COMMERCIAL & FINANCIAL POLICIES IN SMALL AND *MICRO* FAMILY FIRMS: THE SMALL BUSINESS GROWTH MANAGEMENT FLIGHT SIMULATOR

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Abstract

An Interactive Learning Environment (ILE) has been built in order to reproduce the budgeting process of a small family-owned entrepreneurial firm, to capture how current decisions impact on 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 view. Such a goal has been pursued through a connection of traditional Excel ® spreadsheets with Powersim™ SD models.

Playing *The Small Business Growth MFS* allows one to learn how:

- to draw up a budget based on a system dynamics perspective;

- long term goals may be affected by current decisions;

- business/family survival and growth are strongly influenced by current policies;

- linking short to medium-long term policies and commercial to financial and equity management issues is critical to business growth.

Research object and scope

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 where it operates.

In this paper we demonstrate how interactive learning environments matching system dynamics with accounting models may support entrepreneurs and other small business "key-actors" in understanding processes originating from growth strategies, so as to foster diagnosis and policy design.

1. Small and micro firms as a field of research

This paragraph 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 report (1971) suggests that small firms are those that have: relatively small market shares; a high degree of personalised owner-management; independence in that they do not form part of a larger enterprise and that the owner-managers should be free from outside control in taking 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 larger. 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, etc. A taxonomy of small businesses has been identified by Goffee and Scase, according to the characteristics of entrepreneurs. These entrepreneurial styles can be summarised as follows:

- *self-employed entrepreneurs*, who devote their own work to the firm and are only supported by other members of the equity-owning family;

- *small employers*, who also employ external human resources. They both co-ordinate 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 as they are afraid to loose control of it;

- *owner-controllers*, who have evolved from stage (2); they are only involved in management activities and have established a mutual trust relationship with their employees;

- *owner-directors*, who adopt formal organisation 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). Three types of entrepreneurs have been distinguished:

- *gut feeling entrepreneurs*: who are 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*: who are able to master a specific management area that is very often related to production or commercial fields of activity. Usually, *technocrats* are "self-made-men", who started to develop their managerial skills by practising 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 favourite functional area, ignoring implications of their decisions for other components of the system.

- *co-ordinators*: who 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 paper will refer is that of a *family-owned* business, where the owner-entrepreneur usually:

- both *co-ordinates* 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 organisation structures* and *planning & control* systems;

- is unwilling to *delegate* decision power;

- often makes *intuitive decisions*, particularly concerning on-going operations, based on experience and a "flair for business";

- lacks *time* to rationalise strategies, due to his/her emotional involvement in current business management;

- has to balance both *business* and *family* requirements.

In particular, this paper will focus on *micro* family firms, i.e. small businesses employing less than ten people (Stanworth and Gray, 1991; Robertson, 1994; Storey, 1994; Perren, 1997), most of them belonging to the equity-owning family.

The importance of such firms in today's economy has been widely recognised, 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 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 and Ireland, 1988). A considerable percentage of small firms - from 66% in Europe to 80% in U.S. (Ward, 1990; Donckels and Frohlich, 1991; Alcorn, 1982) - is made up by 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 the causes, a recurring circumstance is entrepreneurs' loneliness in facing difficulties hidden by small business growth (Gumpert and Boyd, 1985).

In conclusion, from the above remarks it emerges that small (and, particularly, *micro*) firms have various management styles that is necessary to distinguish, in order to understand peculiarities associated to 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.

2. Main factors of failure related to small business growth

Particularly the start-up and early growth stages are 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 in order 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 two years of their existence. In the U.S.A., of every ten small firms that are opened, seven will survive their first year, three will survive after three years and only two will remain after five years (Franklin Jr. and Franklin Sr., 1982; Ganguly, 1985) [1]. It has been also remarked that nearly 80% of U.S. family businesses fail before reaching the third generation and only the 3-5% 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 U.S., 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 differ across cases. On the basis of The Dun & Bradstreet Business Failure Record (1981), Ault and Miller (1985), 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 eleven more "golden rules" to minimise small business failures. Among them: 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 and Miller, 1985; p.10).

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 then themselves" (Lussier and Corman, 1995; p.5). *Planning*, *recordkeeping* and *financial control* were supported by only 1-3% of the sample. The study identifies ten areas for small business performance improvement. Among them, as an example is the need to work for someone else to

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[1] It has been also remarked that in the UK approximately 11% of VAT registered firms each year fail and that the average failure rate is constant throughout long periods of time. Ganguly, P. (1985); Cressy R. (1996).

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 and *long range planning* to anticipate future events has been suggested (O'Neil and Duker, 1986). At same time, the above mentioned authors have also recognised 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 small firms' 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, ability 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 a major problem, 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 higher managerial problems $\Rightarrow$ higher entrepreneurial stress $\Rightarrow$ higher family emotional involvement $\Rightarrow$ deterioration of family quality of life $\Rightarrow$ higher entrepreneurial anxiety $\Rightarrow$ higher managerial problems.

Some other scholars have been focusing their research on small business entrepreneurs personal characteristics in order 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 behaviour of owner/managers*. He also emphasised how small business entrepreneurs' perceptions, values, beliefs, competencies and incompetencies are likely to effect the operations of a business. Walsh and Anderson (1994) remarked that small business dynamics may 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 *et al.* (1994) remarked on the critical importance in small businesses 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 managers' 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 which characterise 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 are also significant factors that have been emphasised.

