

MANAGING FOR RAPID GROWTH: TECHNICAL PROCESS MANAGEMENT AND FLEXIBILITY IN SMALL FIRMS

Entrepreneurship and Technology Track

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ABSTRACT

Small, entrepreneurial firms face major internal challenges as they move from start-up through the rapid growth phase. This transition to rapid growth demands significant changes in how internal operations are managed. Some researchers have encouraged small firms to adopt process management. Other researchers and entrepreneurs have raised serious questions about the effectiveness and “fit” of process management in small entrepreneurial firms. This research investigates how process management may assist (or hinder) the flexibility and responsiveness of small, rapidly growing firms to changing customer needs.

INTRODUCTION

During the start-up phase owners are typically involved in every aspect of the business. They design products, conduct marketing and sales efforts, deliver customer services, work with suppliers and pay every bill. The new business cannot function on a day-to-day basis without the owner’s direct involvement. As small firms move into a rapid growth phase, however, a fundamental change must occur in how internal operations are managed. No longer can the owner personally attend to every detail. New management practices and processes are needed to ensure productivity and quality, manage and motivate new employees, cope with increased business volume, and respond to diverse customer demands (Pelham 2000; Day 1994; Churchill & Lewis 1983).

Benefits of process management: Internal processes can help small firms cope with the challenges of rapid growth (Kuratko & Hodgetts 2001; Pelham 2000; Day 1994; Price & Chen 1993; Churchill & Lewis 1983). Anderson, Rungtusanatham, & Schroeder (1994) define process management as "The set of methodological and behavioral practices emphasizing the management of process, or means of actions, rather than the results" (p. 480). Process management assists for several reasons: First, it assists market sensing through consistent methods for collecting and analyzing customer, competitor and market information and customer feedback. Second, it assists two-way communication about customer and market needs (and the firm’s capability for responding) among employees within the firm. Third, it helps to coordinate and speed the firm’s internal responses to customers and market opportunities. Fourth, it

improves product and service quality. All of this improves business performance and creates value for customers (Morita & Flynn 1997).

Limitations of process management: Despite the benefits of process management, small firms have been slow to implement it (Pearson & Elleram 1995; Price & Chen 1993). Researchers have raised questions about whether the formalization, internal structure and control associated with process management actually improve business performance in small firms (Fombrun & Wally 1989). Jelinek & Litterer (1995) observed, “The very term, ‘entrepreneurial organization’ seems contradictory and problematic” (p. 137). These researchers noted that unlike large companies, entrepreneurial firms “shift the focus away from producing specific, predetermined behavior by means of formal direction and control from upper management” (p. 137). Instead, Jelinek and Litterer (1995) note that entrepreneurial firms rely on a “shared understanding of what will enable individuals to choose effective actions for themselves” (p. 138). As a result, the types of planned, coordinated and consistent process procedures, systems and performance measures that are fundamental to process management in larger firms, may contradict the organizational cultures and internal activities found in entrepreneurial companies.

Field research on the benefits and limitations of process management in rapidly growing small firms is sparse. This research is guided by the research question: How can process management assist (and hinder) growing small firms in achieving flexibility in products offered to customers? Figure 1 illustrates the theoretical relations.

Figure 1 placed about here.

THEORETICAL DISCUSSION

The following discussion covers three theoretical components that underlie this research: Process management, flexibility and the role of process management in achieving flexibility.

Process management: As noted earlier, Anderson, Rungtusanatham, and Schroeder (1994) define process management as the behaviors, methods and practices for managing internal processes and actions (rather than focusing only on final results). Process management is a broad approach to managing two components of internal operations: human resources and technical resources related to satisfying customers (Morita & Flynn 1997; Anderson, Rungtusanatham & Schroeder 1994). The human resources include methods for hiring, training and motivating employees. Technical resources guide how employees perform their jobs and handle their responsibilities through systems, policies and procedures. Technical resources also include processes for managing supply chains and information technology. Although both types of resources are important, the focus of this paper is on the technical resources.

Flexibility: Upton (1994) defines flexibility as “...the ability to change or react with little penalty in time, effort, cost or performance” (p. 73). Researchers have identified at least fifteen different types of manufacturing and service flexibility. Flexibility is, however, often classified

in three primary ways: Product, process or volume flexibility (Lau 1999). Product flexibility is the ability of a firm to offer a variety of different product designs (broad product lines or customized versions) to its customers without sacrificing quality or performance. Process flexibility is the ability of firms to switch from production of one product to another without incurring significant increases in costs or set-up times for product runs. Volume flexibility is the ability of a firm to adjust the size of product runs or batches without reducing internal efficiency or quality (Lau 1999).

As noted earlier, field research on relations between process management and flexibility in small firms is sparse. Exploration of these relations in small firms forms the basis for this paper.

