes of those process	Business Managers
	Organizational plans and strategies (or lack thereof), as outlined verbally or in formal strategy or budgetary documents	
	Importance of IT to the organization	
	Organizational usage patterns of IT	
	Satisfaction or user feedback surveys	
	Organizational IT requirements	
Individual	Rationales for decisions, as expressed verbally	Owners
	Management activities/practices (as they may relate to service delivery & planning)	Technical Managers
		Business Managers
Information Technology	IT infrastructure portfolio	Technical Managers
	IT services provided	

26

Table 4

Validity Criteria

Criteria	Definition	Case Study Actions To Address Criteria
Construct Validity Establishing that the correct constructs are being measured (Am I studying what I think I am studying?)	A measure of the "approximate validity with which we can make generalizations about higher-order constructs from research operations" (Cook & Campbell 1979, p.38)	Multiple perspectives on constructs (multi-informant, multi-organizational level) Triangulated data sources (interviews, assessment & performance data, internal and external documents) Informants review case narrative drafts Independent verification of links between measurements and narrative
Internal Validity Establishing that valid inferences are being made with respect to cause and effect regarding the constructs under study (Are the relationships between constructs as I expect them to be?)	A measure of the "validity with which statements can be made about whether there is a causal relationship from one variable to another in the form in which the variables were manipulated or measured" (Cook & Campbell 1979, p.38)	Within-case & across-case pattern-matching of data Member checks of interview data Triangulated data sources (interviews, assessment & performance data, internal and external documents) Informants review case narrative drafts Independent verification of links between measurements and narrative
External Validity Establishing the generalizability (and limits to generalizability) of the findings (To what extent do the results generalize to theory/predictions?)	A measure of the validity with which "conclusions are drawn about the generalizability of a causal relationship to and across populations of persons, settings, and times" (Cook & Campbell 1979, p.39)	Two-study design Use of case sites from unrelated industries
Longitudinal Validity Establishing the historical accuracy of the retrospective case study (To what extent does the historical description recount the significant events and the order in which they occurred?)	Time unit validity: a measure of whether the selected time unit (weeks, months, or years) is appropriately sensitive for capturing changes in the variables it is intended to measure. Time boundaries validity: a measure of whether the length of the longitudinal timeline is long enough for researchers to observe applicable changes in the organization. Time period validity: a measure of whether the timeline is set when the external environment or the industry is in a particular state that is relevant for the research question or purpose of the study.	Years were selected as the time unit for both case studies because technology and business budgeting processes were annual events in both firms, and for TechCo, their projects were typically longer than one year. Neither case yielded evidence that significant events occurred on quarterly or monthly basis. Both case timelines captured data from the beginning of the firm's existence to the point in time where the firms had reached relatively stable operations and established a coherent set of capabilities and strategies. No truncation of data was apparent and the beginning and end of the timeline appeared valid. Both case timelines are situated in periods BEFORE dominant business models were established in the industry and DURING a period when advances in IT were accelerating, which increased the likelihood that each firm would act in an entrepreneurial manner.

27

Table 5

Characteristics Indicative of Entrepreneurial Action Types at Case Sites

Causation Approach to Entrepreneurship

C1	Identified and assessed long-run opportunities in developing the firm
C2	Calculated the returns of various opportunities
C3	Wrote a business plan
C4	Organized and implemented control processes
C5	Gathered and reviewed information about market size and growth
C6	Gathered information about competitors and compared their offerings
C7	Wrote up or verbally expressed a vision for venture
C8	Developed a project plan to develop the product and/or services
C9	Wrote up a marketing plan for taking the products/services to market

Effectuation Approach to Entrepreneurship

Experimentation

E1	Developed multiple variations of a product or service in arriving at a commercial offering
E2	Experimented with different ways to sell and/or deliver the product or service in arriving at a commercial offering
E3	Changed the product or service substantially as the venture developed

Affordable loss

E4	Committed only limited amounts of resources to the venture at a time

Flexibility

E5	Responded to unplanned opportunities as they arose
E6	Adapted what they were doing to the resources on hand

Precommitments

E7	Entered into agreements with customers, suppliers, and other organizations

Bricolage Approach to Entrepreneurship

Bricolage definition

B1	Making do - Took action to solve problems (rather than questioning whether a workable solution could be found)
B2	Combination of resources for new purposes - combined existing resources in creating solutions
B3	Combination of resources for new purposes - Reused resources for purposes other than those for which they were originally designed
B4	The resources at hand - Used existing resources (rather than seeking resources from outside)

Bricolage domains

B5	Physical inputs - used forgotten, discarded, worn, or presumed "single-application" materials to create new solutions
B6	Labor inputs - involved customers, suppliers, and hangers-on in providing work on projects
B7	Skills inputs - encouraged the use of amateur and self-taught skills that would otherwise go unapplied
B8	Institutional/regulatory environment - rejected the limitations of the environment. Worked around rules and standards

adapted from Fisher (2012)