However, from the above mentioned literature what does not emerge is another important factor of small business failure, related to low entrepreneurial *awareness of the relevant business system* [2] *structure*. 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 sub-systems, related to the competitive, social and family environment.

Such a misperception often leads small business entrepreneurs to take 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 organisation structure); they also, and particularly, need *to learn* (Cressy, 1996). Learning may allow entrepreneurs to understand and manage business complexity, whose characteristics are peculiar in the small firms context.

3. 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 which often lead to small business failure:

1) *internal-related factors;*
2) *external-related factors;* and,
3) *family-related factors.*

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[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, substitute products, external stakeholders) on a side, and its internal environment (e.g., business-owning family, workers) on another side.

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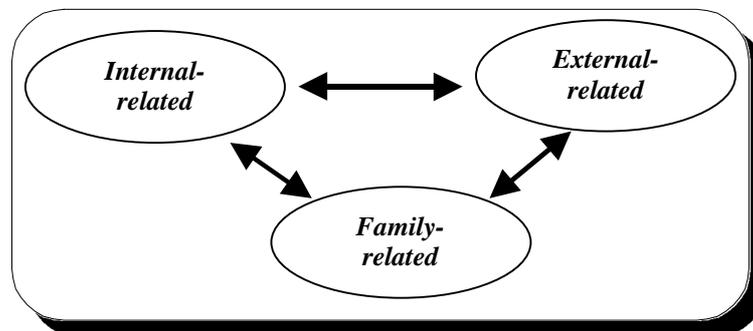

Figure 1 - Three categories of the causes of small business failure.

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

External factors are mainly associated with competitors, customers, financial institutions and other outside actors which 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 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 flows expectations leading to uncontrolled liquidity withdrawals from company bank accounts to satisfy family (current and non-current) needs [3];

b) uncertainty in the definition of roles played by family members into 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: 1) Usually they are not prone to delegate. 2) They usually do not

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[3] Such a phenomenon is particularly frequent in unlimited liability companies, where owner-entrepreneurs more often misperceive the difference between business and personal assets. Another important cause of uncontrolled liquidity withdrawals from company bank accounts can also be related to escalating behaviours 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, as different brothers and/or daughters 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.

dispose of any prompt and selective information support which allows them to anticipate future events. 3) The weak relative weight of the firm in the relevant environment often forces them to adopt a reactive and emotional decision making.

Managing small firms is often a matter of a continuous striving aimed at evading unexpected external [4] or internal events [5]. It is a kind of *muddling through* (Limbloom, 1959) which 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 is an important outcome of the *learning process* that we seek to facilitate (Bianchi et al., 1998).

Business planning & 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. In order 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 places on an on-going 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.

Matching *System Dynamics* (SD) methodology with the *Accounting approach* may allow entrepreneurs to better understand the strategic relevance of their current decisions (figure 2). In fact, system dynamics 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 which are effective in the short run, but produce unintended negative effects on a longer time horizon, that seriously prejudice company survival and growth.

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[4] E.g., higher costs of resources, sudden unavailability of raw materials, new entrants in the competitive system, new laws ruling production or commercial processes or even tax fulfillment's, constraints imposed by Public Administration
[5] E.g., shortages in financial, personnel, production capacity resources, conflicts in the business-owning family.

Understanding causal relationships underlying business results is likely to foster *double loop learning* (Argyris and Schon, 1978; Davidsen 1996; Sterman, 1994), which allows decision makers to detect inconsistencies in their *mindsets* to achieve a common share 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*, which 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 and 1968; Morecroft, 1994; Richardson *et al.*, 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.
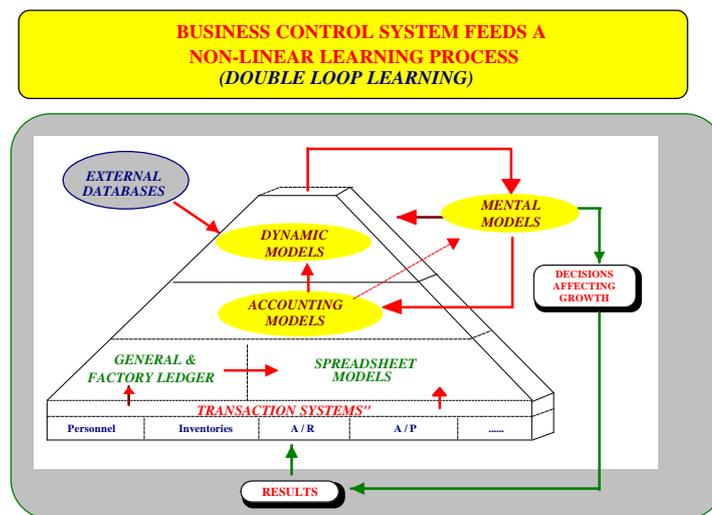

Figure 2 - Double-loop learning from combining system dynamics and accounting models

In this paper, it will be also demonstrated how combining SD and Accounting models into an Interactive Learning Environment (ILE) may help small business entrepreneurs in understanding the dynamics of growth generated by commercial and financial policies impacting on sales revenues, net working capital [6] and liquidity. The ILE will also capture issues related to the family-business overlap. Understanding the above interrelated aspects is a prior condition for effective small business planning.

