

# **Entrepreneurial Firms and Information Systems Capabilities**

*Emergent Research Forum Paper*

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## **Abstract**

Entrepreneurial firms have several characteristics that challenge IS capability development. Resources are often scarce and the top management team usually does not have IS management experience. As these firms go through growth from a small business to a medium enterprise, the firm's IS capabilities mature. This paper presents a nascent process model of this evolution and develops a series of propositions. Two states are described - a stabilization state and a development state - along with three trigger events that move the firm between these states. The triggers are TMT requirement change, customer requirement change and the development of a satisficing solution. At the conference it is proposed to report on a preliminary study.

## **Keywords**

Entrepreneurship, business growth, IS capabilities, process models

## **Introduction**

Academics have long observed that Information Systems (IS) research has focused on large enterprises at the expense of small and medium-sized enterprises (SMEs) (Cragg et al. 2002, Ates, et al. 2013). It is also true that IS research on SMEs has usually not focused on the growth characteristics of these firms, as either an Independent or control variable. This is important as a strong argument given in favor of studying SMEs is precisely because of their contribution to employment growth. Therefore perhaps paradoxically, one of the most important reasons why SMEs should be studied more is generally not theorized. This is even more surprising as IS capabilities do seem to have at least an indirect effect on growth (Mitra 2005).

In order to focus on growth, the specific research question of this research is to focus on the transition of firms from being small businesses (defined as 25 or fewer employees) to medium-sized enterprises (100 or more employees) and the development of IS capability during this period of time. The focus is less on SMEs per se and more on the transition from "S" to "M". IS Capabilities are defined to be the set of information technology (IT) used to deliver support and administration of business operations. In order to reduce the potential conflation of knowledge of IT as product and as support system, this work will focus on firms that are not in the business of delivering components of information systems as their core business (this should not be seen as a limiting factor as growth firms are not necessarily technology firms – Coad et al. 2014). These characteristics – transitioning between 25 and 100 employees, nonIT product, on a growth trajectory – will define the entrepreneurial firms investigated herein.

These firms are more likely to have a decentralized structure to the management and delivery of their IS capability (Chan and Horner Reich 2007). Their processes are not highly engineered (Ates et al. 2013) and are likely to have been developed to value flexibility over efficiency (Levy and Powell 1998, Street and Meister 2004). Their information systems are likely to be run part-time by either one person, either a member of the founding Top Management Team (TMT) or early employee (unlikely to be an IT manager by training), outsourced or highly decentralized (Premkumar 2003). Overall, firms on the smaller end of

our range tend to be less sophisticated with respect to IS capabilities; at the higher end, more formalized and complete with respect to IS capabilities.

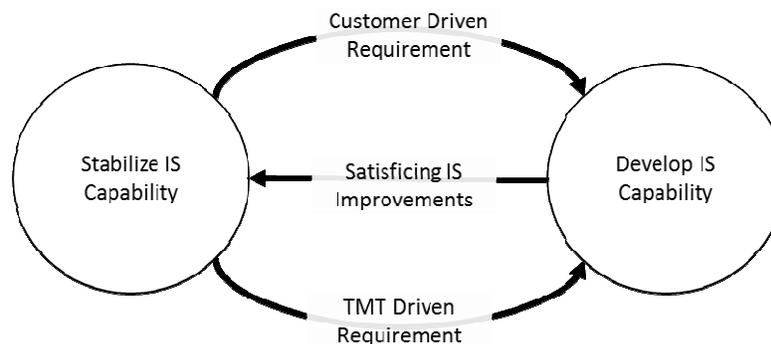
This Emerging Research Forum paper presents a simple process model to investigate the change process for an entrepreneurial firm during growth. Propositions related to the model are made in the areas of stabilization, development, and requirements changes. The current study of firms to investigate these propositions is outlined in the final section. It is anticipated that preliminary results will be available for the conference presentation.

## Research Model

To guide this exploratory study a simple process model with two states and three transition triggers is introduced. A process model approach is suggested as Chan and Horner Reich (2007) raised questions about the way in which Business-IT alignment evolved in entrepreneurial firms. Further, resource development is often considered as a process in the entrepreneurship literature (e.g., McKelvie and Wiklund 2010, Clarysse et al. 2011). Finally within the IS literature, an example of a process model to investigate IT infrastructure in a growing firm was given by Street and Meister (2004). However, studies are often variance models and therefore it is hoped that this approach will new perspectives on the causality of IS Capability development.

