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Commercial and financial policies in family firms: The SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR

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An interactive learning environment (ILE) was built to reproduce the budgeting process of a small family-owned entrepreneurial firm and to capture how current decisions affect business growth in a longer time horizon. The ILE matches the accounting-related perspective through which spreadsheet-based budgets are drawn up, with the system dynamics (SD) view. Such a goal has been pursued through a connection of traditional Excel spreadsheets with POWERSIM SD models. Playing the SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR allows one to learn how (a) to draw up a budget based on an SD perspective, (b) long-term goals may be affected by current decisions, (c) business/family survival and growth are strongly influenced by current policies, and (d) linking short- to medium- and long-term policies and commercial to financial and equity management issues is critical to business growth.

KEYWORDS: *small business management decision making; management flight simulator; organizational learning; simulation.*

Very often, entrepreneurs, either explicitly or implicitly, feel growth as a goal to be pursued through their own management decisions. Both operational (e.g., sales revenues) and structural (e.g., net assets) growth are seen as a means to let the business evolve from an early to a more advanced stage. However, growth may also reveal itself as a crisis factor; in fact, a too fast, high, or unintended growth rate is often a primary cause of decline in financial and economic company performance.

In the specific context of small, family-owned firms, such a threat may lead to even more unexpected and/or unexplained outcomes because of the peculiar relationships between the business and other related actors in the wider system in which it operates.

In this article, we demonstrate how interactive learning environments (ILEs) matching system dynamics (SD) with accounting models may support entrepreneurs

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and other small business key-actors in understanding processes originating from growth strategies so as to foster diagnosis and policy design.

Small and Micro Firms as a Field of Research

This section aims to show the relevance of small and micro firms to the larger economy, how they interact with major economic actors, and the key role of entrepreneurial styles in factoring them.

It is possible to identify some of the most significant approaches according to which small firms have been distinguished from larger ones. Bolton (1971) suggests that small firms are those that have relatively small market shares, a high degree of personalized owner-management, and independence in that they do not form part of a larger enterprise and that the owner-managers should be free from outside control in making their principal decisions. Likewise, a qualitative approach is adopted by Curran and Burrows (1989) and Curran and Stanworth (1986), who suggest that quantitative parameters (e.g., employees, sales turnover) do not allow one to define to what extent a firm ought to be considered small or large. In fact, a quantitative definition of a firm size implies a false homogeneity among the terms being compared. For instance, a larger company in terms of sales revenues in a given industry could be considered as a smaller one in another sector.

Goffee and Scase (1980) focused their study on the role of the small business owner/entrepreneur. They underlined how a small firm may be significantly affected because of the entrepreneur's personal characteristics, such as leadership attitudes, need of freedom, risk aversion, and so forth. A taxonomy of small businesses has been identified by Goffee and Scase according to the characteristics of entrepreneurs. These entrepreneurial styles can be summarized as follows:

- self-employed entrepreneurs: devote their own work to the firm and are only supported by other members of the equity-owning family;
- small employers: also employ external human resources. They both coordinate company activities and engage themselves in operating activities. One of their major puzzling problems is growth: In fact, they are often reluctant to expand the business because they are afraid to lose control of it;
- owner-controllers: have evolved from the previous stage; they are only involved in management activities and have established a mutual trust relationship with their employees; and
- owner-directors: adopt formal organization structures and procedures to delegate their tasks. Even though such approaches are used in more sophisticated management systems, they can still be included in the small business range because of the key role played by the equity-owner entrepreneur.

Another taxonomy concerning small business entrepreneurs has been identified by Bianchi, Winch, and Grey (1998). The following three types of entrepreneurs have been distinguished:

- gut feeling entrepreneurs: usually creative thinkers, sole-entrepreneurs, who give free play to their flair for business. They base their own success on their experience and intuition rather than on any particular managerial competence;
- technocrats: able to master a specific management area that very often is related to production or commercial fields of activity. Usually, technocrats are “self-made-men” who started to develop their managerial skills by practicing production or commercial activities as artisans or craftsmen or even as employees in other firms. The main risk they face in pursuing business growth is to base their policies only on the point of view of their favorite functional area, ignoring implications of their decisions for other components of the system; and
- coordinators: have managerial capabilities in one or more functional areas. They are more able than the previous two to manage their time. The main problem they face in managing growth is the need to understand the extent to which business growth may be pursued internally (i.e., increasing investments in machinery, personnel, distribution systems, etc.) or externally (i.e., through networking or even mergers and acquisitions).

The concept of “small firm” to which this article will refer is that of a family-owned business where the owner-entrepreneur usually:

- both coordinates management operations and is involved in current activities;
- is not supported by professional management;
- involves other members of the family in business operations;
- is seldom supported by formal organization structures and planning and control systems;
- is unwilling to delegate decision power;
- often makes intuitive decisions, particularly concerning ongoing operations, based on experience and a flair for business;
- lacks time to rationalize strategies due to his emotional involvement in current business management; and
- has to balance both business and family requirements.

In particular, this article will focus on micro family firms, that is, small businesses employing less than 10 people (Perren, 1997; Robertson, 1994; Stanworth & Gray, 1991; Storey, 1994), most of them belonging to the equity-owning family.

The importance of such firms in today’s economy has been widely recognized, both concerning the number of small/medium enterprises (SMEs), which constitute the backbone of our economic systems, and with regard to their contribution to gross national product (GNP) and employment. It has been demonstrated that very small firms (i.e., those having less than 100 employees) represent 99.4% of the European Union (EU) total businesses and employ 56.2% of the total workforce (Tagliacarne Institute, 1995). The significance of small firms also emerges from U.S. statistics, where they account for about 40% of the national GNP and 60% of the workforce (Lumpkin & Ireland, 1988). A considerable percentage of small firms—from 66% in Europe to 80% in the United States (Alcorn, 1982; Donckels & Frohlich, 1991; Ward, 1990)—is made up of family-owned businesses.

In spite of the relevance of SMEs to economic growth and stability, many entrepreneurs often seem not to be sufficiently supported by the wide range of business actors (e.g., banks, professional accountants and other external advisors, university researchers, etc.) with whom they currently interact. This phenomenon could be explained by a

number of factors, such as lack of information, business culture, and time available due to entrepreneurs' high degree of involvement in current activities. Regardless of the causes, a recurring circumstance is entrepreneurs' loneliness in facing difficulties hidden by small business growth (Gumpert & Boyd, 1985).

In conclusion, from the above remarks it emerges that small (and, particularly, micro) firms have various management styles that are necessary to distinguish to understand peculiarities associated with such business systems. Another significant aspect is that in spite of their size, small firms are critical to the larger economy and, hence, represent a significant field of research. Nevertheless, although the small business universe is relevant, it often seems to be neglected by major economic actors.

Main Factors of Failure Related to Small Business Growth

The start-up and early growth stages are particularly critical to entrepreneurial involvement and risk of failure. In these early stages,

- the business idea is still to be well developed and elaborated,
- the entrepreneur has not yet figured out how to implement the business idea,
- an initial team that could support the entrepreneur in strategic decisions has not been established, and
- a minimum customer and sales base is still to be built to obtain the necessary liquidity to meet initial financial needs.

In such an environment, a critical resource is the equity-owner's entrepreneurial ability to manage relevant business functions, matching personal and business goals and finding proper monetary resources.

Most small business failures occur during the first 2 years of their existence. In the United States, of every 10 small firms that are opened, 7 will survive their 1st year, 3 will survive after 3 years, and only 2 will remain after 5 years (Franklin & Franklin, 1982; Ganguly, 1985).¹ It also has been remarked that nearly 80% of U.S. family businesses fail before reaching the third generation and only 3% to 5% will grow beyond this limit (Ward, 1994).

The scientific debate on the causes of small business failure has been fruitful, particularly in the last decade. Several surveys have been conducted on this issue, both in Europe and the United States, mostly leading to similar conclusions. However, even though the several causes of small business failure that have been listed by researchers are similar, their relative weight differs across cases. On the basis of the *Dan & Bradstreet Business Failure Record* (1981), Ault and Miller (1985) and Olivera and Martin (1993) identified entrepreneurial inexperience and incompetence (e.g., in terms of marketing and finance) as a primary cause of small business crisis. They maintain that planning should be a first responsibility for small business owners; they also suggest 11 more "golden rules" to minimize small business failures. Among these rules are marketing research, cash flow management, rolling forecasting, and quality policies. They conclude that "many of the factors contributing to business failures occur outside management's domain. Nevertheless, management must deal with the

overall environment—internal and external” (Ault & Miller, 1985, p. 10; Catturi, 1990).