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[6] Net working capital related to current operations equals to: Inventories + Accounts Receiveable - Accounts Payable.

4. The role and process for business planning in small firms

It has been observed (Robinson and Pearce, 1984; Sexton and Van Auken, 1985; Gable and Topol, 1987) 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 staff to invest in strategic planning. In contrast, other authors (Braker et al, 1988; Shuman, 1975; Van Hoorn, 1979; Jones, 1982; Ackelsberg et al., 1985; Bracker et al., 1986; Foster, 1993; Gibb and Scott, 1985) found that small firms who are engaged in formal planning perform better than others. Other authors remarked (Milliiken, 1987; Fredrickson and Mitchel, 1984; Mintzberg, 1973; Nutt, 1976; Quinn, 1980; Bhide, 1994) that, under conditions of environmental uncertainty, small business strategic processes are more indicative of *incremental* - rather than *rational* - decision making, so that 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* which 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 "flair for business".

In the last decade, there has been a growing trend of small firms utilising *formal business plans* as a modelling 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 pre-requisite 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* which 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 in order to get financial resources from banks, or public trusts (Winborg, 1996; Olson and Gough, 1996). The outcome of such mechanistic perspective is a static and non systemic document emerging from the aggregation of disparate data (e.g. commercial, financial, statistical, macro-economic) that do not allow entrepreneurs to understand the structure of the dynamic system where 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 the proper time when 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

entreprenuer 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-to-equity" ratio, could undermine financial structure, because of delayed higher current financial needs caused by growing net working capital (Bianchi and Mollona, 1997). Such dynamics would give rise to increasing negative bank accounts which - 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, that will be commented in the second section of this paper, is to support small business entrepreneurs in drawing up their written plans according to a system perspective.

5. An Interactive Learning Environment to support small business growth management: Spinnato & 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 side. 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 flows expectations leading to withdrawals by family members from the business bank accounts in order to cover current expenses. Learning on 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 SMEs 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 U.S. (Torres and Anderson, 1994). The research suggests that financial analysis and net working capital management is considered as 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 a 175 small businesses sample in Montana is 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 and McFetridge, 1987; p.2). Similar conclusions have been reached by Hutchinson and Ray (1986) who conducted an empirical analysis which showed that in a 33 firms experiencing a "supergrowth", 18 suffered for a long period of time from a negative net working capital (Schulze and Dino, 1998; Merikas *et al.,* 1993; Potts, 1993; Landstrom and Winborg, 1995).

The connection between growth, liquidity and profitability has been traditionally analysed through the so called s*ustainable 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 could also 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 over 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 "debts-to-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*, that will be described here below, has been based on the *Spinnato and Sons* case-study.

Spinnato & Sons is a family-owned business which distributes a kind of wood-cutting machines, named **Shadow**, to manufacturing firms. Mr. Spinnato is a 53 years old man, who has the role of both owner and entrepreneur. He has four sons, two of whom support him in the co-ordination of purchasing and other commercial activities. The other company activities are carried out by 5 employees. The *business information/control system* consists of transaction sub-systems (e.g., receivables, inventory), a balance sheet and some spreadsheet reports, mainly concerning financial

issues, which are occasionally drawn-up. No formal planning is done. Mr. Spinnato makes decisions, based on an intuitive basis, making use of his personal knowledge and "flair for business". In the wider business *arena*, it is possible to distinguish four main forces interacting with the firm (figure 3), i.e.:

- Competitors;
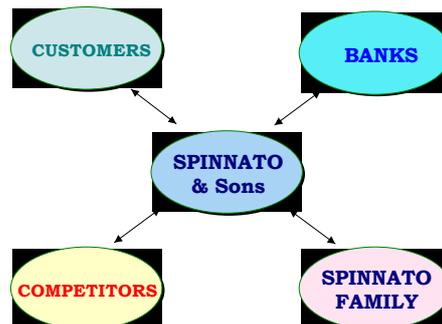- Customers;
- Banks; and,
- Spinnato family.

Figure 3 – Spinnato & Sons' *arena*

The way such forces act on or react to Spinnato & Sons' policies may significantly affect its performance. The industry in which the company operates is characterised 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 is also 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 millions lire which were threatening its survival. Mr. Spinnato was asking himself about the opportunity to sell the company, but he 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 millions £. The past two years' behaviour of key variables constitutes a comprehensive business dynamics (figure 4). In fact, it embraces the effects of current policies adopted which led to the results achieved.

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 loosing 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 second year and why, after that time, did it exhibit a decreasing pattern, in spite of average sales revenues growth?
- Why the "debts/equity" ratio has 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 behaviour?
- How can future growth be obtained?