Table 6

Business Strategy Indicators for Prospectors, Analyzers, and Defenders

Prospector		Analyzer		Defender	
Entrepreneurial Characteristics					
P11	Broad and continually developing domain	A11	Hybrid domain that is both stable and changing	D11	Narrow and stable domain
P12	Wide ranging environmental scanning	A12	Environmental scanning mostly limited to stakeholder scanning (some innovation)	D12	Aggressive maintenance of domain
P13	Creates change in the industry	A13	Steady growth through market penetration and service development	D13	Tendency to ignore developments outside of domain
P14	Growth occurs through product and market development			D14	Cautious and incremental growth (primarily through market penetration)
P15	Uneven, sometimes rapid growth cycles			D15	Some product development (closely related to current goods/services)
Engineering Characteristics					
P21	Flexible, prototypical technologies	A21	Dual technology core (stable and flexible components)	D21	Cost-effective technology
P22	Multiple technologies	A22	Large and influential applied process group	D22	Single core technology
P23	Low degree of routinization and mechanization	A23	Moderate degree of technical rationality	D23	Tendency toward vertical integration
				D24	Continuous improvements in technology to maintain efficiency
Administrative Characteristics					
P31	Marketing and innovation focus	A31	Marketing and innovation focus	D31	Limited environmental scanning
P32	Large, diverse or transitory senior management (may include 'inner circle')	A32	'Loose' matrix structure combining both functional divisions and service groups	D32	Cost & process focus
P33	Shorter tenure of senior management (internal and external promotion)	A33	Moderately centralized control system with both vert. and horiz. information systems	D33	Lengthy tenure of senior management (internal promotion)
P34	Comprehensive, problem-oriented planning (rarely finalized before action)	A34	Complex and expensive coordinating mechanisms (hierarchy and informal control)	D34	Cost-oriented, intensive planning (completed before action)
P35	Tendency toward product structure with lower degree of formalization	A35	Performance measured on both efficiency and effectiveness (favouring innovation)	D35	Tendency toward functional structure (extensive formalization/division of labour)
P36	Decentralized control and horizontal information systems			D36	Centralized control and vertical information systems
P37	Complex coordinating mechanisms, less hierarchical control			D37	Simple coordinating mechanisms, hierarchical control
P38	Performance measured relative to similar others (e.g. competitors), favouring innovation			D38	Performance measured against previous years (favouring cost & process)

Table 7

IS Strategy Indicators

IS Strategies	Definitions
Low Cost	Achieve advantage by reducing your firm's costs, supplier's costs, or customer's costs, or by raising the costs of your competitors
Differentiation	Achieve advantage by distinguishing your company's products and services from competitors, or by reducing the differentiation advantage of rivals
Growth	Achieve advantage by volume or geographical expansion, backward or forward integration, product-line or entry diversification
Alliance	Achieve advantage by forging marketing agreements, forming joint ventures, or making acquisitions related to the thrusts of differentiation, cost, innovation, or growth
Innovation	Achieve advantage by introducing a product or process change that results in a fundamental transformation in the way business is conducted in the industry

adapted from Rackoff et al. (1985) and Sabherwal et al. (2001)

Table 8

Characteristics Indicative of Entrepreneurial Action Types at Case Sites

		HealthCo	TechCo
Causation Approach to Entrepreneurship			
C1	Identified and assessed long-run opportunities in developing the firm	*	-
C2	Calculated the returns of various opportunities	*	-
C3	Wrote a business plan	**	*
C4	Organized and implemented control processes	**	**
C5	Gathered and reviewed information about market size and growth	*	-
C6	Gathered information about competitors and compared their offerings	*	-
C7	Wrote up or verbally expressed a vision for venture	**	**
C8	Developed a project plan to develop the product and/or services	**	*
C9	Wrote up a marketing plan for taking the products/services to market	*	-
Effectuation Approach to Entrepreneurship			
Experimentation			
E1	Developed multiple variations of a product or service in arriving at a commercial offering	**	-
E2	Experimented with different ways to sell and/or deliver the product or service in arriving at a commercial offering	**	-
E3	Changed the product or service substantially as the venture developed	**	-
Affordable loss			
E4	Committed only limited amounts of resources to the venture at a time	*	**
Flexibility			
E5	Responded to unplanned opportunities as they arose	**	**
E6	Adapted what they were doing to the resources on hand	*	-
Precommitments			
E7	Entered into agreements with customers, suppliers, and other organizations	**	-
Bricolage Approach to Entrepreneurship			
Bricolage definition			
B1	Making do - Took action to solve problems (rather than questioning whether a workable solution could be found)	*	**
B2	Combination of resources for new purposes - combined existing resources in creating solutions	-	**
B3	Combination of resources for new purposes - Reused resources for purposes other than those for which they were originally designed	-	**
B4	The resources at hand - Used existing resources (rather than seeking resources from outside)	-	**
Bricolage domains			
B5	Physical inputs - used forgotten, discarded, worn, or presumed "single-application" materials to create new solutions	-	**
B6	Labor inputs - involved customers, suppliers, and hangers-on in providing work on projects	-	**
B7	Skills inputs - encouraged the use of amateur and self-taught skills that would otherwise go unapplied	-	**
B8	Institutional/regulatory environment - rejected the limitations of the environment. Worked around rules and standards	-	*