From a survey conducted by Lussier and Corman (1995), undercapitalization, recession, and creditor problems were indicated as the major causes of failure. Poor management was not strongly indicated by the entrepreneurs as a main reason of their failure. Lussier and Corman also remarked that “it is not uncommon for people to blame external factors for their failure rather than themselves” (p. 5). Planning, recordkeeping, and financial control were supported by only 1% to 3% of the sample. The study identifies 10 areas for small business performance improvement. Among them, as an example, is the need to work for someone else to gain entrepreneurial skills before starting a business and the need to take care to expand slowly with adequate capital to support growth.

According to Festervand and Forrest (1991), financial problems (e.g., undercapitalization, cash flow management, ability to control costs) are the first cause of small business failure. Management problems have been indicated as the second leading cause of crisis. In particular, lack of planning has been remarked as a significant small firm weakness; long-range planning to anticipate future events has been suggested as a solution (O’Neil & Duker, 1986). At the same time, the above-mentioned authors also have recognized that many owners and managers are not willing to do or do not have the time and/or expertise to use business plans. Another significant managerial weakness has been indicated in human resources, in terms of lack of qualified personnel and ineffective assignment of rules and tasks to family members.

Bradley (1997) showed that the complexity of today’s business world has been indicated by small business entrepreneurs as a significant factor of failure. In fact, inability to adjust to the fast-paced environment (e.g., competitors, government rules, technologies) and to keep well-trained and motivated employees have been identified as major problems that are even more severe than financial issues. Another important cause of failure was found in the inability of the small business owners to leave their problems at work. Such a problem led to a vicious circle of higher managerial problems → higher entrepreneurial stress → higher family emotional involvement → deterioration of family quality of life → higher entrepreneurial anxiety → higher managerial problems.

Some other scholars have been focusing their research on small business entrepreneurs’ personal characteristics to find some relationships with possible constraints to pursuit of the firm’s growth. Moran (1997) mentioned as negative indicators for business growth the owner/manager likelihood of playing team roles involving turning ideas and concepts into practical working procedures. Young (1987) focused his research on the idiosyncratic behavior of owner/managers. He also emphasized how small business entrepreneurs’ perceptions, values, beliefs, competencies, and incompetencies are likely to affect the operations of a business. Walsh and Anderson (1994) remarked that small business dynamics might be affected by an entrepreneurial attitude not to pursue growth, seeking instead a more leisurely standard of living generated by any enjoyable activity through which it is possible to excel. Aitchison, Van Auken, and Komacara (1994) remarked on the critical importance in small businesses

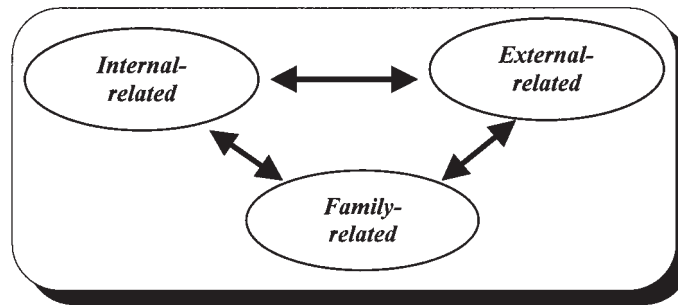


FIGURE 1: Three Categories of the Causes of Small Business Failure

of the need to understand how family relationships affect the business and how the business impacts on the family. Such a concern has been raised by Ward and Aronoff (1990), who found that business growth cannot keep up with family expansion and rising family lifestyles. The tensions resulting from operating a business can distract a small business manager's attention from family life, resulting in family stress. In family-owned firms, disagreement between family members can increase stress.

From the above analysis, it is possible to discern some interesting features that characterize the main causes of failure in small business growth management. In particular, the entrepreneurial tendency to blame external factors is a remarkable primary cause of crisis. Other important research findings concern the need of external advisors and the strong relationship between small business problems and the equity-owning family emotional involvement. Lack of managerial skills and budgeting tools also are significant factors that have been emphasized.

However, from the above-mentioned literature, what does not emerge is another important factor of small business failure that is related to low entrepreneurial awareness of the relevant business system structure.² In fact, usually the relevant business system does not coincide with the internal boundaries of the firm. It also embodies a wider range of variables belonging to other external subsystems that are related to the competitive, social, and family environment.

Such a misperception often leads small business entrepreneurs to make their decisions according to a bounded point of view, both in terms of time horizon and causal relationships between internal and external relevant variables. Entrepreneurs need not only to acquire managerial concepts, technical capabilities, or qualified professional management (which could, however, be inconsistent with a small business organization structure) but they also, particularly, need to learn (Cressy, 1996). Learning may allow entrepreneurs to understand and manage business complexity, whose characteristics are peculiar to the small firms context.

Fostering Entrepreneurial Learning to Pursue Small Business Growth in Complex and Unpredictable Systems

Complexity and unpredictability usually have a specific and different shape in small firms than in bigger ones.

Figure 1 depicts three main interrelated factors of complexity that often lead to small business failure: (a) internal-related factors, (b) external-related factors, and (c) family-related factors.

It is worth remarking that such a schema does not pretend to completely separate three aspects of this issue—they are interrelated. We only want to depict a systematic picture of the investigated phenomena.

Internal factors are those that are related to variables located inside the firm. Among them, the most influential may concern entrepreneurial managerial attitudes, debts: equity ratio, planning and control methodologies and tools, human resources, and innovation management.

External factors are mainly associated with competitors, customers, financial institutions, and other outside actors who interact with the firm. Perceptions about external factors are a key linking mechanism between internal and external factors. Lack of understanding industry rules of the game and difficulty to provide financial or human resources to sustain growth are among the main external factors of small business failure.

Family-related factors refer to the overlap (Landsberg, 1983; Sorci, 1995) between the firm and equity-owning family. Such overlap often leads to two problems: (a) bias in profit and cash flow expectations leading to uncontrolled liquidity withdrawals from company bank accounts to satisfy family (current and noncurrent) needs³ and (b) uncertainty in the definition of roles played by family members in the firm.

Owing to their particular tendency to be subject to environmental unpredictability, much more than in larger firms, the boundary between short and long term is usually particularly soft in small businesses. Small business entrepreneurs are almost always completely involved in current activities for three main reasons: (a) they are usually not prone to delegate, (b) they usually do not dispose of any prompt and selective information support that allows them to anticipate future events, and (c) the weak relative weight of the firm in the relevant environment often forces them to adopt reactive and emotional decision making.

Managing small firms is often a matter of continuous striving aimed at evading unexpected external⁴ or internal events.⁵ It is a kind of muddling through (Limbloom, 1959) that very often does not allow for the pursuit of formal or conscious definition and planning of strategies. This does not mean, however, that small firms do not have strategic information needs and do not need to plan for their future. On the contrary, particularly in small firms, qualitative and quantitative growth depends on the extent to which the entrepreneur is able to discern relationships between current decisions (short-term objectives) and long-term wider business goals. Dynamic relationships between current and future events are an important outcome of the learning process that we seek to facilitate (Bianchi et al., 1998).

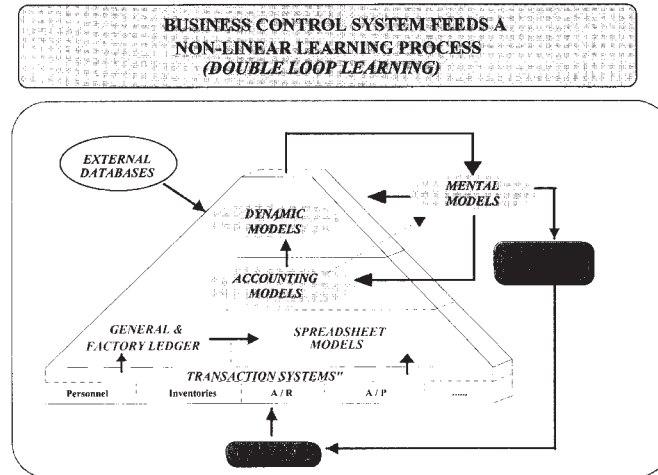


FIGURE 2: Double-Loop Learning From Combining System Dynamics and Accounting Models

Business planning and control systems currently used in small firms are mainly based on accounting models and may not allow entrepreneurs to properly capture the dynamic relationships between day-to-day policies and consequent future outcomes (Brusa, 1986). To understand the strategic impact of current decisions on a longer time horizon, a higher degree of selectivity is required. In fact, current management takes place on an ongoing basis, but not all current decisions have the same level of strategic importance. Detecting weak signals of strategic change hidden in current activities implies a level of complexity that is different from longer run decisions related to capital investments. Even though, in the first case, the structure of the system to be managed can more easily be defined than in the second case, monitoring strategic relevance of current events implies a major difficulty in detecting in advance weak signals of change. In fact, such signals are usually hidden in a wider range of daily occurrences in which the entrepreneur is fully involved (Anthony & Govindarajan, 1998; Bergamin Barbato, 1991; Brunetti, 1985; Marchant, 1998; Riccaboni, 1999).