After a few interviews, the consultant suggests that Mr. Spinnato introduces 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 inter-relationships 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?
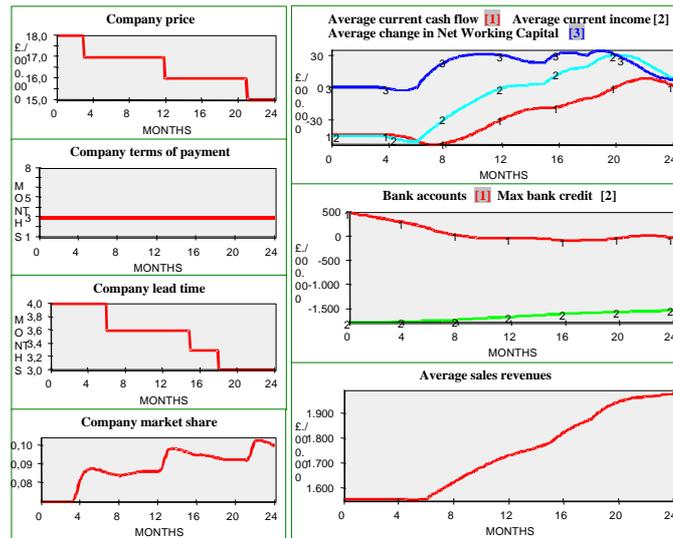
Figure 4 – The last two years business dynamics

6. *The Small Business Growth Flight Simulator educational package*

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

The *first day-course* is devoted to present, through a Powerpoint ® slide package, the basic concepts of financial and small business growth management.

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

During the *third day* the participants are engaged in using the *Small Business Growth Flight Simulator*.

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7.1 General briefing

A *general briefing* is initially provided in order to introduce the participants to the operation of the ILE. Such a briefing consists of three parts, in which we introduce the participants to:

- the *main sub-systems* of the ILE (i.e. the company, customers, competitors, banks and Spinnato family);

- the *users' task* (i.e. setting policy levers to improve performance, in terms of *profitability*, *liquidity* and *family satisfaction* in a four years time horizon); and,

- 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 % are made quarterly. Users start to draw up the budget for the first year through an Excel® spreadsheet interface [7] (figure 5). According to the adopted policies, they have also to assess future sales quantities.

Figure 5 – Spreadsheet budget input shell

After setting policies for the first year, users may check in the Excel® windows the associated *economic* (Profit & 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 delays between causes and related effects. On the basis of spreadsheet results, they are able to adjust their policies in order to achieve desired goals, e.g., in terms of sales revenues, market share, current income, cash flow, debts-to-equity ratio, etc. Then, they are ready to simulate their budget decisions through an SD model built in a Powersim™

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

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 a same database, the latter follows a different approach. In fact, it takes into account feedback loops, delays, non-linearities and *soft* variables that is very hard to include in a spreadsheet model.
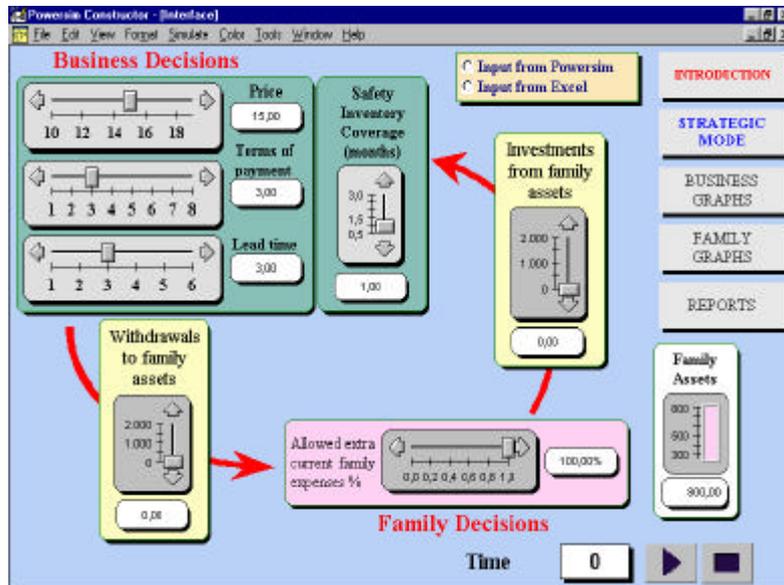

Figure 6 - Powersim™ input shell

An Excel® window allows decision makers to analyse variances between original Excel® budget and related simulation results generated by the SD model. In an hour and half, participants have to draw the all four years budget, with the aim to detect and analyse 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 first year, they may modify the original budget and repeat the simulation, in order to verify their assumptions. Then, they can move to draw up the budget for the first 6 months of the second year. The above commented iterative *planning-and-simulation* process will be extended, with a six months step, over the all 4 years budget period.

Then, participants are asked to move to Powersim™, in order 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 family "quality of life") and simulation functions, which allow users to reinforce the learning process.

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) in order to assume, and then experience, competitors' reactions to commercial policies (*Strategic Mode*).

Strategic Mode Simulation allows users to test different behaviours 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, i.e., to explore how the system structure responds to their hypotheses.

During the simulation, learners may also check both business and family performances through the Powersim™ windows, i.e., business or family graphs and reports.

