THE BUSINESS PLAN AS A LEARNING-ORIENTED TOOL FOR SMALL/MEDIUM ENTERPRISES: A BUSINESS SIMULATION APPROACH

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ABSTRACT

The philosophies and policies put in place during the early stages of a new business venture will have a lasting influence on the future growth of the firm. In recent times there has been a growing trend of small firms utilizing formal business plans, particularly in start-up and growth phases. A major reason for this phenomenon is likely to be that such documents are pre-requisite to receiving state financial grants or as part of commercial loan applications. Quite often, however, entrepreneurs have viewed writing their business plans as a bureaucratic constraint (i.e. as a duty to be fulfilled), rather than as a learning tool which may help them to be aware of the business formula that is going to be adopted within their firms. The outcome of such a mechanistic perspective is a static and non-systemic document emerging from the aggregation of disparate data that does not assist entrepreneurs in understanding the dynamic system the firm will comprise.

This paper identifies the main issues of a joint research project whose focus is on opening up to the new entrepreneur the process of developing and using a business plan as a learning tool, adopting a system dynamics perspective. This will help make their business ideas more explicit and facilitate their operationalization. Preliminary results of a first fieldwork stage are summarized in this paper, and initial conclusions suggest that there is a need to support planning/learning in this way, and from this an emerging full research program is thus identified.

Introduction - Planning and learning in managing small firms' growth

Quite often, small firms' crises are either caused by too a fast growth rate, if compared to available resources (money, personnel, production capacity, etc.), or by a set of assumptions which are no longer consistent (e.g. owing to sudden changes in the competitive system of which the entrepreneur is not aware) . It may even be by an opportunistic search for profit, which takes advantage of contingent external favorable conditions (e.g. competitors' failure, financial grants allowed by Government, economic trends) without reinvesting cash flows.
It is not unusual, for instance, that a crisis is caused by an excessive rise of terms of payment allowed to customers or too a sharp reduction of delivery time and/or sale prices, in order to increase market share. Even though such "aggressive" commercial strategies may lead to a higher income rate in the short term, very often they cause a financial crisis over a longer time perspective.

In such cases, small business entrepreneurs may not understand why their growth rate, which initially led to higher sales revenues and profits, suddenly threatens their firm's survival. They cannot understand the causes of a drastic and progressive reduction in working balances, despite increasing sales revenues. Likewise, it seems a contradiction that a remarkable "orders backlog" cannot be filled because of stock unavailability. Sometimes it can be also unclear the rationale of customers' behavior, who reduced their demand, in spite of aggressive commercial strategies of the firm. This characterizes the very real questions the entrepreneur faces:

- How does the entrepreneur frame his firm and competitive system?
- How does she/he map relationships between the firm and financial institutions, the business-owning family, customers, competitors, etc?
- How does she/he perceive the time it takes to attain expected results, as a consequence of a given set of adopted policies?
- To what extent business growth is an healthy condition for the firm?
- How business planning and control system [1] may support entrepreneurs to understand *which policy levers* to act on, *when* and *how* (i.e. to what extent) to operate on them, in order to pursue a consistent and balanced growth path over time?

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[1] *Business management control* is a process oriented to support decision makers in: (a) setting goals and objectives, (b) planning for actions (i.e. strategies, policies and operational activities) to achieve them, (c) assessing efficiency and effectiveness in the use of available resources, (d)

- How can management control support decision makers to understand the relevant domain of the system to be managed and to map cause-and-effect relationships between variables, taking also into consideration delays and non-linearities?

Managing growth implies that business control system should be able to support decision makers not only in the evaluation of the strategic feasibility of big projects (such as: mergers/acquisitions, opening/closing factories, investing/divesting in R&D, production, marketing for a given product, etc.), but also in helping them to become more aware of short and long-term effects related to their current decisions. Increasing complexity and unpredictability of company environments require business control systems to be more oriented to taking into consideration strategic implications of current decisions affecting qualitative and quantitative *growth*. Particularly in the last two decades, literature on *strategic control* has been proposing several theories on how to include "strategic" perspective into business control systems design. However, even though much work has been done in this area, poor results have generally been attained when compared to practice. In fact, strategic control has been applied only with reference to some big companies and very often even the most careful and straightforward strategic control system design has not been followed by a real implementation [2].