Matching SD methodology with the accounting approach may allow entrepreneurs to better understand the strategic relevance of their current decisions (see Figure 2). In fact, SD allows policy makers to understand managerial processes underlying accounting information. Drawing up budgets only on the basis of single and static pieces of accounting information may lead entrepreneurs to design policies that are effective in the short run but produce unintended negative effects on a longer time horizon that seriously prejudice company survival and growth.

Understanding causal relationships underlying business results is likely to foster double-loop learning (Argyris & Schon, 1978; Davidsen, 1996; Sterman, 1994), which allows decision makers to detect inconsistencies in their mindsets to achieve a common shared view of reality (Winch, 1993). Achieving a common shared view is not a symptom of conformism (i.e., forcing people to adopt a common vision); it is,

instead, a result of a learning process that stems from the comparison and coherent combination of the variety of frames through which things are implicitly or explicitly perceived. Making mental models explicit and sharing them in an organization is not an end per se; it is, rather, a means through which people are helped to raise proper questions on relevant business issues (Forrester, 1961, 1968b; Morecroft, 1994; Richardson, Andersen, Maxwell, & Stewart, 1994; Vennix, 1996). The main concern of learning in and about complex systems is not simply to find the right solutions to problems but instead to understand their deep causes (Sterman, 1994). Furthermore, learning is not to be conceived as a contingent or discrete activity (i.e., to be fulfilled through ad hoc task forces) but instead as a continuous process. In fact, in a complex and dynamic context, freezing such a learning process in a bounded time horizon could not allow decision makers to respond to future outcomes.

In this article, it also will be demonstrated how combining SD and accounting models into an ILE may help small business entrepreneurs in understanding the dynamics of growth generated by commercial and financial policies affecting sales revenues, net working capital,⁶ and liquidity. The ILE also will capture issues related to the family-business overlap. Understanding these interrelated aspects is a prior condition for effective small business planning.

The Role and Process for Business Planning in Small Firms

It has been observed (Gable & Topol, 1987; Robinson & Pearce, 1984; Sexton & Van Auken, 1985) that formal strategic planning is a typical and relevant issue in big firms rather than in smaller ones. In fact, a small business entrepreneur is more concerned with day-to-day operational problems of running the firm and has neither the time nor the staff to invest in strategic planning. In contrast, other authors (Ackelsberg & Arlow, 1985; Bracker & Pearson, 1986; Braker, Keats, & Pearson, 1998; Foster, 1993; Gibb & Scott, 1985; Jones, 1982; Shuman, 1975; Van Hoorn, 1979) found that small firms that are engaged in formal planning perform better than do others. Other authors remarked (Bhide, 1994; Fredrickson & Mitchel, 1984; Milliken, 1987; Mintzberg, 1973; Nutt, 1976; Quinn, 1980) that under conditions of environmental uncertainty, small business strategic processes are more indicative of incremental rather than rational decision making; therefore, business plans may be directed to achieving a modification of the current state rather than some desired future state. A main reason of this phenomenon is due to resource constraints that prevent both small and growth-oriented entrepreneurial firms from using business plans as a control tool under conditions of environmental uncertainty. Rather than engaging informal planning, such firms focus on doing, on entrepreneurial intuition, and on a flair for business.

In the last decade, there has been a growing trend of small firms using formal business plans as a modeling tool, both in the start-up and further growth stages; a major reason for this phenomenon could be related to the fact that such a document is a prerequisite to benefit by public financial grants. Quite often, however, many entrepreneurs have viewed drawing up their business plans as a bureaucratic constraint rather than as a learning tool that may help them to be aware of the business formula that is

going to be adopted. Such an approach is based on a linear and static perspective, according to which past data are extrapolated to generate expected outcomes. Such business plans are usually drawn up by professional accountants from outside the firm, mainly to get financial resources from banks or public trusts (Olson & Gough, 1996; Winborg, 1996). The outcome of such a mechanistic perspective is a static and non-systemic document emerging from the aggregation of disparate data (e.g., commercial, financial, statistical, macroeconomic) that do not allow entrepreneurs to understand the structure of the dynamic system in which the firm will operate. On the contrary, conceiving of business planning in a learning-oriented (Bianchi et al., 1998) context may allow the entrepreneur to foresee the future stages of business growth and, consequently, to understand when it is the proper time to start to build relevant resources (e.g., money, management competencies, formal systems and structures, machinery, brand reputation, customer base, etc.) that will allow the firm to move to the subsequent stages. More particularly, a learning-oriented and dynamic approach to business plans is likely to support the entrepreneur in understanding cause-and-effect relationships between cash flows generated or absorbed by consolidated and new products as well as trade-off between support and development investments (Wolstenholme, 1990, p. 31). Another important decision area that could be mastered by a learning-oriented approach to business planning is related to the dynamics generated by commercial policies (e.g., those related to sale price, terms of payment allowed to customers and negotiated with suppliers, sale delivery delays) on sales revenues, current income, and cash flows in a short and longer time horizon. For instance, a too sharp increase in customers' terms of payment and inaccurate short-term profit withdrawals by the equity-owner, together with a too high debts:equity ratio, could undermine financial structure because of delayed higher current financial needs caused by growing net working capital (Bianchi & Mollona, 1997). Such dynamics would give rise to increasing negative bank accounts that, in spite of growing trends in sales and low interest rates, might seriously threaten long-term liquidity and profitability (Coda, 1984).

The main learning target of the ILE, which will be commented on in the second section of this article, is to support small business entrepreneurs in drawing up their written plans according to a system perspective.

An ILE to Support Small Business Growth Management: Spinnato and Sons Case Study

In this second section of the article, an SD and accounting-based ILE that represents the growth of a small family-owned firm will be described. The focus of the ILE is on understanding the dynamics generated by commercial and financial policies on sales revenues and profitability, on one side, and the net working capital and liquidity, on the other. Another concern in this ILE is to help learners to figure out relationships between the firm and the equity-owning family, particularly with respect to bias in profit and cash flow expectations leading to withdrawals by family members from the business bank accounts to cover current expenses. Learning how to pursue a balanced

growth, in compliance with both business and family needs, is the primary focus of the ILE. Another purpose of the ILE is to train entrepreneurs and their direct collaborators in budgeting, according to a learning-oriented approach.

The relevance of issues covered by the ILE not only emerges from our analysis of the literature on SME's failure but is also confirmed by empirical findings on net working capital and cash flow management in small firms. Lamberson (1995) conducted a survey on 477 small firms located in the southern region of the United States (Torres & Anderson, 1994). The research suggests that financial analysis and net working capital management is considered a very important issue by small business entrepreneurs, although a significant percentage of the firms interviewed do not use any of these concepts. The author also remarks that "the financial management of small firms is different from the financial management of large firms because some large company financial practices simply are not necessary or appropriate for the small firm" (Lamberson, 1995, p. 2). Nix and McFetridge (1987) showed that the majority of 175 small businesses in Montana are not apparently aware of the net working capital concept, and some of them are probably primarily financed by equity. The implication of this research is that "the importance of maintaining an appropriate level of working capital and its contribution to business survival is a concept that small business managers should understand" (Nix & McFetridge, 1987, p. 2). Similar conclusions have been reached by Hutchinson and Ray (1986), who conducted an empirical analysis that showed that in 33 firms experiencing a supergrowth, 18 suffered for a long period of time from a negative net working capital (Landstrom & Winborg, 1995; Merikas, Bruton, & Vozikis, 1993; Potts, 1993; Schulze & Dino, 1998).

The connection between growth, liquidity, and profitability has been traditionally analyzed through the so-called sustainable growth model (Zakon, 1966). This model suggests that growth could be internally sustainable (both from a financial and an economic point of view) if the net assets growth rate is not higher than the retained earnings growth rate. Another implication, however, is that growth also could be pursued by increasing debts if the cost of borrowing is lower than the return on net assets. A correct use of financial leverage is likely to increase net profitability and to generate new financial resources so as to enhance new growth.

Such a model is one of the cornerstones in the financial literature to which both researchers and practitioners have been referring throughout the last 30 years. However, although it is simple and relatively ready to use, it appears more useful for an ex post analysis rather than to support entrepreneurs in setting their growth policies for the future. In fact, it does not make explicit causal determinants of profitability and assumes that a linear relationship exists between a debts:equity ratio and the cost of borrowing. Moreover, the model does not take into consideration the time variable (i.e., delays between causes and effects) and the dynamic relationships between growth, profitability, and liquidity.

The SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR, which will be described below, has been based on the Spinnato and Sons case study.

Spinnato and Sons is a family-owned business that distributes a kind of wood-cutting machine, Shadow, to manufacturing firms. Mr. Spinnato is a 53-year-old man who

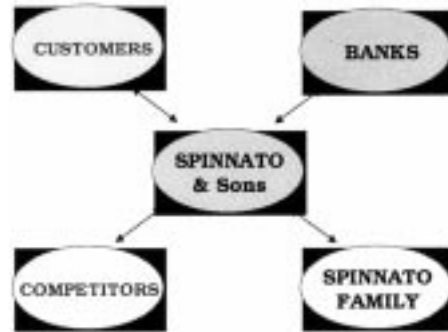


FIGURE 3: Spinnato and Sons' Arena

has the role of both owner and entrepreneur. He has four sons, two of whom support him in the coordination of purchasing and other commercial activities. The other company activities are carried out by five employees. The business information/control system consists of transaction subsystems (e.g., receivables, inventory); a balance sheet; and some spreadsheet reports, mainly concerning financial issues, that are occasionally drawn up. No formal planning is done. Mr. Spinnato makes decisions, based on an intuitive basis, using his personal knowledge and flair for business. In the wider business arena, it is possible to distinguish four main forces interacting with the firm (see Figure 3): competitors, customers, banks, and the Spinnato family.

The way such forces act on or react to Spinnato and Sons' policies may significantly affect its performance. The industry in which the company operates is characterized by a fragmented offer and a strong competition between distributors based on sale prices, terms of payment allowed to customers, and lead (delivery) time. Spinnato's customers are small business manufacturers. They are very sensitive to price discounts, changes in terms of payment, and lead time. Banks grant a maximum credit on current loans. This allows the firm to finance current monetary needs by an increase in negative bank accounts. Each month, a minimum withdrawal from company bank accounts is done by the equity-owning family to feed its current expenses. The family also is used to require an extra level of withdrawals when it perceives that the company is growing.

Two years ago, the firm was facing some serious economic problems. In fact, it suffered a loss of about 300 million lire, which threatened its survival. Mr. Spinnato was asking himself about the opportunity to sell the company but felt that there were some unexploited commercial chances. He believed that the losses were due to a low sales volume; consequently, he started to increase sales discounts and to decrease lead (delivery) time. In spite of such growth, achieved during the first period of time, the debts:equity ratio has increased from 0.73 to 1.13 and the maximum bank credit has fallen from 2,000 to 1,600 million lire. The past 2 years' behavior of key variables constitutes a comprehensive business dynamics (see Figure 4). In fact, it embraces the effects of current policies adopted that led to the results achieved.

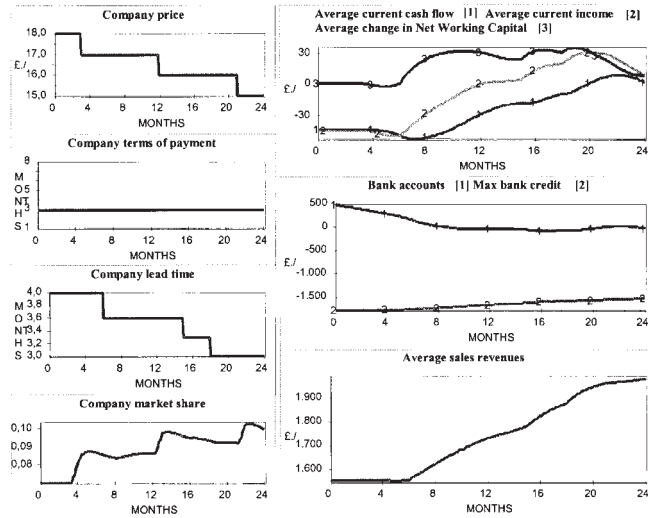


FIGURE 4: The Past 2 Years' Business Dynamics

Mr. Spinnato is now asking himself about the future of his company and the opportunity to devote his life to this adventure. Understanding the past might help him in setting future policies and designing the roles that could be played by himself, the family, and the firm in its arena. Being aware of the need to understand more about the causes of past performance and the firm's potential, he asks a management consultant for help.

- Why has the increase in market share been losing strength over time?
- Is the increase in sales revenues healthy for the firm?
- Why has the current income been increasing until the second half of the 2nd year, and why, after that time, did it exhibit a decreasing pattern in spite of average sales revenue growth?
- Why has the debts:equity ratio increased from 0.73 to 1.13?
- Does the actual liquidity state allow for further growth?
- Is the business profitable?
- What does the future of the company look like? How could it be influenced to improve future behavior?
- How can future growth be obtained?

After a few interviews, the consultant suggests that Mr. Spinnato introduce a simple management control system based on a budgeting process driven by a causal analysis of business performance and on a dynamic investigation of the interrelationships between the firm and its environment.

Now, the learner is asked the following questions: How would you, as the consultant, perform such an investigation? Which budgeting decisions would you take if you were Mr. Spinnato?

The SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR Educational Package

The ILE based on the Spinnato and Sons case study has been used as the core of a 3-day course mainly offered to small business entrepreneurs and their direct collaborators. The course also is oriented to those who wish to start a new firm and to post-graduate students in business administration.

The 1st day is devoted to present, through a Powerpoint slide package, the basic concepts of financial and small business growth management.

The 2nd day is spent on an introduction of the SD methodology as an approach to understand dynamic interdependencies between variables characterizing small business growth. Participants also are asked to discuss the Spinnato and Sons case study. The purpose of this discussion is to make explicit their mental models on the issues covered in the ILE.

During the 3rd day, the participants are engaged in using the SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR.

General Briefing

A general briefing is initially provided to introduce the participants to the operation of the ILE. Such a briefing consists of three parts, in which we introduce the participants to (a) the main subsystems of the ILE (i.e., the company, customers, competitors, banks, and Spinnato family), (b) the users' task (i.e., setting policy levers to improve performance in terms of profitability, liquidity, and family satisfaction in a 4-year time horizon), and (c) the budgeting planning.

Decisions on sales price, terms of payment allowed to customers, lead time, safety inventory coverage, withdrawals to family assets, investments from family assets, and allowed extra current family expenses in percentages are made quarterly. Users start to draw up the budget for the 1st year through an Excel spreadsheet interface (see Figure 5).⁷ According to the adopted policies, they also have to assess future sales quantities.

After setting policies for the 1st year, users may check in the Excel windows the associated economic (Profit and Loss and Break-Even Analysis) and financial (Financial and Flow of Funds Statements) budgeted results that are automatically portrayed in a spreadsheet model based on linear relationships and computations, regardless of delays between causes and related effects. On the basis of spreadsheet results, they are able to adjust their policies to achieve desired goals, for example, in terms of sales revenues, market share, current income, cash flow, debts:equity ratio, and so forth. Then, they are ready to simulate their budget decisions through an SD model built in a

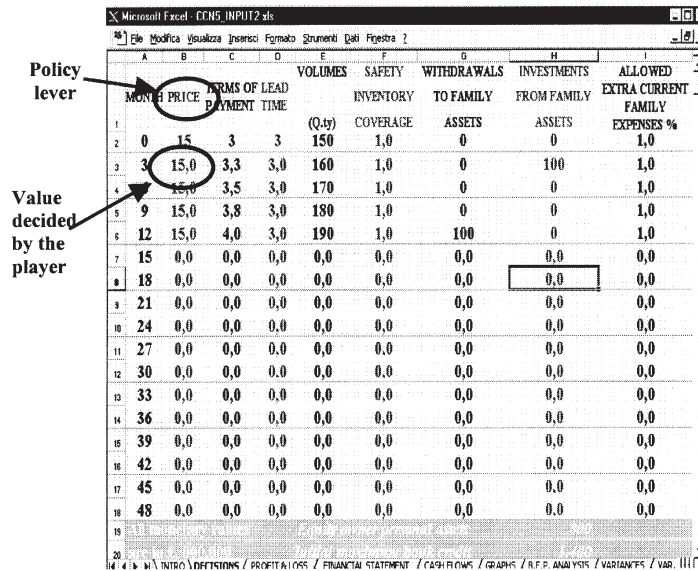


FIGURE 5: Spreadsheet Budget Input Shell

POWERSIM environment. After a POWERSIM simulation has been done, results are automatically transferred to the Excel file. Although both the spreadsheet and the SD model share the same database, the latter follows a different approach. In fact, it takes into account feedback loops, delays, nonlinearities, and soft variables that are very hard to include in a spreadsheet model.