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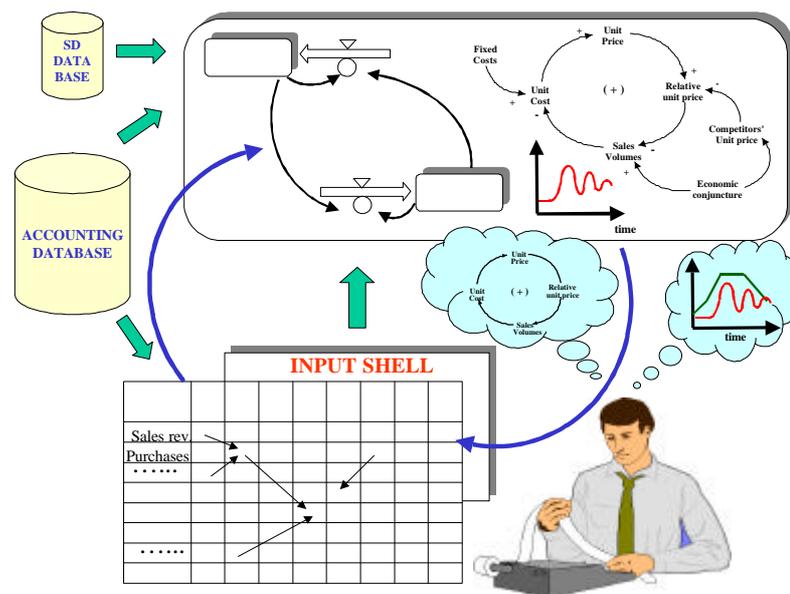

Figure 7 - Budgeting learning-oriented process

6.2 Detailed briefing

In the *detailed briefing,* the Spinnato case-study is reviewed in order 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 he faced, they have to pursue company growth taking into account both family and company requests.

6.3 Base run

Some *base runs* are then displayed and commented on by learners. The base run allows one to became familiar with Powersim™ interface and the Spinnato's business environment.

After several simulation runs, users will be able to operate *The Small Business Growth Management Flight Simulator*.

6.4 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* which implies a comparison between actual and standard values, and *ex post* variance analysis that may feed back to modify the initial budget hypotheses (figure 8).
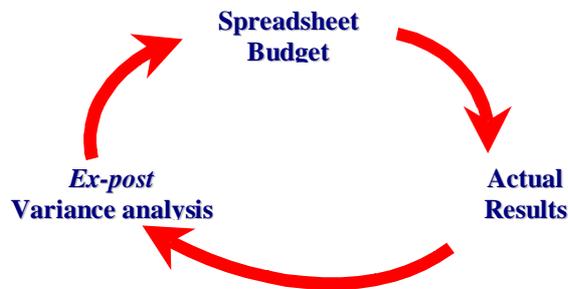

Figure 8 – Traditional single loop budgeting approach

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 *sub-variances*, rather than on the analysis and interpretation of their real causes. Variances analysis is applied to: sales volumes, inventories, accounts receivable, current income, bank accounts, cash flows, investments from personal assets and sales revenues (figure 9).
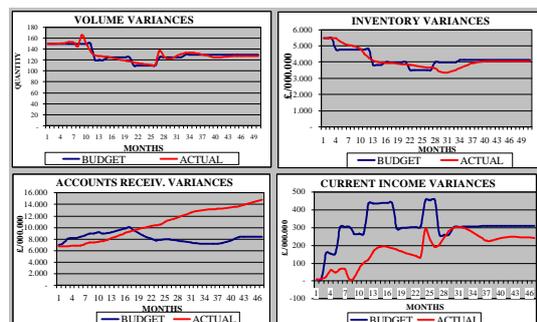

Figure 9 – Variance graphs

Matching *System Dynamics* with the traditional budgeting approach allows decision makers to *ex ante* reformulate the budget, using a more careful analysis of forces that inter-relate to drive business performance. Such an approach is meant to capture feedback loops between relevant (internal and external) variables, delays and non-linearities, in order to improve key-actors' mental models (figure 10). Such an approach is likely to foster *double loop learning*.
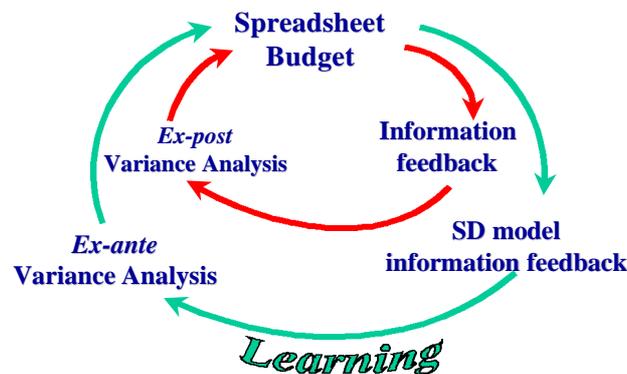

Figure 10 – Double loop learning in the budgeting process

6.4 De-briefing

The last step in the suggested learning process is *de-briefing*. 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 behaviour experienced. Some of the issues which 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, more generally, time delays and non-linearities.

The outcome of this process is twofold:
- feedback loops are being identified; and,
- system boundaries are focused.

The above goals are also 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 behaviours portrayed inspire participants to raise more focused and relevant questions in order to understand the deep causes underlying the consequences of their decisions. In order to give the reader a more concrete insight into possible outcomes emerging from the de-briefing process, two scenarios are discussed below.

6.4.1 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 sub-systems (figure 11).