The general model is that the entrepreneurial firm will alternate between two states of stabilizing its IS capability and developing IS capabilities (Figure 1). Ates et al. (2013) suggest that most change to a firm's resources will be internally driven. However, these internal concerns can be separated in to two different types: those driven by customer needs for revenue growth, and those driven by other internal matters such as efficiency or reliability. Effectively, even though the TMT would give instructions to the firm to build IS capabilities in response to customer demands, the distinction between these two triggers is made to attribute the change to the root cause. Customers and the TMT would drive requirements that motivate the need to develop IS capabilities, as these companies often react to stimuli rather than plan careful change (Hudson-Smith and Smith 2007). Then after satisficing solutions have been applied to the specific problem, the firm would then move in to a mode where it was stabilizing and consolidating its capabilities, rather than develop new capabilities. The propositions are supported in the next sections.

The implication is that a growing firm would go through discrete and distinct period of IS development. Due to the scarcity of resources and capabilities, there would not be a portfolio of concurrent development at different stages. It also has the second implication that, during a period of development, a risk exists that stabilization of previous initiatives would not be the priority. This in turn would create the opportunity to drive new requirements, primarily from the TMT when something breaks. This does create the possibility that an accelerating oscillation between the two states could occur. The business outcome is not clear but could be one of the reasons that firms fail to grow successfully and occasionally collapse.



**Figure 1: Entrepreneurial Firm Stabilization-Development Model**

### ***Stabilize IS Capability***

The fit between IS capability and business strategy has been extensively studied in the alignment literature (Chan and Horner Reich 2007, Gerow et al. 2014). As entrepreneurial firms do not tend to have

sophisticated IS capabilities (Mitra 2005), its TMT will see a misalignment between IS and Business fit (Street and Meister 2004). However, “fixing” this fit will not usually be a top priority as it would likely be in a large organization, or even in a more stable SME (Levy et al. 2001, Chan and Horner Reich 2007). As they are operating in a turbulent environment, fit will not necessarily be there on a daily basis (Gerow et al. 2014) but the TMT will not feel a need to act as it values flexibility (Levy et al. 2001) and a desire to not restrict future options (Street and Meister 2004). This is an important difference between entrepreneurial firms and larger firms (and even SMEs) where poor alignment is something that needs to be fixed. Therefore, the initial starting state of the model will be a firm that attempts to stabilize its IS capability without additional commitments of resources.

P1: TMT will be comfortable with a degree of misalignment. Flexibility will be valued over efficiency. Reliability will matter but functionality will be more important.

### ***TMT-Driven Requirements***

TMT actions clearly have a major role in shaping the changes in a firm’s IS Capability (Huang et al. 2010). While it is proposed that the TMT will accept stabilizing a satisficing solution, it is known that higher performing SMEs do have better business-IT alignment (Cragg et al. 2002). Further, a long standing factor in the adoption and successful implementation of new IS capability is the support of the TMT. The TMT may push for changes due to a performance issue, or because they identify a potential new opportunity where the existing IS capabilities are insufficient to support it (Premkumar and Roberts 1999, Premkumar 2003). Firms do seem to find cash and other resources for specific IT investments when required for growth (Mitra 2005, Dutot et al. 2014). However, it is expected that they would not be part of an overall strategic plan (Levy and Powell 1998, Levy et al. 2001) but more a set of actions.

P2: Opportunistic demands or crises will be to TMT-driven requirements. This will be preceded by a marked decline in perceived alignment by the TMT. The satisficing solution will no longer be appropriate.

### ***Customer-driven Requirements***

In growth mode, revenue is often the most important goal. Indeed, the two most common methods of measuring growth are number of employees and sales (Coad et al. 2014). The primary concern often of the firm at this stage is to distribute and sell its product as quickly as possible (Kazanjian 1988). Therefore it is not surprising that customer needs are often an important issue in driving IS capability changes (Levy et al. 2001). Further over time, companies will learn that properly addressing customer requests and requirements can drive successful growth ensuring that these needs will move higher on the priority list (Parker et al. 2010). Systems related to e-Commerce or other sales activities have also been seen to take a high priority (Raymond and Bergeron 2008). This leads to the proposition that:

P3: Systems related to revenue generation will be more likely to be addressed than those related to cost centres.