An Excel window allows decision makers to analyze variances between original Excel budget and related simulation results generated by the SD model. In 1½ hours, participants have to draw the complete 4-year budget, with the aim to detect and analyze variances between budget and SD-simulated results and to make a diagnosis of possible causes related to experienced discrepancies. Variance analysis is aimed to foster a deeper understanding of causal relationships among variables driving business results.

Once users have formulated a set of hypotheses explaining the causes of variances related to the 1st year, they may modify the original budget and repeat the simulation to verify their assumptions. Then, they can move to draw up the budget for the first 6 months of the 2nd year. The above-commented iterative planning-and-simulation process will be extended, with a 6-month step, over the complete 4-year budget period.

Then, participants are asked to move to POWERSIM to experience decision-making process in a different environment. In fact, the POWERSIM environment provides a wider range of financial and soft variables (such as those related to the families' quality of life) and simulation functions that allow users to reinforce the learning process.

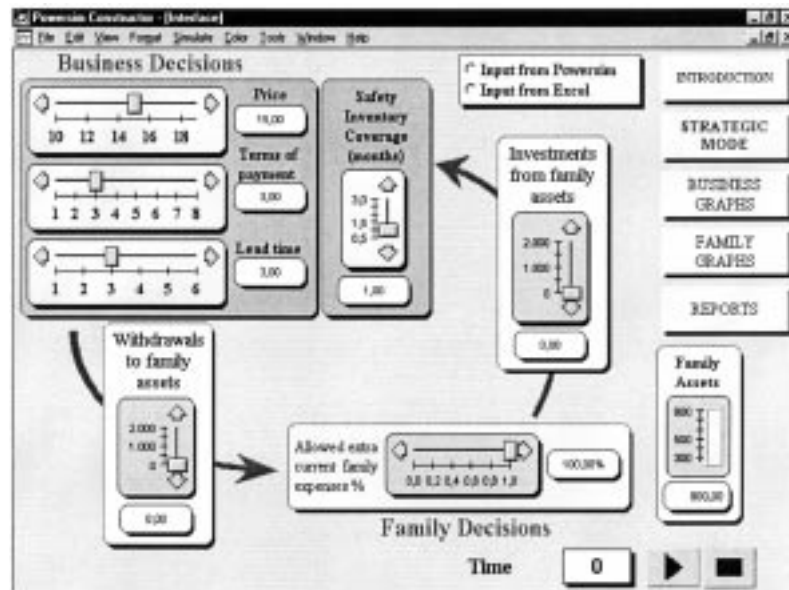


FIGURE 6: POWERSIM Input Shell

As it is possible to observe from Figure 6, a POWERSIM input shell may either accept budget decisions from the Excel model or from the slider bars displayed in the left-hand side of the window. In a further step, budgeting decisions will be made through POWERSIM slider bars (by setting the "input from POWERSIM" option) to assume, and then experience, competitors' reactions to commercial policies (strategic mode).

Strategic mode simulation allows users to test different behaviors related to market reactions to company commercial policies before decisions are accepted. After a strategic simulation, users may decide to repeat it by either keeping the past trial values or setting new decisions. This enables them to evaluate the consequences of their assumptions, that is, to explore how the system structure responds to their hypotheses.

During the simulation, learners also may check both business and family performances through the POWERSIM windows, that is, business or family graphs and reports.

Figure 7 depicts the above-commented budgeting process, which is based on a learning-oriented spreadsheet and SD model environment.

Detailed Briefing

In the detailed briefing, the Spinnato case study is reviewed to provide users with an in-depth understanding of the situation in which they will be involved. They take the role of Mr. Spinnato, they are in charge of the family firm, they have the same problems

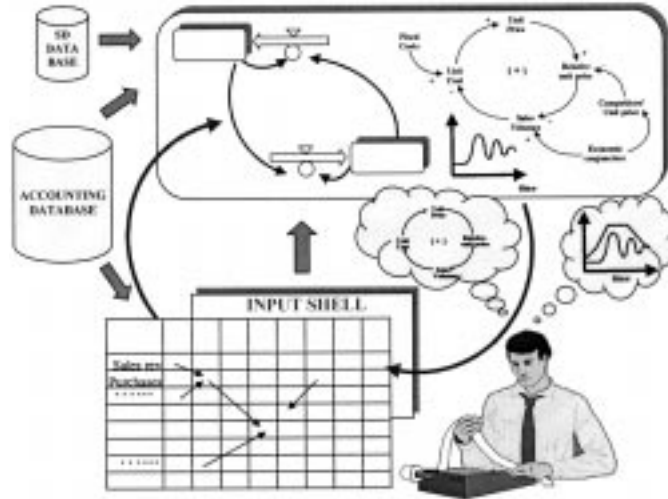


FIGURE 7: Budgeting Learning-Oriented Process

he faced, and they have to pursue company growth taking into account both family and company requests.

Base Run

Some base runs are then displayed and commented on by learners. The base run allows one to become familiar with POWERSIM interface and the Spinnatos' business environment.

After several simulation runs, users will be able to operate THE SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR.

Simulation

Combining Excel and POWERSIM simulation into the ILE allows participants to close the learning process loop. The traditional budgeting process is based on a single-loop approach that implies a comparison between actual and standard values and ex post variance analysis that may feed back to modify the initial budget hypotheses (see Figure 8).

However, according to such an approach, decision makers' mental models may not be questioned by themselves when actual and budgeted data are compared. In fact, quite often people are more used to focusing their attention on the computation of such variances and their division in subvariances rather than on the analysis and interpretation of their real causes. Variance analysis is applied to sales volumes, inventories, accounts receivable, current income, bank accounts, cash flows, investments from personal assets, and sales revenues (see Figure 9).

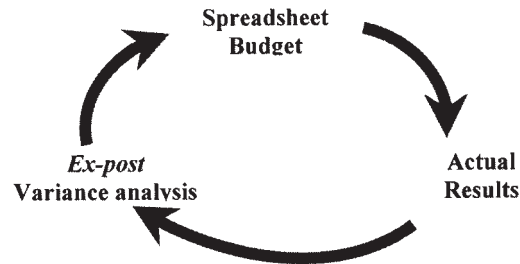


FIGURE 8: Traditional Single-Loop Budgeting Approach

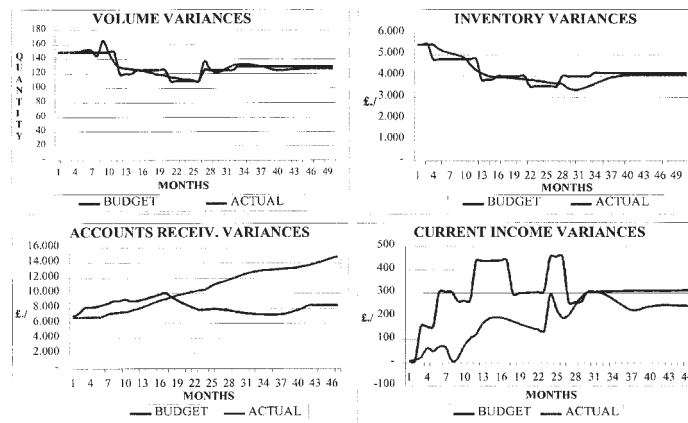


FIGURE 9: Variance Graphs

Matching SD with the traditional budgeting approach allows decision makers to ex ante reformulate the budget, using a more careful analysis of forces that interrelate to drive business performance. Such an approach is meant to capture feedback loops between relevant (internal and external) variables, delays, and nonlinearities to improve key actors' mental models (see Figure 10). Such an approach is likely to foster double-loop learning.

Debriefing

The last step in the suggested learning process is debriefing. This activates double-loop learning as it opens the participants' minds to shift from a fragmented and static approach to a holistic and dynamic perspective. Participants are asked to comment on their decisions and to give an explanation of the system behavior experienced. Some of the issues that are usually raised in the discussion include competitors' reactions, demand elasticity, limits to market growth, relationships between sales growth and net working capital, shortages in bank credit allowed, trends in family climate, and



FIGURE 10: Double-Loop Learning in the Budgeting Process

more generally, time delays and nonlinearities. The outcome of this process is two-fold: (a) feedback loops are being identified and (b) system boundaries are focused.

The above goals also are pursued by showing information on market reactions to decision makers' policies. These pieces of information were not previously available in the interface that was used to draw up the budget. Such a constraint in information availability is introduced to replicate the real conditions under which decisions are usually made, particularly in small firms. The behaviors portrayed inspire participants to raise more focused and relevant questions to understand the deep causes underlying the consequences of their decisions. To give the reader a more concrete insight into possible outcomes emerging from the debriefing process, two scenarios are discussed below.