Table 9a

Prospector, Analyzer, and Defender Business Strategy Indicator Frequency at HealthCo

Prospector	*Number of Time Periods Observed*	Analyzer	*Number of Time Periods Observed*	Defender	*Number of Time Periods Observed*
Entrepreneurial Characteristics					
P11 Broad and continually developing domain	3	A11 Hybrid domain that is both stable and changing	2	D11 Narrow and stable domain	-
P12 Wide ranging environmental scanning	3	A12 Environmental scanning mostly limited to stakeholder scanning (some innovation)	1	D12 Aggressive maintenance of domain	2
P13 Creates change in the industry	2	A13 Steady growth through market penetration and service development	1	D13 Tendency to ignore developments outside of domain	-
P14 Growth occurs through product and market development	3			D14 Cautious and incremental growth (primarily through market penetration)	1
P15 Uneven, sometimes rapid growth cycles	2			D15 Some product development (closely related to current goods/services)	1
Engineering Characteristics					
P21 Flexible, prototypical technologies	3	A21 Dual technology core (stable and flexible components)	3	D21 Cost-effective technology	3
P22 Multiple technologies	3	A22 Large and influential applied process group	1	D22 Single core technology	1
P23 Low degree of routinization and mechanization	1	A23 Moderate degree of technical rationality	2	D23 Tendency toward vertical integration	1
				D24 Continuous improvements in technology to maintain efficiency	4
Administrative Characteristics					
P31 Marketing and innovation focus	4	A31 Marketing and innovation focus	4	D31 Limited environmental scanning	-
P32 Large, diverse or transitory senior management (may include 'inner circle')	3	A32 'Loose' matrix structure combining both functional divisions and service groups	3	D32 Cost & process focus	4
P33 Shorter tenure of senior management (internal and external promotion)	2	A33 Moderately centralized control system with both vert. and horiz. information systems	-	D33 Lengthy tenure of senior management (internal promotion)	-
P34 Comprehensive, problem-oriented planning (rarely finalized before action)	2	A34 Complex and expensive coordinating mechanisms (hierarchy and informal control)	1	D34 Cost-oriented, intensive planning (completed before action)	1
P35 Tendency toward product structure with lower degree of formalization	2	A35 Performance measured on both efficiency and effectiveness (favouring innovation)	3	D35 Tendency toward functional structure (extensive formalization/division of labour)	-
P36 Decentralized control and horizontal information systems	2			D36 Centralized control and vertical information systems	2
P37 Complex coordinating mechanisms, less hierarchical control	3			D37 Simple coordinating mechanisms, hierarchical control	3
P38 Performance measured relative to similar others (e.g. competitors), favouring innovation	-			D38 Performance measured against previous years (favouring cost & process)	-

Table 9b

Prospector, Analyzer, and Defender Business Strategy Indicator Frequency at TechCo

Prospector		*Number of Time Periods Observed*	Analyzer		*Number of Time Periods Observed*	Defender		*Number of Time Periods Observed*
Entrepreneurial Characteristics								
P11	Broad and continually developing domain	3	A11	Hybrid domain that is both stable and changing	1	D11	Narrow and stable domain	-
P12	Wide ranging environmental scanning	3	A12	Environmental scanning mostly limited to stakeholder scanning (some innovation)	-	D12	Aggressive maintenance of domain	-
P13	Creates change in the industry	2	A13	Steady growth through market penetration and service development	3	D13	Tendency to ignore developments outside of domain	-
P14	Growth occurs through product and market development	2				D14	Cautious and incremental growth (primarily through market penetration)	-
P15	Uneven, sometimes rapid growth cycles	3				D15	Some product development (closely related to current goods/services)	2
Engineering Characteristics								
P21	Flexible, prototypical technologies	3	A21	Dual technology core (stable and flexible components)	-	D21	Cost-effective technology	3
P22	Multiple technologies	-	A22	Large and influential applied process group	-	D22	Single core technology	1
P23	Low degree of routinization and mechanization	3	A23	Moderate degree of technical rationality	-	D23	Tendency toward vertical integration	-
						D24	Continuous improvements in technology to maintain efficiency	3
Administrative Characteristics								
P31	Marketing and innovation focus	3	A31	Marketing and innovation focus	3	D31	Limited environmental scanning	-
P32	Large, diverse or transitory senior management (may include 'inner circle')	-	A32	'Loose' matrix structure combining both functional divisions and service groups	-	D32	Cost & process focus	3
P33	Shorter tenure of senior management (internal and external promotion)	-	A33	Moderately centralized control system with both vert. and horiz. information systems	-	D33	Lengthy tenure of senior management (internal promotion)	-
P34	Comprehensive, problem-oriented planning (rarely finalized before action)	-	A34	Complex and expensive coordinating mechanisms (hierarchy and informal control)	-	D34	Cost-oriented, intensive planning (completed before action)	-
P35	Tendency toward product structure with lower degree of formalization	3	A35	Performance measured on both efficiency and effectiveness (favouring innovation)	3	D35	Tendency toward functional structure (extensive formalization/division of labour)	-
P36	Decentralized control and horizontal information systems	-				D36	Centralized control and vertical information systems	3
P37	Complex coordinating mechanisms, less hierarchical control	-				D37	Simple coordinating mechanisms, hierarchical control	3
P38	Performance measured relative to similar others (e.g. competitors), favouring innovation	3				D38	Performance measured against previous years (favouring cost & process)	-