METHODOLOGY

Since the research focus is on how and why questions a theory-based exploratory approach is appropriate (Yin, 1994; Eisenhardt, 1989). The methodology includes extensive structured interviews, employee surveys and document reviews.

Data collection: Exploratory case research was conducted at six companies using three different types of data: sixty structured interviews, employee surveys and document reviews. An initial convenience sample of thirty-two prospective companies was drawn from New England manufacturing directories utilizing the following criteria:

- Each prospective company was a manufacturing company with 50 to 250 employees.
- Each company produced either partially or fully customized industrial or consumer products and services in response to customer orders.

The thirty-two firms were contacted to arrange screening interviews with senior managers or owners. The interviews were used to determine if the firms had significant experience in implementing process management, if they had experienced sales growth of at least 20% per year over the past two years and to explain the research purpose and methods. Six firms decided to participate.

Interviews followed a structured interview protocol. Follow-up interviews were held at the firms to clarify important points. Specific questions began with the following topics:

- Identifying the functional areas where process management was implemented at each firm.
- Identifying positive and negative experiences that each firm had in implementing process management (and understanding why these experiences occurred).
- Owner and employee perceptions of each firm's flexibility in response to changing customer and market demands.

In the second part of interviews, business owners and employees were asked for their perceptions of how and why process management assisted or hindered each firm's flexibility (or had no impact) in the following areas:

- Product designs and performance.
- Product and support service quality (including post-sale services).
- Communication and coordination of responses to customer needs.

- Speed of responses.
- Flexibility in adjusting to new customer demands.
- Responses to customer feedback about delivered products and services.

Surveys included questions on employee perceptions of the use and effectiveness of process management at each firm. To ensure confidentiality, respondents were asked to return the questionnaires directly to the researcher.

Document reviews identified evidence on the use of process management and the flexibility of each firm in response to changing customer demands. Such reviews can assist in supporting or dis-confirming results from the interviews. Documents were chosen based on a document checklist. Examples include process instructions, customer orders and feedback forms, quality and business performance measures, and supplier evaluations.

Data analysis: Specific within-case data analysis procedures of Yin (1994) and Eisenhardt (1989) were followed. Each type of data was analyzed separately to evaluate two research areas: First, the possible relations among the constructs of process management and responsiveness and second, how and why the relations may exist. The results from separate data sources were then compared to identify areas of agreement and differences. This comparison of results from separate data sources can significantly strengthen the reliability of conclusions if results from different data sources are in agreement (Jick, 1979).

Case databases were organized in a similar manner to provide evidence used to evaluate the 'how and why' of relations among the constructs. This approach increased reliability and assisted the cross-case comparisons that followed. The goal of cross-case comparisons was to assist in identifying similarities and differences among the cases. This allowed for replication logic that increases confidence in research findings due to confirmation from multiple cases (Yin, 1994).

RESULTS

Impact of Process Management

The analysis of research data yielded four categories of the impact of process management. Table 1 illustrates the categories and types of process management activities, systems and procedures adopted by these growing firms to cope with the challenges of providing product flexibility. Specific processes or activities are discussed below for each of the four categories.

Table 1 placed about here.

Customization and manufacturing: Of the four firms that offer either partially or completely customized product designs, all implemented formal ordering processes. At Tubbs, Varian, Concept 2 and Hypertherm, processes now require employees to answer a checklist of specific

questions about the product application and performance needs of customers before an order is considered for approval. Employees are trained to translate customer needs into product specifications (including checklists of questions to help customers who are uncertain about their requirements). Customers must formally approve the accuracy of order information before their orders are accepted.

To cope with the market uncertainty, each product design variation or model is treated like a separate product in daily or weekly cross-functional reviews. A manager of production control explained the change under new spanning processes, “Engineering, manufacturing and sales acted like special interests – they didn’t work together well – they didn’t want to talk to each other. It was like pulling teeth to get them to talk to each other. ISO (processes) force them to talk at the sales review meetings and now they cooperate more – even outside the meetings.”

Process cookbooks: Processes guide employees who must understand how to build many different designs. Simplified process procedures and illustrations explain in plain language the steps for producing different products and measuring product quality. As one assembler noted, “Everything I do in assembly is covered by (ISO) procedures. Now we have to slow down to make sure all bases are covered. It makes us look at things twice to make sure things are done right – like looking at the product drawings and assembly instructions.” Accurate, readily available procedures and illustrations reduce the learning curve for employees. Consistent procedures reduce quality problems, increase productivity and lower unit costs.

Flexible suppliers: Suppliers are chosen for their fit with a firm’s internal processes. Both flexibility and quality in delivering different product designs and changing order volumes are critical. Pricing is a secondary consideration. Suppliers that specialize in certain products with advanced design and manufacturing technologies are often chosen. Their technical and process capabilities are often far superior to what the firm could achieve in house.