Fast Growth, Profitability, and Liquidity Failure Caused by Emotional Commercial Policies in Response to Liquidity Shortages

A first scenario gives an example of irrational and emotional company policies based on a mismatch between commercial and financial subsystems (see Figure 11). To increase market share and sales revenues, the entrepreneur progressively raises the terms of payment during the 1st year and decreases prices in the 2nd year.

It is possible to identify four main consequences related to this scenario. They are as follows:

- market share and sales revenues gradually increase due to a slow rise in terms of payment;
- in spite of higher sales revenues, the current income slightly increases and reaches a limit to growth earlier than sales revenues. This behavior is due to both a decrease in unit sale price and a rise in interest costs on negative bank accounts;
- net working capital shows a pattern of behavior that mirrors current income, leading to a negative cash flow⁸ that fully absorbs equity-owner's initial investments; and
- investments from personal assets progressively decrease the average family satisfaction ratio.

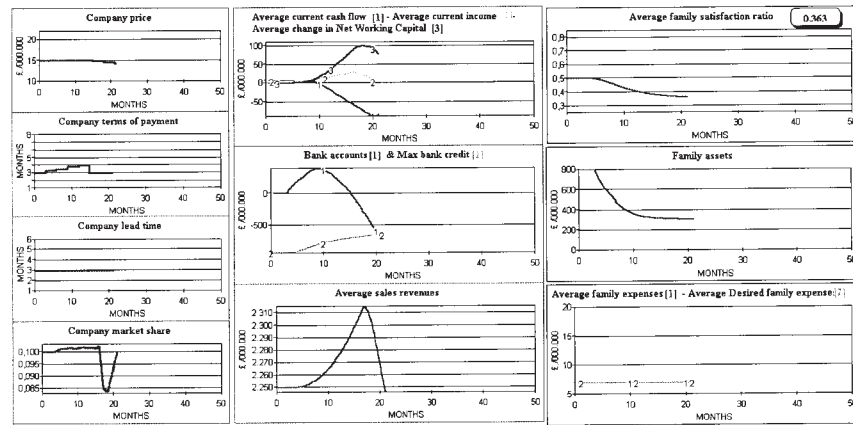


FIGURE 11: Business and Family Graphs

Around the 15th month, the entrepreneur realizes that the business' financial structure does not allow the above strategy to sustain; another limit to the market share increase also is found in competitors' reactions to terms of payment increases (see Figure 12).

To overcome the above limits to market share growth, the entrepreneur decides to shift from a terms of payment policy to a price-based commercial policy. In the entrepreneur's mind, resetting terms of payment to their initial value would have allowed the firm to immediately restore both the net working capital and liquidity. At the same time, such a strategy was intended to foster an increase in both market share and sales revenues. However, the expected outcomes are sharply different from the actually achieved results. In fact, as Figure 11 portrays, from around the 15th month both market share and sales revenues dramatically fall, leading to a negative current income and to a negative cash flow. Such behavior originates from the following:

- a delayed competitors' reaction to the decrease in company's terms of payment, leading to a lower market appeal of the firm;
- a delayed customers' perception of company price decrease; and
- a delayed market share increase that does not compensate the decrease in price.

The result of this scenario is failure that is mainly caused by the exploitation of allowed maximum bank credit. It is worthwhile to observe that maximum bank credit shows a decreasing pattern over time (in absolute value) because of a family assets decrease and a debts:equity ratio increase.

From the above scenario, one can learn that resetting a policy lever to its initial value does not necessarily imply that the system is restored to its initial state. In fact, current policies contribute to change the structure of the environment in which the firm operates. In other words, it is not only the internal environment that determines business performance. In fact, the way the firm interacts with a wider range of actors

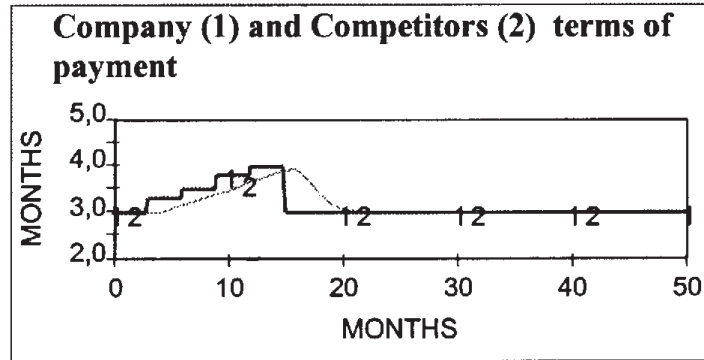


FIGURE 12: Company and Competitors Terms of Payment

(clients, competitors, banks, etc.) operating from outside must be taken into consideration to understand business dynamics as a condition for policy setting.⁹

Fast Growth and Liquidity Failure Caused by Uncontrolled Family Withdrawals and Lack of Invested Capital

A second scenario shows how company failure may be caused by a growth policy that is not sustainable because of excessive bank withdrawals aimed at increasing the family's quality of life, both in terms of current expenses and personal assets. Such a phenomenon is mainly caused by bias in profit and cash flow expectations and related distorted information, combined with entrepreneur's emotional involvement in coping with the business/family overlap.

As portrayed in Figure 13, the firm pursues a growth policy based on both a decrease in lead time and an increase in terms of payment. To finance such an aggressive policy, the entrepreneur decides to progressively increase sale price and to reduce safety inventory coverage.¹⁰ In the 3rd month, terms of payment are increased to 4 months. As a consequence of such policy, both company market share and sales revenues increase. On the other hand, net working capital decreases (in spite of higher sales volumes and terms of payment) because of lower inventories caused by the reduction in safety inventory coverage. The combined effect of higher income and lower net working capital leads to an increase in net cash flow. At around the 6th month, the entrepreneur increases average sale price: In his mind, such an increase is justified by a better product appeal perceived by clients because of higher terms of payment and lower lead time. The initial effect of such a policy is an increase in both the current income and liquidity due to higher sales revenues and sales unit contribution margin. However, market share decreases for two main reasons: (a) customers are more sensitive to lower prices than higher terms of payment and (b) the competitive advantage of the firm in terms of payment and lead time has been progressively reduced because of competitors' reactions to the company's aggressive commercial policies. Such an

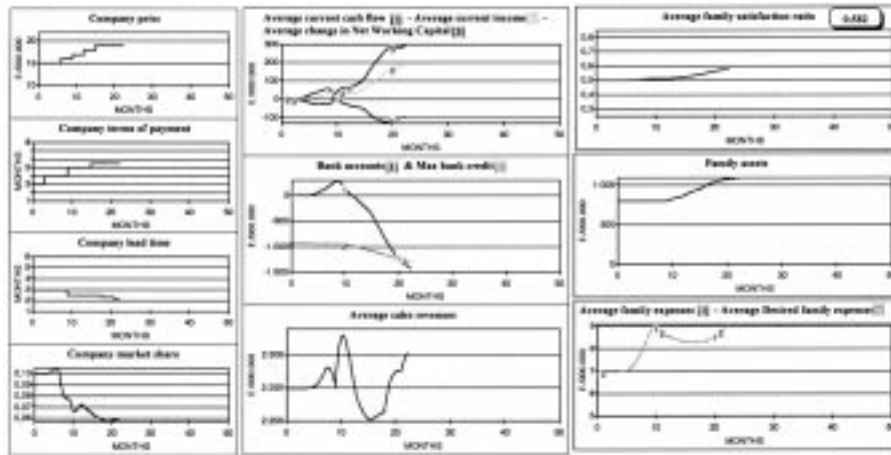


FIGURE 13: Company and Competitors' Terms of Payment

analysis suggests again that decision makers need to understand market dynamics before setting their policies. To counterbalance such a decreasing pattern in market share, at around the 9th month, the entrepreneur decides to support the high price–high terms of payment strategy with a lower lead time. At the same time, expectations of further growth in both profits and cash flows lead him to divest accumulated monetary resources to increase family assets (e.g., buying property) and quality of life. In addition, average family current expenses are increased from 7 to about 8.5 million lire per month.

As a consequence of the above decisions, the level of family satisfaction grows (see the family satisfaction ratio portrayed in Figure 13). Nevertheless, both business profitability and liquidity dramatically worsen. In fact, the lower lead time strategy is only able to generate a delayed and transient increase in both sales volumes and revenues. Such a behavior is once again explained by competitors' reactions, associated to their high sensitivity to lead time, which limit business sales revenues and current income growth. In particular, from around the 15th month, when it is more difficult to further operate on commercial policy levers, the company liquidity begins to erode for three main reasons:

- the higher financial needs associated with increased net working capital resulting from higher accounts receivable from the rise in terms of payment;
- the decreasing sales revenues resulting from price increase and competitors' reactions to the business' aggressive commercial policy; and
- the too high debts:equity ratio, if compared to the low available bank credit and the rising financial needs associated with the pursued growth rate of the firm.