This sharp mismatch between theory and practice seems to be caused by the use of a *project* approach in business control systems design [3]. In fact, according to most of literature on strategic control, to include strategic perspective of management into control systems, new mechanisms (i.e. structures, tools, procedures) are to be added to existing ones; this means that a significant distinction is done between *strategic* and *management* (or *budgetary*) control system. Such a *project* approach is even more evident if we consider four main hypotheses adopted by most of strategic control scholars and practitioners:

1. *It is possible to separate short and long term goals / planning and implementation.* According to this view, while strategic control should have to support long range planning, management control should support implementation [4]. A balance between long and short term may be pursued by *dual budgeting* [5], i.e. supporting an operating budget by a strategic one, according to which planning goals are connected to intermediate *milestones*, whose attainment may help to understand if planning assumptions are valid over time;
2. Strategic control mechanisms have to support strategic planning in setting *clear and precise objectives in order to reduce complexity*;
3. *Responsibility units devoted to strategic planning and control* (C.E.O. and Staff) *are different from those oriented to strategy implementation* (lower level line units) [6];
4. *Tools supporting strategic planning and control are different from those supporting management control*.

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reported information. Such a process is based on a *feedback* mechanism which embraces both *planning/budgeting* and *ex-post "stricto-sensu" control* activities. Consequently, in this paper, we will refer to *business planning* as a part of a wider management control process, whose variables are strictly related each other. In fact, business management control is a *system*, consisting of three main components: (1) an *organization structure of responsabilities* (related to cost, revenue, profit, investment, etc. centers); (2) an *information structure* (which is based on management/strategic accounting and other non-accounting models and tools); (3) a *process* which connects the information to the organization structure through the feedback mechanism. Although the *feedback* process is the core of business management control, it could be necessary - particularly when systems' complexity and unpredictability are higher - to support it by a *feedforward* mechanism, in order to allow decision makers to correct their actions or even goals and objectives also during the execution of plans. This is possible through a *strategic control* subsystem, which is particularly based on environmental scanning, strategic issue management, "flash" and flexible reporting, setting of *milestones* (i.e. significant events or intermediate objectives whose attainment is a pre-assumption to meet the final goal) and control of their achievement over time. On this subject see: Anthony R. - Welsch G. - Reece J.,*Fundamentals of Management Accounting*, Irwin, Homewood, 1985; Maciariello J., *Management Contro Systems*, Prentice Hall, Englewood Cliffs, 1984; Brunetti G., *Il controllo di gestione in condizioni ambientali perturbate*, F. Angeli, Milano, 1985; Ansoff I., *Implanting Strategic Management*, Prentice Hall, Englewood Cliffs, 1984; Lorange P. - Scott Morton M. - Ghoshal S., *Strategic Control*, West Publishing Company, St Paul, 1986.

[2] Goold M. - Quinn J., "The paradox of strategic controls", in: Strategic Management Journal, vol. 11, 1990.

[3] Amigoni F., *I sistemi di controllo direzionale*, Giuffrè, Milano, 1979; Bergamin Barbato M., *Programmazione e controllo in un'ottica strategica*, Utet, Torino, 1991, pg. 30; Bianchi C., *Modelli contabili e modelli dinamici per il controllo di gestione in un'ottica strategica*, Giuffrè, Milan, 1997, chapter 1.

[4] Horovitz J., "Strategic Control: a new task for top Management" in: Long Range Planning, June 1979, vol. 12; Harrison E.F., "Strategic Control at the CEO level", in: Long Range Planning, vol. 4, No. 6, 1991; Asch D., "Strategic Control: A problem looking foa a solution", in: Long Range Planning, vol. 25, No. 2, 1992; Band D. - Scanlan G., "*Strategic Control through core competences*", in: Long Range Planning, vol. 28, No. 2, 1995.