In order to increase market share and sales revenues, the entrepreneur progressively rises the terms of payment during the first year and decreases prices in the second year.
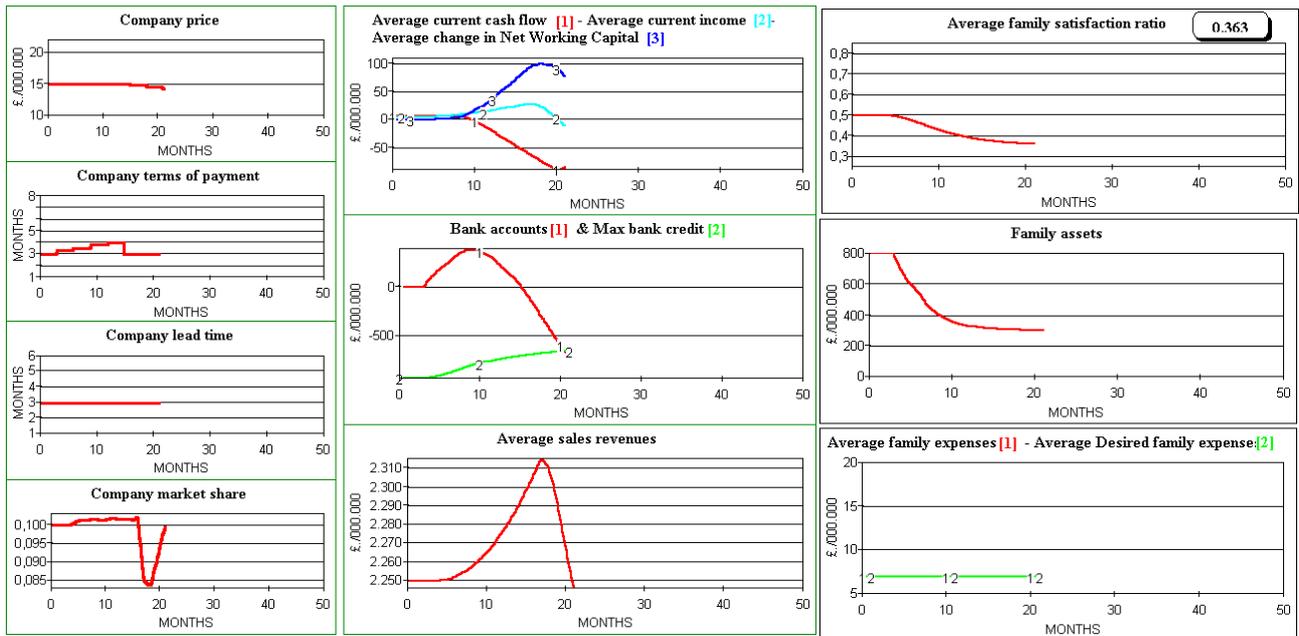

Figure 11 – Business and Family graphs

It is possible to identify four main consequences related to this scenario:

- 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 behaviour 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 behaviour that mirrors current income, leading to a negative cash flow [8] which fully absorbs equity-owner's initial investments;
- investments from personal assets progressively decrease average family satisfaction ratio.

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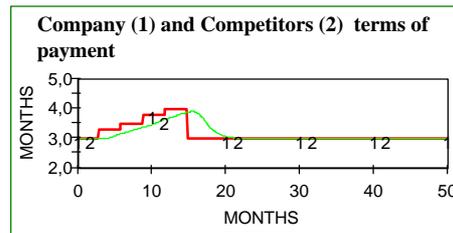
Figure 12 – Company and competitors terms of payment

In order to overcome the above limits to market share growth, the entrepreneur decides to shift from a *terms of payment* 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 still to a negative cash flow.

Such behaviour originates from:

- 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 which 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-to-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" (clients, competitors, banks, etc.) operating *from outside* must be taken into consideration in order to understand business dynamics as a condition for policy setting [9].

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[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; 1968).

6.4.2 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 "quality of life", both in terms of current expenses and personal assets. Such phenomenon is mainly caused by bias in profit and cash flows 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. In order 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, on the one hand 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: 1) customers are more sensitive to lower prices than higher terms of payment, and 2) the competitive advantage of the firm in "terms of payment" and "lead time" has been progressively reduced because of competitors' reactions to company's aggressive commercial policies. Such an analysis suggests again that decision makers need to *understand market dynamics* before setting their policies. In order 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, in order to increase family assets (e.g., buying property) and "quality of life". Also average family current expenses are increased from 7 to about 8.5 millions £ per month.

As a consequence of the above decisions, on the one hand the level of family satisfaction grows (see "family satisfaction ratio", portrayed in figure 13). Nevertheless, on the other hand, both business

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[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 rises actual lead time (i.e. delivery delay).