Table 10

IS Strategy Indicator Frequency at Case Sites

IS Strategies	Definitions	Number of Periods Observed at HealthCo	Number of Periods Observed at TechCo
Low Cost	Achieve advantage by reducing your firm's costs, supplier's costs, or customer's costs, or by raising the costs of your competitors	2	0
Differentiation	Achieve advantage by distinguishing your company's products and services from competitors, or by reducing the differentiation advantage of rivals		
Growth	Achieve advantage by volume or geographical expansion, backward or forward integration, product-line or entry diversification		
Alliance	Achieve advantage by forging marketing agreements, forming joint ventures, or making acquisitions related to the thrusts of differentiation, cost, innovation, or growth	1	3
Innovation	Achieve advantage by introducing a product or process change that results in a fundamental transformation in the way business is conducted in the industry		
Hybrid	A combination of the Low-Cost and Differentiation, Growth, Alliance, and Innovation strategies.	1	0

Table 11
Perspectives on Strategic Alignment in New Ventures

	Causation	Effectuation	Bricolage
Manner of Developing Strategic Alignment	IT capabilities (including strategic alignment) will develop through deliberate, conventional planning as a means to achieve the entrepreneur's stated goals.	Strategic alignment will be one of the means through which the dynamic environment is addressed and goals are defined.	IT capabilities, including strategic alignment, will not be developed through deliberate planning, but will be developed to respond to pressing needs.
Emphasis on Strategic IS Planning (SISP)	Strong – SISP is the primary mechanism for strategic alignment, most often with business strategy leading IT strategy. Relatively little strategic co-evolution.	Strong – SISP will be practiced, but perhaps with IT strategy as an input to business strategy development (if such strategy is developed at all). Co-evolution should be evident.	Absent – SISP will be supplanted by (often ad-hoc) co-evolution of business and IT strategies, sometimes with IT strategy as an input to business strategy.
Alignment	Traditional Top-down, Business Strategy leads IT strategy.	Co-evolutionary or Bottom-Up, with IT strategy potentially leading business strategy.	Emergent, and likely bottom-up, including reciprocal interaction and feedback
Upside	Top-down planning will be emphasized, with a high degree of alignment possible because of the stable, benign environment and the deliberate development of IT capabilities.	Bottom-up strategy development means that strategy can be refined and alignment pursued based on customer needs and customer feedback. Highly-responsive to customers and environmental forces.	Reconfigurability is built into the DNA of bricolage-type ventures. IT agility and flexibility should be apparent and obvious.
Downside	Strategic alignment developed in this manner may be less flexible, less dynamic, and less-easily reconfigurable than capabilities developed through effectuation or bricolage. As long as the environment remains stable, this may not be a serious issue.	IT strategy and capabilities are dictated by environment, and may be haphazard (possibly even in a "ready, fire, aim" manner). Strategic alignment may be difficult to sustain.	Strategic alignment may have a relatively short lifespan as tactics and capabilities evolve rapidly.

Appendix A – Case Summaries

Case #1 HealthCo

Start-Up Phase. HealthCo began in 1984 as a small business in Western Canada, providing home-based nursing care for clients who required nursing assistance but were not considered sick enough to be hospitalized. By 2004, the company operated a network of more than 50 franchise and corporate offices across Canada, and by 2005, it was the largest Canadian-owned home health care provider, contracting with approximately 5,000 independent health care professionals and generating annual revenues of approximately $80M (CDN$). Surprisingly, few government or healthcare stakeholders seemed to take the new company seriously:

> *"I had quite a bit of newspaper coverage, a lot of media asking a lot of questions because*
> *[HealthCo was a new type of business], and I think a lot people thought I would just fall*
> *on my face, basically" (HealthCo founder)*

During the start-up phase, the founders spent significant time searching for clients, defining and refining the types of services these clients wanted, and working to generate a reliable source of revenue. Business planning was ad-hoc and progressed in waves as a client list was built and stabilized. As the company grew, it moved from the founder's basement to a separate office, and added more service staff. With no established business model to guide them, management tried to remain as flexible and informal as possible so as to allow the business to define itself through its growing client base. HealthCo's business strategy emphasized innovation, flexibility, and service/market development. All business decisions and company functions were managed with a centralized structure which allowed the founders to be responsive to changes in the business environment while also staying reasonably informal as the business developed.

The structure of the information systems function—which was just beginning to emerge—was also centralized. In this early phase, there was no formal IS department, although there was a small IS infrastructure in place. For example, a Macintosh PC and early versions of MacWrite and Peachtree accounting software were used to keep track of revenues and expenses. Most of the communication

36

technologies taken for granted in modern offices, such as email or fax, were not present in the early HealthCo offices.