[5] Ansoff I., *op. cit.*; Lorange P., "Strategic Control: Some Issues in Making it Operationally More Useful", in: Lamb R. (editors), *Competitive Strategic Management*, Prentice Hall, Englewood Cliffs, 1984; Lorange P. - Scott Morton M. - Ghoshal S., *op. cit*, pg. 83 and follow..; Lorange P. - Chakravarthy B., Lorange P. - Chakrawarthy B., *Managing The Strategy Process*, Prentice Hall, Englewood Cliffs, 1991, pg. 112 and follow.

[6] Vancil F. - Lorange P., "*Strategic Planning in Diversified Companies*", in: Harvard Business Review, No. 53, Jan.-Feb. 1975; Lorange P. - Vancil F., *Strategic Planning Systems*, Prentice Hall, Englewood Cliffs, 1977; Lorange P. - Vancil F., *Corporate Planning. An Executive Viewpoint*,

This approach has produced an increasing bureaucratization and a lack of communication between headquarters and planning staff on a side and several operating divisions on another, even in many big companies characterized by an articulated organization structure and by the use of sophisticated control tools. This situation often led divisional management to depart from policies and goals officially declared in strategic plans (*exposed theory*), in order to take other decisions (*theory-in-use* [7]) which were seen as more coherent with the characteristics of the systems to be managed and to contingent environmental dynamics. In order to include a strategic perspective into business control systems, particularly when management systems complexity and environmental unpredictability are significant, it is necessary to use a different approach. Rather than focusing on systems *design*, it is much more important to be oriented to influence - i.e. to change - people behavior, thereby enhancing a deep understanding of processes in which they are involved. This shift from a *project* to a *behavioral* approach in control systems design on a strategic perspective is not a trivial one, as it radically changes the logic of strategic control process itself. The project approach implies that people fit in the structure and its focus is on *information*; on the contrary, the behavioral approach is focused on *learning*.

According to this perspective, the difference between strategic and management control tends to become more fuzzy, as the control system (as a whole) is oriented to achieve a common goal: i.e. *strategic organizational learning*. In other words, such an approach implies that strategic control may allow people to *deal with uncertainty*, to better frame systems in which they are involved, in order to understand management complexity and unpredictability. Such a goal may be attained only if management is seen as a continuous (rather than discrete) process, according to which even current actions may disclose significant strategic outcomes. Moreover, if one considers that current management takes place on an on-going basis, but not all day-to-day decisions have a same level of strategic importance, it follows that (other conditions being equal) it is completely different to detect weak signals of strategic change if one refers to current activities or to long term investment options which are oriented to change a firm's *business formula*. Even though, in the first case, the structure of the system to be managed (relevant variables, connections between them, delays, etc.) can be usually easier defined than in the second one, monitoring strategic relevance of current events implies a major difficulty in detecting in advance weak signals [8] of change as they are usually hidden in a wider range of daily occurrences in which management is fully involved. Consequently, a higher *selectivity* of control system is needed in order to detect weak signals related to current operations; however, such a selectivity is not to be seen as an *end* (i.e. information gathering per se), but instead as a *means* to change people mindsets.

This paper aims to give a contribution to the analysis of the role that *System Dynamics modeling and simulation* could play in supporting business planning (and control) as a learning-oriented process in small/medium enterprises. Its purpose is to identify the main issues of a joint research project whose focus is on opening up to the new entrepreneur the process of developing and using a business plan as a learning tool, according to a system dynamics perspective. This will make their business ideas more explicit and support the operationalizing of them. We will, particularly, refer to those firms which do not have a *technostructure* (i.e. a professional management team), as they are managed by a single entrepreneur or even by a few people belonging to the equity-owning family. In these firms the problem of understanding connections between short and long term policies is generally more amplified than in bigger ones, as current decisions tend to exploit all the company's managerial resources.

The paper comprises two main sections. In the first one we will deal with complexity and discontinuity as a source of strategic information needs in a small firm and with *models* and *tools* that could support small business entrepreneurs to understand how their current decisions may affect growth in the short and long run. This analysis will be oriented to:

- describe the role of business planning and control as a process to support small firm's growth;
- identify different "actors" involved in the business planning process;
- demonstrate how the wider strategic control process in a small firm could be enhanced through the use of system dynamics models to support learning in business plan drawing up;
- show and comment some preliminary results from a first field work.