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 behaviour 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-to-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, in order to overcome such financial stress and the experienced limits to market share growth, the entrepreneur reduces lead time again. As a 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 J., 1980). In this scenario, *profitability* is not compatible with *liquidity*.
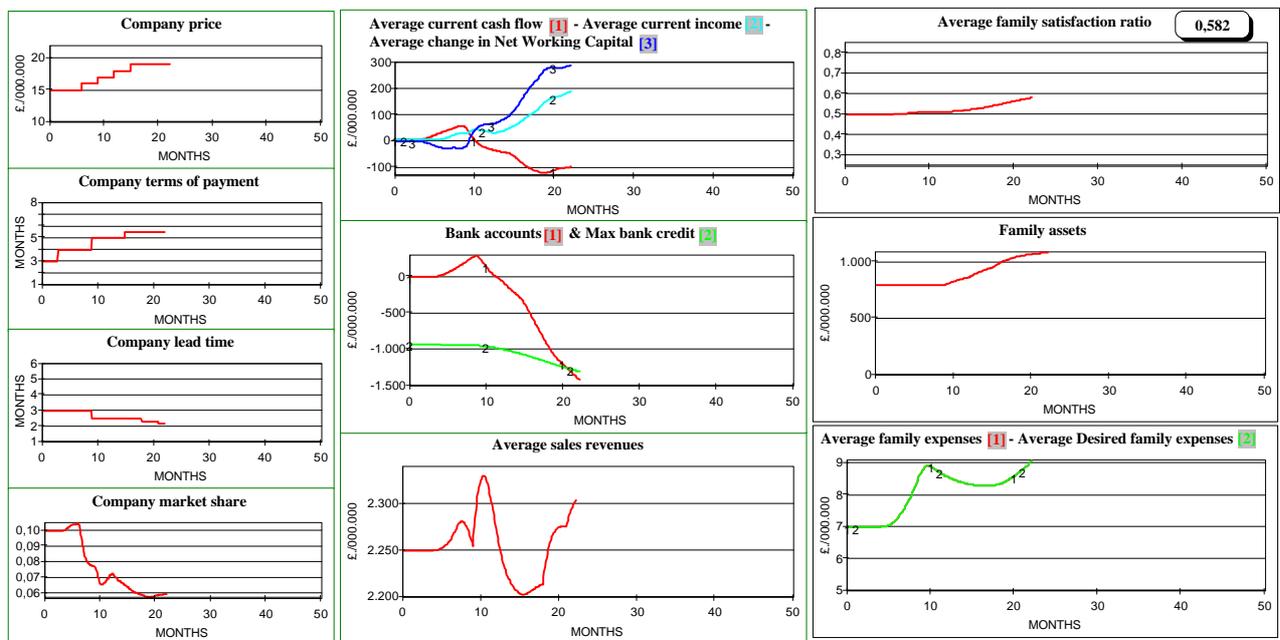

Figure 13 – Business and Family graphs

6.5 Feedback analysis

The two scenarios commented above depict some of the most common behaviours that participants are expected to experience in running the *Small Business Growth MFS*. As previously remarked, during the budgeting process, participants compare expected [11] with SD model behaviours related to their policies. Such a comparison leads them: 1) to figure out and sketch causal relationships among relevant variables, and 2) 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 sub-systems and related feedback loops (figure 14).
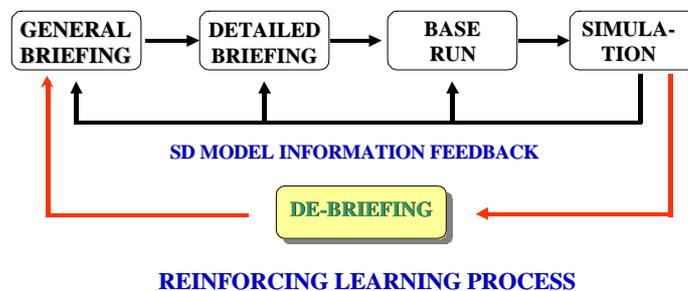
Figure 14 – The learning process overview

The learning process enhanced by the use of the *Small Business Growth MFS* implies that *SD model information* feeds back to the previous steps in order 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 in order to better understand the real causes underlying family business growth dynamics.

The most significant feedback loops originated by decision makers' behavioural analysis are portrayed here 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

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[11] Expected behaviours are originated by participants' mental models. They are depicted through the Excel ® interface and, then, compared with the 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 rationalise the conditions according to which such 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 give rise to the parable of the <<boiled frog>>… Learning to see slow, gradual processes requires slowing down are frenetic pace and paying attention to the subtle as well as the dramatic" (Senge P., 1990; p. 22-23).

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 rise terms of payment again (figure 15).

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.
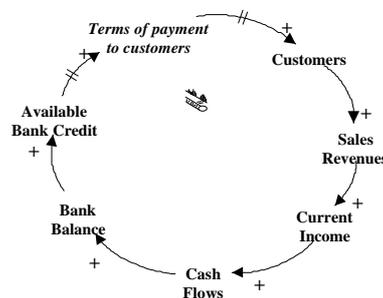

Figure 15 – Positive terms of payment loop

If the entrepreneur realises that a liquidity shortage might slow down growth, he will soon either stop increasing terms of payment allowed to customers or will increase equity, through investments from family assets. The entrepreneur could also restore the debts-to-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 in order to tackle the dominance of the negative feedback loop originating from the net working capital (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 working capital which will worsen liquidity even more. Eventually, negative bank accounts will produce interest costs that will progressively increase bank debts (positive loop), on a side, and will reduce the current income, cash flows and bank accounts (positive loop), on another side.
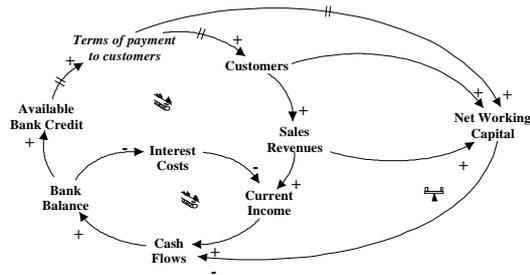
Figure 16 – Limits to growth and risks of failure from net working capital dynamics

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 (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 (positive feedback loop of figure 17).
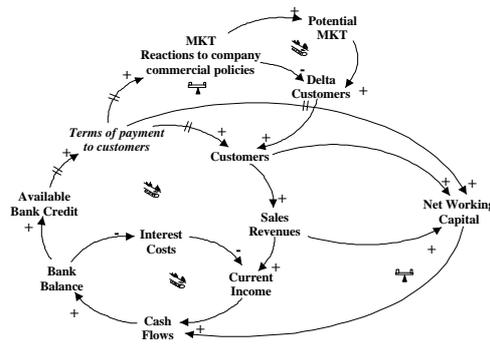