All IS-related decisions were made by one of the co-founders, who was also a computer science professor at a nearby university. This co-founder was responsible for managing and planning the technology. The IS strategic planning orientation in this period was focused on cost reduction. The planning that went into early sourcing and investment decisions was not strategic because no assumption was made that basic IS tools would provide a competitive advantage. Rather, these tools were simply seen as essential for productivity in a business that was trying to keep its administrative costs down.

Environmental IT scanning was done at a rudimentary level. Integrating emerging organizational requirements with available IT was done on an ad-hoc basis. Informal decisions about which technologies to invest in were based on simple decision heuristics such as "adopt new technology in step with increased business volume if it occurs." Managing alignment in this informal, flexible environment meant that there was little development of systems to build stakeholder commitment, to assess alignment, or to engage in ongoing IS experiments. IS alignment processes were idiosyncratic and informal, but were gradually becoming increasingly routinized ("systematized" in the founder's vernacular).

While HealthCo's start-up activities may seem primitive by modern standards, there were several important practices and capabilities being built up that gradually shaped the firm and contributed to its success. HealthCo was an early adopter of personal computers, and procedures were initially developed for functions such as accounting and office correspondence. For example, HealthCo acquired new Macintosh PCs, which came on the market only 2 months before the company opened for business. At a time when few small businesses (and likely even fewer start-ups) were adopting desktop computers, HealthCo was exploring ways of using them to increase office productivity. Experimenting with their use and using IT to increase administrative efficiency were dominant management practices in the early stages of the company.

Franchising Phase. A 1988 decision to transition to a franchise company rapidly changed the structure and function of the business and was a significant change and risk for the company. For the two years between 1988 and 1990 the company's strategy and operations outpaced the IS function's ability to keep track of a

37

growing network of franchisees. In 1990 and 1991 the IS function, led by the CEO, began building momentum in developing an innovative franchise management information system to address the company's new requirements. By 1992 the application, code-named Wizard, was introduced to existing and prospective franchisees. IS alignment increased quickly as the IS planning practices improved and increased the effectiveness of the custom franchise software.

By the beginning of 1992, HealthCo consisted of a network of 18 franchises. The company followed an aggressive growth strategy as it developed its franchising strategy in this period. Cost, quality, service delivery processes, and efficiency remained important. However, given the uncertain business environment, and the fact that private health care was still a relatively new industry, management followed an informal problem-oriented business planning process so that the strategy could be perfected as experience grew. Learning-by-doing, franchise system development, and service marketing were key elements of the company's strategy between 1988 and 1992. In 1990, a third-party software developer—who was contracted to develop and support a proprietary information system for the franchise network—came up with a new franchise management information system (Wizard) to handle scheduling and office accounting. Scheduling, a time-intense process, was central to operations:

> *"You need a system for scheduling … to take a caregiver and match them up to a client who wants maybe an elderly person, a non-smoker, [etc. etc.] … So what we really wanted to do was [create] a scheduling [system] where we did some matching and then from that schedule generate the bills and the payroll. That was the key thing. … absolutely essential. Totally essential." (HealthCo founder)*

An efficiency strategy for IS now augmented the prior period's low cost strategy. IS management was analysis-oriented and predominantly opportunity-seeking. The founding owners, now unexpected franchise builders, began referring to the proprietary franchise management application when attracting new franchisees. Opportunity-seeking practices in deciding among potential technology strategies to follow (e.g. buy or build) and prioritizing the development schedules were done through simple product evaluations, franchisee requirement analysis, and periodic review of application developer capabilities.

38

The number of franchises increased from 18 at the start of 1992 to more than 50 offices across the country by the end of 1997. Franchises were sold as quickly as possible in order to establish a viable network. The increase in the size of the franchise network did not change HealthCo's business strategy and governance, but the IS strategy changed from efficiency and cost effectiveness to focus on growth and differentiation. Wizard was initially conceived as a way to automate scheduling, accounting, and billing but it was discovered that the system also offered a tremendous opportunity to differentiate HealthCo from competitors because it offered fast, flexible, and accurate scheduling. This pleased clients and made the franchisees more profitable. HealthCo also discovered that the Wizard system, which was well-designed and easy to learn and use, was an attractive part of the value proposition for potential franchisees to consider:

> *"[Wizard] played a major role, and there would have been a lot of people scared off if that hadn't been available to them, in terms of buying [a franchise] in the first place. ... It was an excellent software program to have, ... I guess by today's standards with [internet systems] around this doesn't sound so significant, but back in those days it was, they were probably even ahead of their time and that is why HealthCo was so competitive with the big players out of the [Untied] States." (HealthCo executive)*

Franchisees very quickly began requesting customization and support. A major system-wide upgrade occurred in 1995 in response to requests for more functionality, ease of use, and an ability to handle more transactions (some franchisees were beginning to surpass $2M/year in revenues). Difficulties appeared almost immediately as the larger franchises quickly taxed the limits of the new system. It had taken approximately 3-4 years for franchisees to outgrow Wizard 1.0, but in just a year-and-a-half some outgrew Wizard 2.0. HealthCo's IS function was an integral part of early franchise success but the decreasing ability of developers and management to respond to growth demands was beginning to limit the options that HealthCo had for the strategic maneuvering required to keep expanding.