Closed-loop, fast feedback: Feedback from customers is proactively solicited to identify problems and areas for improvement early. One customer service manager noted the problems that used to be caused by the lack of a customer feedback processes: “Really what I think ISO (processes) did was to get us to a position where we did business better internally. Before you might have four different people in one department keeping scratch notes about customer contacts where we really had no definitive record of how many times we spoke to customers, when, or about what products or problems.” Concept 2, Hypertherm, Varian and Tubbs maintain an electronic real-time database of customer comments that is categorized by the type of concern and show what action was taken in response.

Challenges of Process Management

As noted, two firms experienced problems with formalized process procedures that were too rigid and inflexible. This reduced their ability to respond with agility to changes in customer and market demands. One product manager explained, “On the product development side - I have struggled with the product and design reviews and what is an official project and what you can do unofficially without all sorts of meetings and documentation. Official projects have created

so much red tape... Outside of the system you've got to be able to do this stuff on the fly - so that's been a struggle.”

Another important challenge in developing and implementing processes is the significant time involved. Several revisions are often required. This was viewed as a one-time implementation problem, however, that was justified by long-term benefits

CONCLUSIONS

Improved flexibility: All firms in this study improved their flexibility by implementing processes that assist in the categories identified in Table 1. The specific impact of process management on flexibility was uneven among these firms, however. This is because not all firms implemented the processes effectively in all areas.

Comprehensive processes: A ‘half-way’ approach to applying process management was not used. Instead, the firms chose a comprehensive approach that utilized processes that supported external information collection about customer needs combined with internal analysis, communication and coordination among employees about flexible responses. Processes to support effective relationships with suppliers were also common among the firms in this research.

Inflexible processes: A major challenge posed by process management is its potential to create inflexible systems that reduce agility. There is the danger that employees will delay action and wait for formal processes or follow only the existing process procedures rather than acting immediately and being creative in responding when an unexpected situation demands it. When formalizing internal processes, firms must be ready to by-pass the processes to meet individual customer needs or change the process to accommodate changes in their markets.

Limitations of the Research

The rich detail that is a strength of qualitative data can become so complex that it can become difficult to generate clearly defined and theory-based conclusions. The application of theory on process management and flexibility to the research data plus the analysis and comparison techniques utilized in this research helped to address this problem. A second limitation is that the relatively small number of companies involved limits the generalizability of these results to other small firms.

FUTURE RESEARCH DIRECTIONS

Researchers raised concerns that consistent systems and processes can damage the entrepreneurial creativity and agility of small firms (Jelinek & Litterer 1995; Fombrun & Wally, 1989). Since creativity and agility are key competitive advantages for many small firms, their concerns require attention. Future research should investigate the question: How can small businesses balance the need for processes that achieve consistent, effective and efficient internal communication and responses against the need for entrepreneurial creativity, agility and freedom?

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Figure 1: Technical Process Management and Product Flexibility in Small Firms

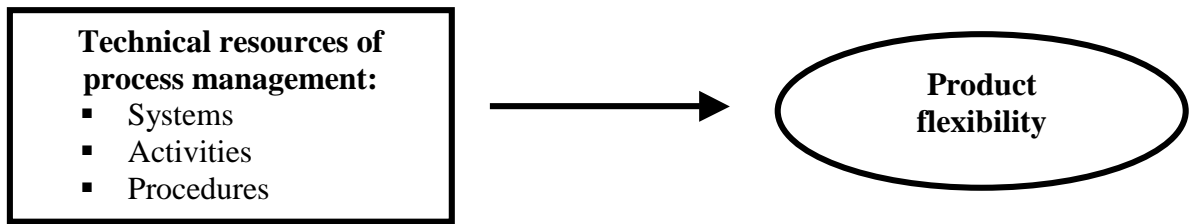


Table 1: Process Management and Flexibility

(▲ = Positive impact on flexibility; ▼ = negative impact on flexibility, -- = not used at this firm)

Process Management Techniques Used to Achieve Flexibility:	Hypertherm	Varian	Tubbs	Champlain	Termiflex	Concept 2
Customization and manufacturing processes:						
▪ Questions defined at outset to identify customer needs and internal operations challenges.	▲	▲	▲	--	▲	--
▪ Reviews of market demand and operational requirements; planning for multiple product designs.	▲	▲	▲	▲	▲	▲
▪ Common parts: Only change parts that affect performance.	▲	▲	▲	--	▲	▲
Process cookbooks:						
▪ Positive: Written procedures and illustrations guide the manufacture of different designs.	▲	▲	--	▲	▲	▲
▪ Negative: Procedures take time to develop, may restrict flexibility and change is difficult.	▼	--	--	▼	--	--
Flexible suppliers:						
▪ Offer technology and tooling to switch among different parts on short notice.	▲	▲	▲	--	▲	▲
Fast feedback:						
▪ Unified reporting mechanisms and databases.	▲	▲	--	--	▲	▲
▪ Performance standards and deadlines for collection, analysis and responses.	▲	▲	--	--	▲	--