Figure 17 – Competitors and customers' reactions to company commercial policies

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, that could suggest decision makers to further decrease prices (positive loop). Likewise, a lower lead time could lead to a larger customer base and a higher sales revenues that could induce decision makers to further decrease lead time (positive loop). However, lead time strategy finds two internal limits two growth, 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). On the other hand, the same reactions could also increase the potential market, thereby also rising the gain of new customers that the firm would be able to get from its commercial policies.
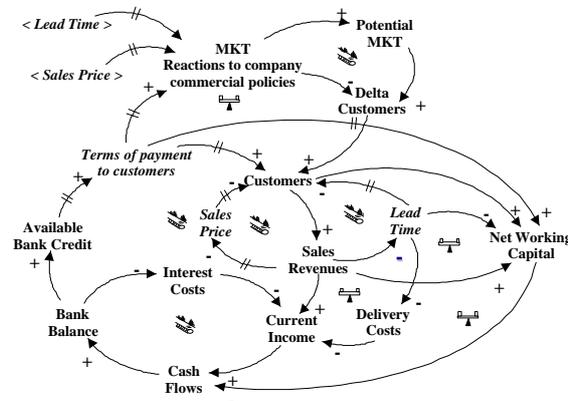

Figure 18 – Main feedback loops related to company commercial policies

Other relevant feedback loops are related to the *business-family overlap* (figure 19). The more the company grows and perceived current income and cash flows increase, the higher number of family members' withdrawals requests will result. A positive loop characterises the relationship between family requests and bank withdrawals allowed by 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 $\Rightarrow$ withdrawals actually operated on business bank balances $\Rightarrow$ 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 the one hand the increasing liquidity withdrawals give rise to lower bank balances. On the other hand, being such withdrawals an interim dividend on perceived profits, they would cause a decrease in business equity (net worth), leading to a higher "debts-to-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, misperception of inter-relationships between commercial, financial and family sub-systems may lead to company failure. In order to avoid such risks, decision makers may invest new resources from family assets into the firm (negative feedback loop "investments $\Rightarrow$ bank balance $\Rightarrow$ available bank credit $\Rightarrow$ investments"). Nevertheless, the above investments may cause a lower family satisfaction, which could also 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].

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: current income, available bank credit and family satisfaction ratio.
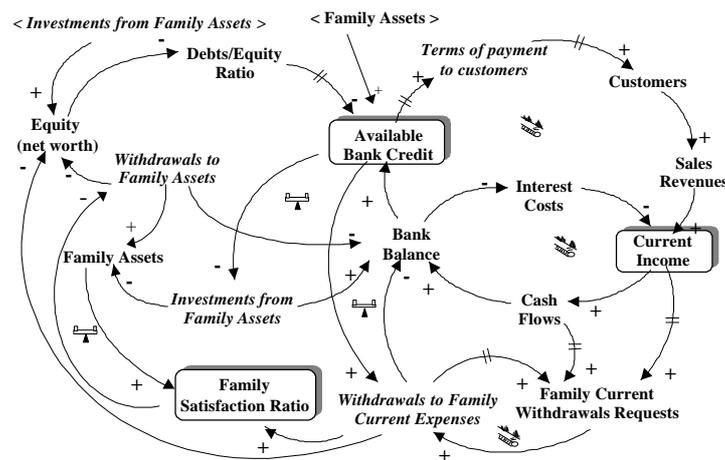

Figure 19 – Main feedback loops related to business-family relationships

7. *What participants can learn*

To summarise, the *Small Business Growth MFS* supports participants in understanding:

- 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".

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

[14] It is worth to remark that both withdrawals and investments also produce their effects on business equity.

It is possible to refer some of the most significant issues covered by the above analysis to three main archetypes [15] (figure 20):

- limits to growth;
- shifting the burden; and,
- 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 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.
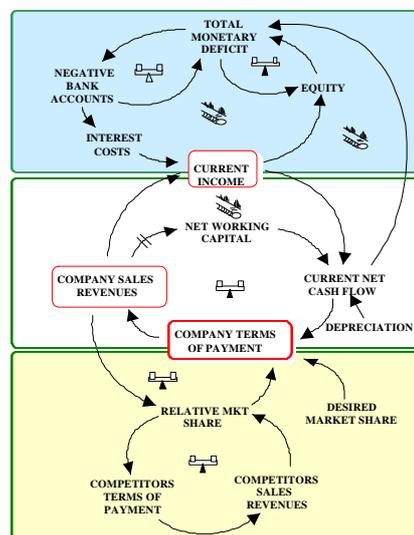

Figure 20 – Systems archetypes underlying small business growth dynamics

Another important message which 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 sub-systems interact with the firm [(*)].

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[15] *Archetypes* are general frameworks to which it is possible to refer in order to analyse, from a systemic point of view, a complex, dynamic problem.

[(*)] The authors are grateful to the reviewers for their useful comments and suggestions. Even though this article is the result of a joint research, Carmine Bianchi may be considered the author of paragraphs one to four, while Enzo Bivona may be considered the author of paragraphs five to seven.

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