Corporate Entrepreneurship Phase. As revenue growth and new franchise starts slowed down by 1997, consultant reports and internal task force reviews led to a new IS strategy and updated corporate strategy

39

for renewed growth and the Wizard system was replaced in the early 2000s by an off-the-shelf product from a major software provider of administrative software for the health care industry. After a change in top leadership in 1999, the new President & CEO began aggressively implementing an increasingly common strategy of buying back selected franchise offices and operating them as corporate-owned offices. New programs aimed at expanding the types of services being offered were tried out, such as palliative care and preventative health, and a series of pilot projects ranging from home-based telehealth to Internet-based marketing and health assessment services were experimented with. The IS strategy orientation in 1997 began as a combination of low cost and differentiation/growth but changed very quickly to a low-cost orientation, far before the change in corporate strategy produced tangible results.

> *"I came to the conclusion that IT isn't as proprietary today as maybe it was. Our unique factor is going to be with the health care service, the programs we talked about. That is where I want to excel. A lot of us are going to have the same kind of back office, and I like to think of course that we are more efficient than the guy next door" (New HealthCo President & CEO)*

IS management became increasingly systematized, formalized, and centralized for the first time in the company's history. HealthCo executives (none of which included the original founders by 1999), included a dedicated IT manager who planned, budgeted and managed all technology-related decisions for the business. Cost-effectiveness was the criterion for IS investment and sourcing decisions. Strategic IT experimentation increased dramatically as HealthCo became involved with technology partners to try out new technologies such as home telehealth and mobile workforce software.

By 2005 the original IS infrastructure had been completely replaced with a centralized healthcare management system from a new vendor. Planning responsibility was held by the CFO and an IT manager, and a belief existed that IS was a source of cost efficiency but not necessarily competitive advantage. However, opportunity-seeking IS management practices were unchanged throughout the timeline. Practices such as selecting and implementing emerging technologies (PCs in the 1980s, decentralized PC-based proprietary applications in the 1990s, and ASP applications in the 2000s) were done even though at the

40

time it was anyone's guess whether the technology would turn out to be useful or long-lived. HealthCo's management built up most of the IS management practices in an ad-hoc fashion when the situation presented itself to use innovative technology in a potentially useful way and most often before the business strategy had a chance to show actual outcomes.

Case #2 TechCo

Start-Up Phase. TechCo officially began operations in February 1997 with a clear idea of what business it wanted to be in: the growing market for computer-generated (CG) effects in advertising, television, and feature movies. The company's only tangible items were a $20,000 loan from a local bank and a carload of assorted computers and networking equipment. In its first year of operation, TechCo landed several projects for providing computer-generated visual effects for television commercials. Because of the capital-intensive nature of the CG industry, revenue from these projects was immediately reinvested in the IT hardware and software that was necessary to create the commercials.

In 1998, TechCo had 5 employees (including the 2 founders) and posted revenues of $168,000. At this point, TechCo attracted the attention of an experienced visual effects supervisor in California who was looking for a company to add the effect of a swirling snowstorm for a production scheduled to air in December, 1998. TechCo was awarded the project and subsequently worked on additional Hollywood feature films and television productions while continuing their locally-based business with commercials. These projects (in the $1,000 to $10,000 range) funded IT infrastructure purchases and built critical experience in the new industry. Costs were tightly controlled by buying only the technology that was absolutely necessary for immediate projects. Revenues were generated by aggressively searching for work in multiple places. The opportunistic strategy enabled TechCo to remain in operation and build both experience and business relationships.

TechCo searched for project opportunities in a somewhat ad-hoc manner. Because no standard VFX business model existed, the founders were forced to be flexible and learn as they went, with little routinization or formalization. Because project schedules were unpredictable and hard to forecast, the

41

company had to increase capacity quickly each time a project was started. Some parts of the initial strategy were more cautious and purposeful, such as focusing on using least-cost equipment and adapting it to project requirements as defined in the project specifications. TechCo developed a low-cost S-I-R (Salvage–Innovate–Reuse) IT strategy as software and hardware were purchased as needed for each project. Low-cost PCs were purchased and networked together to create higher capacity "virtual computers" for visual effects work rather than purchasing more-expensive, higher-capacity computers. Being cost-effective yet inventive allowed TechCo to compete against larger VFX businesses like PIXAR.