Another reason that change may be driven by customers is that entrepreneurial firms are bad at scanning for new technologies. They rely on others including their customers to drive the scanning for them. For a firm’s IS capabilities this may lead to major changes being driven less by the TMT and more by customer requirements, either as orders or requests for proposals. This is not to say TMT’s will be ignorant of new technologies but rather because of the aforementioned focus on sales they are likely to see these technologies as something to incorporate in to new products, rather than the delivery of existing products.

P4: The effect of disruptive technologies such as Internet of Things, Autonomous Vehicles, Big Data or Machine Learning will be considered by the TMT from a product offering perspective, not a delivery perspective. (Potential) customers will be more influential in shaping the direction than internal management (internal will likely be relatively weaker and inexperienced).

### ***Develop IS Capability***

Improving the IS Capability of an entrepreneurial firm is hard. Often the needs are technical such as software and hardware that require cash that might be hard to find, there may be managerial deficiencies

or both (Thakur 1999). Hiring staff at an entrepreneurial firm can be challenging (Lee 2014). IS personnel often are drawn to environments with leading-edge tools and training. In a growing firm, this could be overcome by offering equity but that would be hard for a TMT to agree to for something that might be perceived as a short-term problem. Therefore,

P5: Hiring IT staff will be hard for an entrepreneurial firm. This will be one of the factors contributing to satisficing solutions being accepted.

As firms address concerns, their inherent resource scarcity and perspective leads to short-term solutions and these solutions will often come from outside (Premkumar 2003). After the immediate problem has been solved, the firm's attention will return to other matters and strategic change to the IS infrastructure will not be prioritized (Jennings and Beaver 1997).

P6: Firms will look for satisficing solutions. There will be a lack of overall IT vision. Rather than an overall architecture, there will be a series of connected solutions with a portfolio of outside vendors. After a solution is identified and applied to the specific problem, state will move to "Stabilize the IS Capability".

## **Overall**

Over time, we would expect to see a more and more disjointed IS capability set that might lead to a major crisis as satisficing solutions are implemented and stabilized. There will likely be an idiosyncratic mix of internally-managed and externally-provided capabilities. The organization will have a defined but not necessarily optimized IT governance structure. This will be for some time the "norm" in a growth phase (it is an implication of the Stabilize IS Capability state).

This model has important ramifications. While it implies that point needs will lead to changes in IS capability, it does not mean that the business will successfully address the underlying problems. The business may stall or continue to grow, or indeed it may step backwards as the response is inadequate in either scope or timeliness. Just because the company wants to develop a satisficing solution does not mean that it can. This risk is interesting as it may open a new understanding of reasons why growth, while leading to increased profitability, can also lead to decreases in firm survival (Delmar et al. 2013). While it is true that IS capability implementation can set the stage for future growth and success (Mitra 2005), it might also lead to firm failure.

P7: As the company continues to experience this cycle of crisis and resolution, it would be expected that the TMT would slowly formalize the IS function, potentially with a major overhaul.

Missing from this model are transitions that lead to an entirely different enterprise state. Proposition 7 begins the exploration of where the firm would go next. However, the existing research literature does not provide much guidance on when does a firm become more formal. It seems to do so eventually but we do not really know when. Further, firms may exit from the cycle in the model through business failure, acquisition, or other enterprise-wide concern.

## **Research Study**

This exploratory study will employ a case research methodology to investigate the propositions. Firms will be recruited that have experienced growth rates of 20% per year (to indicate growth) for multiple years during the period when they had between 25 and 100 employees. The research team's School's Entrepreneurship Institute has a program with an ongoing relationship with nearly 500 such companies.

For the conference, it is expected that 4-6 case studies will be completed with primary data providing initial observations on the model and the propositions. Due to the nature of the models and propositions (the sudden transitions between states followed by a resolution), it is anticipated that the analysis may follow Street and Meister (2004) and use Punctuated Equilibrium Theory as an explanatory lens.

## **Conclusion**

This paper outlines an ambitious research agenda. The goal of this specific effort is to open up the black box of the evolution of IS capabilities as firms transitions from small to medium. It is expected that this

will lead to refined research questions and literature, drawn from both the entrepreneurship and information systems fields. In turn, this should make contributions that would improve academic and practitioner understanding of the growth of these firms.

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