At around the 18th month, to overcome such financial stress and the experienced limits to market share growth, the entrepreneur reduces lead time again. As a

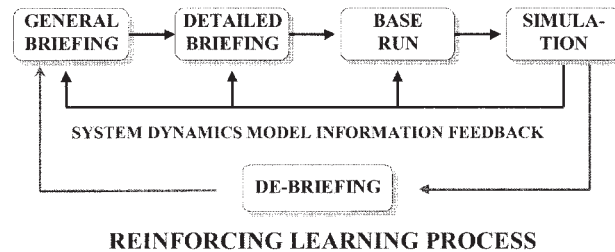


FIGURE 14: The Learning Process Overview

consequence of this policy, both market share and sales revenues grow again. However, they also imply a further increase in net working capital and, hence, higher financial shortages. The above-said financial difficulties develop into a crisis and eventually into a failure (Lyneis, 1980, p. 359). In this scenario, profitability is not compatible with liquidity.

Feedback Analysis

The two scenarios previously commented on depict some of the most common behaviors that participants are expected to experience in running the SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR. As previously remarked, during the budgeting process, participants compare expected behaviors with SD model behaviors related to their policies.¹¹ Such a comparison leads them (a) to figure out and sketch causal relationships among relevant variables and (b) to fine-tune their policies according to detected variances. Such an analysis is done by groups (each of them including no more than three participants) during the simulation process. After the simulation phase, in a plenary session, a facilitator asks participants to describe their experience and helps them in identifying main relevant subsystems and related feedback loops (see Figure 14).

The learning process enhanced by the use of the SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR implies that SD model information feeds back to the previous steps to allow users to review under a different perspective the investigated issues. Double-loop learning is reinforced by the debriefing process, which opens up the learners' mind to better understand the real causes underlying family business growth dynamics. The most significant feedback loops originated by decision makers' behavioral analysis are portrayed below.¹²

A first positive loop emerges from the effects generated by terms of payment increase. After a delay, such an increase gives rise—*ceteris paribus*—to an increase in customers, which determines higher sales revenues and current income. A higher current income implies a growth in the cash flows (given an unchanged net working capital), which increases bank balance and available bank credit. An increase in perceived available bank credit allows the entrepreneur to raise terms of payment again (see Figure 15).

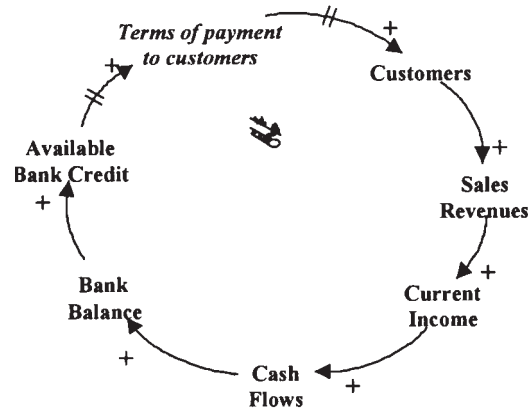


FIGURE 15: Positive Terms of Payment Loop

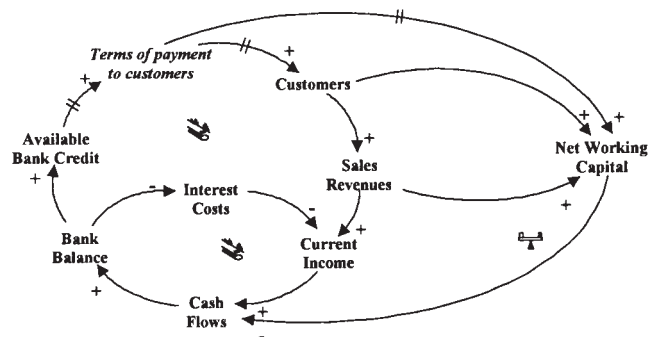


FIGURE 16: Limits to Growth and Risks of Failure From Net Working Capital Dynamics

However, growth in sales revenues, income, and cash flows based on a terms of payment policy may be counterbalanced, sooner or later, by liquidity shortages caused by a net working capital increase. Such an increase is due to the higher sales revenues and higher average terms of payment allowed to customers. When the increase in accounts receivable and average inventory is not offset by an increase in accounts payable (due to terms of payment negotiated with suppliers), the change in net working capital will decrease cash flows. That will reduce available bank credit.

If the entrepreneur realizes that a liquidity shortage might slow growth, he will soon either stop increasing terms of payment allowed to customers or will increase equity through investments from family assets. The entrepreneur also could restore the debts:equity ratio and reduce terms of payment growth rate. It is a matter of finding a fine tuning between the average level of terms of payment and the level of equity invested to tackle the dominance of the negative feedback loop originating from the net working capital (see Figure 16).

Whereas financial shortages are not promptly perceived and corrective policies are not adopted, further increases in terms of payment will give rise to a higher net

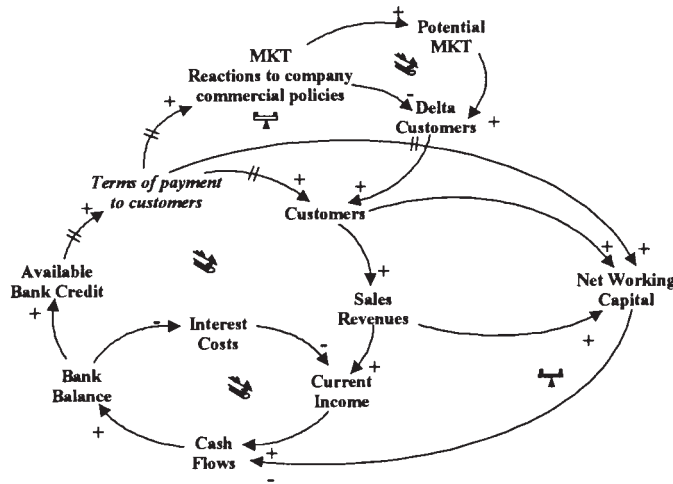


FIGURE 17: Competitors' and Customers' Reactions to Company Commercial Policies

working capital that will worsen liquidity even more. Eventually, negative bank accounts will produce interest costs that will progressively increase bank debts (positive loop) and will reduce the current income, cash flows, and bank accounts (positive loop).

The effects generated by terms of payment (and, more generally, commercial) policies are not limited to the internal business system. In fact, such policies will cause competitors' reactions aimed at filling the gap in terms of payment. Adjustments in competitors' policies will reduce the increase in the customer base that the firm will be able to obtain as a consequence of its commercial policies (see the negative feedback loop of Figure 17). On the other hand, competitors' aggressive commercial responses will increase the potential market. This will increase—*ceteris paribus*—the number of customers that the firm will be able to get from the market (see the positive feedback loop of Figure 17).

Figure 18 provides a wider insight into the main feedback loops associated with commercial policy levers operated by the entrepreneur. It shows how a low price strategy may lead to an increase in the customer base and (if the volume increase offsets the decrease in contribution margin) sales revenues, which could suggest to decision makers to further decrease prices (positive loop). Likewise, a lower lead time could lead to a larger customer base and higher sales revenues, which could induce decision makers to further decrease lead time (positive loop). However, lead time strategy finds two internal limits to growth that are associated with negative feedback loops. The first one is related to the increase in net working capital, due to higher inventories caused by increased sales volumes and safety stocks. The second one is associated with higher delivery costs that would be sustained to achieve a faster dispatching of goods. Likewise, terms of payment, also growth strategies based on price and lead time, can be counterbalanced by competitors' reactions that would decrease the gain in customer base associated with an aggressive use of the above policy levers (negative feedback).

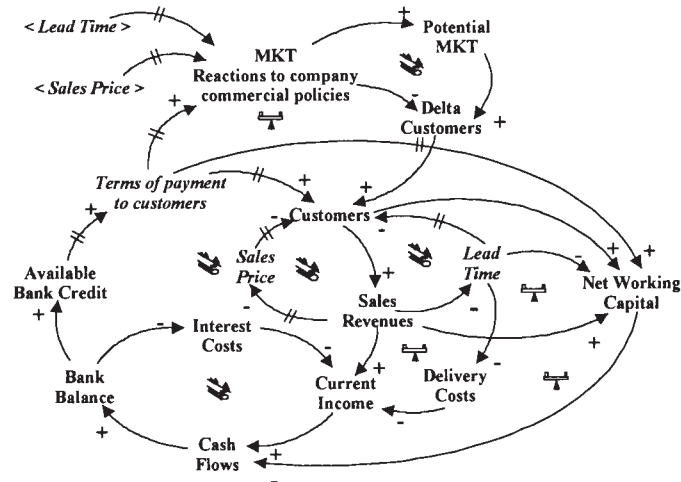


FIGURE 18: Main Feedback Loops Related to Company Commercial Policies

On the other hand, the same reactions also could increase the potential market, thereby raising the gain of new customers that the firm would be able to get from its commercial policies.