Environmental IT scanning involved constant checking of vendor websites, eBay, and technology magazines for new software and hardware announcements, as well as subsequent discount announcements. Typically, a VFX project would be received, IT requirements determined, and—depending on the project size (basically a proxy for importance)—IT decisions would then be made regarding purchases, support provided, and how existing IT was to be reused or reallocated. No projects were ever turned down, even if the company's existing technology was insufficient. If a project contract was awarded, TechCo managers improvised with what they already had on hand and only purchased new IT if a significant gap existed:

> *"the very first thing [with] this one project … a $2000 project, we basically had to spend $1000 of that on buying an editing program and we used that same editing program for years. … It ran on NT stuff like that, it was a very early program. Once again, it was a very cost effective solution. We could have gone and bought, like an Avid [that] was like 30+ thousand and really what was the difference, so we steered clear of that. We found another solution." (TechCo Founder)*

Hollywood Contractor Phase. Early success created its own momentum. Pleased with the quality of work provided by a small start-up that no one had ever heard of, the same VFX supervisor again approached TechCo at the end of 1999 and asked if they were interested in working on a slightly larger Hollywood project. A different VFX company that was originally contracted to provide the opening sequence for the coming year's Hollywood summer "blockbuster" movie had backed out of the project and left the production company scrambling for a replacement. TechCo accepted the project in December, 1999 and

42

was suddenly thrust into a major new industry with large, successful, and very innovative competitors. In its first three years, TechCo transitioned from producing its first major Hollywood VFX project to being involved in multiple Hollywood movies, independently-produced live action, and TV commercial projects at the same time.

In 2000, ownership and senior management of the firm was shared between three individuals: the two original founders as well as a new CEO who was recruited to share executive responsibilities and to jump-start a live-action television production division. An IT manager and a software research and development manager were hired in this period, but decision making continued to be centralized among the three owners. The low-cost S-I-R strategy also remained unchanged from the previous years. IS management practices during this period remained opportunistic as the company looked for projects which benefited from its IT experience and infrastructure. For example, IT staff waited until particular video production tasks were held up by some performance limits (e.g., rendering speed) and then focused time and technology on improving that specific problem. These practices helped maintain the company's business strategy of carefully doling out scarce financial resources for IT in the most cost-effective manner. TechCo was able to stay very current in the industry and remain aware of potentially influential trends as early as possible.

Other IS management practices were being developed in areas such as benchmarking, which involved bringing in new technology for a trial period before deciding whether to purchase it. For the first time, handling internal IT maintenance tasks such as network security sometimes took precedence over getting new projects to work on. Significant IS experimentation still continued as necessity dictated. Trial and error was the essential usage strategy as these experiments typically operated "in production" and different network configurations were tested on the same networks that were being used by artists for current projects.

A technological maturing process began unfolding by the end of 2002 as the frequency with which TechCo's projects were seen on both the large and small screen increased. TechCo made a transition from learning how to compete as a visual media production business (between 2000 and 2002) to exploiting that experience with a diverse array of productions (between 2003 and 2004). Individual project schedules,

many of which were finalized on short notice, continued to dominate the company's planning cycles, and this pressured business processes such as staffing and IT investment to remain flexible and informal. Efforts to create more stable routines for budgeting, project management, IT support, and software R&D were beginning to take shape, but often still assumed secondary priority when new VFX and live action projects started. TechCo was gaining a reputation as an innovative provider of high quality VFX in certain areas such as liquid flow animation, and the company received government support to further develop this pioneering expertise in the industry.

The environment surrounding TechCo's IT department had significantly transformed from start-up to 2004 yet the IT strategy was unchanged. Several steps for dealing with the IT requirements for each new project had developed into a common set of processes over time, and together with the beginnings of a formalized set of IT standards, technology sourcing routines were becoming increasingly established while still maintaining the S-I-R (Salvage–Innovate–Reuse) philosophy.

TechCo concentrated on improving and establishing successful management capabilities. The IT manager began attending departmental meetings in order to explain why and how IT changes were being made. The software R&D manager also began acting as a liaison between programming staff and senior management in order to keep both sides aware of important strategic goals and the progress being made toward them. Customer feedback pertaining to the company's new commercial software products began being evaluated to see how well current IT capabilities were meeting external requirements. This was the first time an external view was taken regarding IT efficacy. Finally, the IT manager began instituting formal monitoring metrics for hardware and network performance for the purpose of making the gap between the VFX division's IT requirements and the actual IT service levels more transparent. No such evaluation system existed prior to the end of 2004 when the metrics went into effect. IS management capabilities remained inventive but now became more established.

Established Infrastructure Phase. By 2005, internal IT inventories had built up to the point where a substantial stock of computer components existed within the company. With this inventory, TechCo was able to reconfigure project teams much faster and supply them with a properly-sized IT infrastructure. Basic

44

IT infrastructure build-out largely came to an end as a lower percentage of each project's revenues was dedicated to IT purchases. Management of the IT environment had transitioned from being primarily concerned with trial and error and investment to a focus on efficiently managing the strong infrastructure that now existed.

Over time, TechCo's infrastructure was gradually transformed into massive server farms for data storage and processing, with machines running commercial and customized software capable of providing visual effects for Hollywood feature films. What made this transformation interesting was that the changes were reactive; as the IT infrastructure evolved into something unrecognizable and several generations removed from its origin, the basic strategies and management practices involved in planning for, sourcing, and modifying this technology did not change. In other words, the basic S-I-R improvising strategy was instituted on day one and remained in place. Opportunities certainly existed for the company to avoid being reactive, to plan for and pursue, for example, a focused strategy of cost-effectiveness such as leasing equipment instead of buying in order to smooth corporate cash flows and improve the balance sheet, but these changes were resisted by the two original founders. By 2005, both the overall business and the specific IT department were very different from what they had been a few years earlier.

Appendix B - Coding Guide

Data Sources

Two of the co-authors did the coding using the full case narratives for each company. The case summaries presented in Appendix A of this paper are abridged versions of the originals, edited for length. Each full case narrative included information describing the original data sources.

Procedure

The data analysis procedure proceeded in three steps as follows:

1. Coding. Working independently, two co-authors completed data tables like the ones shown below by reading the full case narratives and noting when and where examples of specific entrepreneurial behaviors were demonstrated or could be reasonably inferred. The behaviors for which the authors were searching were those that are indicative of the three perspectives on entrepreneurial behavior (see Table 5). For reference purposes, the full case narratives have line numbers. These line numbers were inserted in the table to indicate specific locations in the case narratives where entrepreneurial behaviors can be observed. For example, if evidence for Causation code C3 ("Wrote a business plan") is described in lines 250-256 and then again later in lines 341-342 of the HealthCo case narrative, the table entry would look like this:

	Evidence	*(page #s)*					
Codes	*1*	*2*	*3*	*4*	*5*	*6*	*7*
C1							
C2							
C3	250-256	341-342					
…							

This full table included all of the entrepreneurial behaviors listed in Table 5, and numerous instances of each behavior [for some behaviors, over 30 instances were recorded in the cases].

After completing the table shown above, if the coder's determination was that evidence strongly supported the conclusion that a business plan was purposefully written (again, "Wrote a business plan" is code C3) then the Results table would look like the table immediately below, with "******" denoting strong

46

evidence of behavior C3, as shown below. This procedure allowed the researchers to create an audit trail for the next step in the analysis.

		TechCo	HealthCo
…	…		
C2	Calculated the returns of various opportunities		
C3	Wrote a business plan		**
C4	Organized and implemented control processes		
…	…		

2. Reconciling. Working collaboratively, the researchers compared the results from each coder and examined the elements where disagreement exists. The researchers discussed and resolved discrepancies, noting cells in the Results table where agreement did not occur.

Specifically, after coding by two authors, the remaining author performed a consistency check by first randomly selecting passages in the case narratives and coding for causation, effectuation, or bricolage behavior from each case comparing the results with what was recorded in the first round of dual-coding. Second, line numbers were randomly selected from the coding spreadsheet and the passages were looked up in the narratives to see if there was agreement. In the majority of instances the consistency check resulted in agreement with the original coding. Instances where differences were detected were interpreted as minor. We concluded from this process that the display tables presented in the results section accurately represents the correspondence between theoretical and observed behaviors in the two new ventures.

3. Results. Finally, we consolidated the data analysis into one set of results. The fit between the data in the case and the behaviors associated with the theory was assessed as *strong* (marked with "**" in the respective Results tables) when (1) it was clearly evident that the behavior of the entrepreneur (as captured in the case study) matched with the behavior associated with the theory as reported in the respective tables, or (2) the data in the case study were clear, came from multiple sources, and were not likely to be contested by anyone else reading the same information. For example, code C8 – "develop a plan to develop services", is clearly stated in the HealthCo case: "The company followed an aggressive growth strategy as it developed its franchising strategy in this period." (summarized in Appendix A on p. 3, on the basis of lines 233-238 in the full case narrative). Another example from the TechCo is Code B4 – "resources at hand – used existing

resources" is found in the comment "TechCo developed a low-cost S-I-R (Salvage–Innovate–Reuse) IT strategy as software and hardware were purchased as needed for each project." (summarized on p. 7 of Appendix A, on the basis of lines 274-281 in the full case narrative).

Fit was assessed as *moderate* (marked with "*" in the respective theory tables) when (1) it required some interpretation, or (2) it was not supported by multiple data sources. Examples of *moderate* fit are; 1. Code C9 – "wrote up a marketing plan…" from HealthCo with the comment "Learning-by-doing, franchise system development, and service marketing were key elements of the company's strategy between 1988 and 1992." (summarized on p. 3 of Appendix A, on the basis of lines 354-356 in the full case narrative), and 2. From TechCo, Code B8 – "rejected limitations of the environment" with the comment "Because no standard VFX business model existed, the founders were forced to be flexible and learn as they went, with little routinization or formalization." (summarized on p. 6 of Appendix A, on the basis of lines 254-256 in the full case narrative).

No Fit (marked with "-" in the respective theory tables) was established when there was not any clear evidence that the actions of the entrepreneur aligned with the behavior associated with the particular entrepreneurial perspective.

Finally, an assessment of *unknown* (marked with "?" in the respective theory tables) was reached when it was not possible to infer from the data whether the actions of the entrepreneur aligned with the theory. The results, coded with the "**", "*", "-", and "?" indicators, appear in Table 8 in the body of the paper.