Other relevant feedback loops are related to the business-family overlap (see Figure 19). The more the company grows and perceived current income and cash flows increase, the higher the number of family members' withdrawal requests. A positive loop characterizes the relationship between family requests and bank withdrawals allowed by the entrepreneur. In fact, an increase in family current withdrawals is likely to stiffen family requests on a higher level. However, the spiral withdrawal requests for current expenses → withdrawals actually operated on business bank balances → withdrawal requests for current expenses can be counterbalanced—sooner or later—if the entrepreneur perceives two emerging negative feedback loops associated to escalating withdrawals. In fact, on one hand, the increasing liquidity withdrawals give rise to lower bank balances. On the other hand, because such withdrawals are an interim dividend on perceived profits, they would cause a decrease in business equity (net worth), leading to a higher debts:equity ratio that would determine a lower liquidity because of a weaker business perceived solvency, resulting in a lower available bank credit.

As shown by the second scenario previously commented on, misperception of interrelationships between commercial, financial, and family subsystems may lead to company failure. To avoid such risks, decision makers may invest new resources from family assets into the firm (negative feedback loop investments → bank balance → available bank credit → investments). Nevertheless, the above investments may cause a lower family satisfaction, which also could lead to a business crisis.¹³ The entrepreneur may overcome such threat through withdrawals of liquidity from bank accounts to increase family properties (negative feedback loop).¹⁴

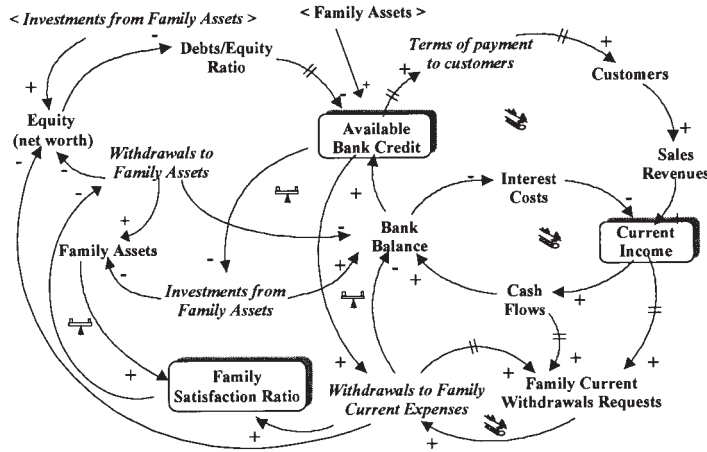


FIGURE 19: Main Feedback Loops Related to Business-Family Relationships

Balancing withdrawals and investments to achieve an adequate family satisfaction ratio that is compatible with business liquidity and matching commercial policies with financial structure are the key to survival and growth of both the business and the family. Three main key performance indicators resulting from the above analysis are as follows: current income, available bank credit, and family satisfaction ratio.

What Participants Can Learn

To summarize, the SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR supports participants in understanding the following:

- effects of current commercial policies on the financial structure in the medium-long term,
- limits to sales growth generated by the financial structure,
- limits to sales growth generated by competitors' policies and potential market,
- perils from symptomatic solutions to liquidity shortages,
- perils from escalating aggressive commercial policies in response to competitors' reactions, and
- perils from irrational liquidity withdrawals due to bias in profit and cash flow expectations to increase the equity-owning family quality of life.

It is possible to refer some of the most significant issues covered by the above analysis to three main archetypes¹⁵ (see Figure 20): (a) limits to growth, (b) shifting the burden, and (c) escalation.

The inner section of Figure 20 portrays limits to business growth caused by the net working capital dynamics. The upper section shows how the shifting-the-burden archetype may describe the unintended effects of undercapitalization on both liquidity

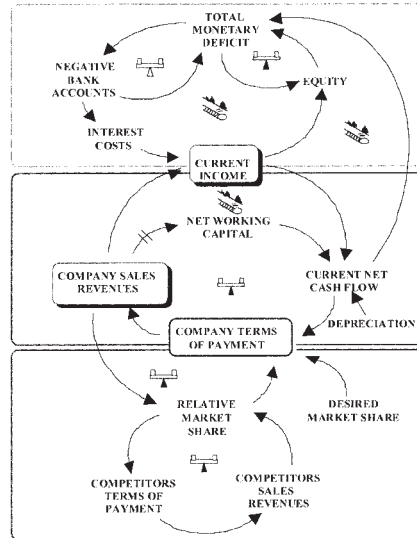


FIGURE 20: Systems Archetypes Underlying Small Business Growth Dynamics

and profitability. The bottom section illustrates the risks of escalation related to a war on price (or other commercial levers) between the firm and its competitors.

Another important message that emerges from the above remarks is that decision makers ought to set their policies not only on the basis of their internal environment but also based on the dynamic relationships between the firm and external actors (competitors, customers, suppliers, banks, etc.) with whom it interacts. Exploring relevant system boundaries is not a matter of building huge models but instead of selectively understanding how external subsystems interact with the firm.

Notes

1. It also has been remarked that in the United Kingdom, approximately 11% of Value Added Tax registered firms each year fail and that the average failure rate is constant throughout long periods of time (Cressy, 1996; Ganguly, 1985).

2. The relevant business system structure refers to the interactions between the firm and the several forces belonging to the competitive and social system (e.g., suppliers, clients, competitors, potential entrants, substitutes).

3. Such a phenomenon is particularly frequent in unlimited liability companies in which owner-entrepreneurs more often misperceive the difference between business and personal assets. Another important cause of uncontrolled liquidity withdrawals from company bank accounts can be related to escalating behaviors originated by several family units owning business equity. This is especially the case of family businesses that have reached the second or further succession stages. Such firms are usually controlled by more than one family unit because different brothers and/or sisters or even cousins may inherit the entrepreneurial function. In these circumstances, it may happen that deteriorating relationships between different

equity-owning family units may give rise to escalating imitative withdrawals aimed at pursuing individual goals, to the prejudice of future business survival.

4. For example, higher costs of resources, sudden unavailability of raw materials, new entrants in the competitive system, new laws ruling production or commercial processes, tax fulfillments, or constraints imposed by public administration.

5. For example, shortages in financial, personnel, production capacity resources, or conflicts in the business-owning family.

6. Net working capital related to current operations equals: Inventories + Accounts Receivable – Accounts Payable.

7. The spreadsheet interface portrayed in Figure 5 has been built to provide a friendly environment to which participants are accustomed.

8. Current cash flow = current internal flow of funds – Δ current net working capital.

9. "To understand a corporate information-feedback system, one should look neither at isolated individuals nor at the exterior of a system. It is from the intermediate viewpoint of seeing individuals and groups in their working environments that we can capture the true character of a business operation" (Forrester, 1994, p. 61; see also 1968b).

10. Safety inventory coverage is the number of months of sales kept on stock. A reduction in safety inventory coverage leads to a decrease in inventory financial needs. On the other hand, particularly when the firm pursues aggressive commercial policies aimed to increase sales volumes, a too high reduction in such a parameter raises actual lead time (i.e., delivery delay).

11. Expected behaviors are originated by participants' mental models. They are depicted through the Excel interface and, then, compared with the system dynamics (SD) simulation results.

12. All of them embody the implicit nature of current changes on policy levers operated by decision makers in small family businesses. In particular, when the firm operates in fragmented markets where competition is strong, decision makers often redefine day-by-day sale conditions for different customers. Many entrepreneurs are usually not able to rationalize the conditions according to which decisions are being made. They also do not adequately perceive how their contingent decisions (e.g., terms of payment allowed to a particular customer for a given supply) contribute to change the state of the system (e.g., average terms of payment).

Maladaptation to gradually building threats to survive is so pervasive in systems studies of corporate failure that it has given rise to the parable of the "boiled frog". . . . Learning to see slow, gradual processes requires slowing down our frenetic pace and paying attention to the subtle as well as the dramatic. (Senge, 1990, pp. 22-23)

13. In fact, a lower family satisfaction ratio may give rise to contrasts among family members that would reduce the confidence toward the entrepreneur and involve him in making emotional and reactive business decisions.

14. It is worth remarking that both withdrawals and investments also produce their effects on business equity.

15. Archetypes are general frameworks to which it is possible to refer to analyze, from a systemic point of view, a complex, dynamic problem.

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