The second section will be devoted to the issue of introducing System Dynamics in small firms' strategic control systems. A taxonomy of main "key-actors" involved will be outlined in order to identify different possible *scenarios* concerning communication approaches and main areas of application of the System Dynamics methodology to support business planning as a learning-oriented tool to manage business growth.

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[7] Argyris C., *Strategy, Change and Defensive Routines*, Pitman, Boston, 1985; Argyris C. - Schon D., *Organizational Learning. A Theory of Action Perspective*, Addison Wesley, Reading Mass., 1978; Senge P., *The Fifth Discipline*, Century Business, London, 1990, chapt. 10.

[8] About weak signal detection in strategic control see: Ansoff I., *"Managing Strategic Surprise by Response to Weak Signals"*, in: California

Critical viewpoints in business planning and strategic control in small firms.

Specifying the problems and boundaries in planning and control in the smaller firm

Dealing with the problem of growth management in a small enterprise - and, particularly, in those ones which do not rely on a professional management - is not easy, as not always general working hypotheses which are adopted in research can be empirically verified, owing to the big variety of multi-faceted scenarios characterizing such firms. It is possible, however, to discern some common aspects which better qualify the phenomenon. First of all, it is worthwhile to observe that both the limited number of case-studies demonstrating a successful application of a formal business planning & strategic control system in small firms and the limited attention that in literature it has been devoted to this subject, could suggest that such an issue has a minor importance in small business management. To this conclusion reach those who observe that a strategic control system - as it is commonly designed in multi-divisional companies - should be too expansive and complex for a small firm, whose management processes are usually relatively simple.

On the contrary, it is to be remarked that in many small firms *complexity* and *unpredictability* may have a specific and different shape, than in bigger ones. In fact, it may be particularly complex for a small business entrepreneur to timely and properly:

- *detect relevant environmental variables* to be taken into consideration in order to better define business strategy;
- *set business goals*;
- *introduce innovations in management processes*;
- *get relevant information* for decision making.

Quite often, it is particularly difficult for a small firm to *interact with its external environment*, due to its weak "relative weight" in the wider system of business actors (e.g. competitors, suppliers, customers, research institutions, banks, public administration) with whom it is linked. However, unpredictability of a future strategic order in a small business is often related also to the *instability and complexity* of its *internal environment*. In fact, small firms' *strategic goals* are very often difficult to be focused because of the overlapping [9] between entrepreneur's and business-owning family's *personal goals*, on a side, and the *firm's goals*, on another side.

Another variable related to internal environment which may sometimes cause a higher complexity and unpredictability in small business management consists of *technical and/or managerial difficulties to introduce innovations in business processes.* For example, in order to improve the firm's competitive position, an entrepreneur may decide to introduce new production or distribution or information processing methodologies; however, such innovations usually give rise to problems related to the firm's lack of management skills or its high "debts/equity" ratio or even to difficulties to get enough financial resources from banks, due to insufficient asset guaranties. Additionally, too, may be a factor of complexity in small firms' growth management is their *lack of relevant information* for decision making. In fact, small firms' control systems are more focused on external (i.e. balance-sheet), than internal reporting. The so-called *transaction information systems* (e.g. inventory, accounts receivable/payable, cash, personnel, etc.) play a central role in the wider information and accounting system of a small firm. Data they collect feed financial accounting and, hence, balance-sheet. As it will be shown later, very often such data do not give entrepreneurs enough support to their strategic information needs. Owing to their particular tendency to be subject to environmental unpredictability, much more than bigger firms, in small businesses the *boundary between "short" and "long" term* is usually particularly soft. Small business entrepreneurs are almost always completely involved in current activities for three main related reasons: 1) usually they are not prone to delegate; 2) they usually do not dispose of any prompt and selective information support which allows them to anticipate future events; 3) their firm's relative weight in the relevant environment is quite weak.

It follows that managing small firms is often a matter of a continuous striving aimed at escaping from unexpected external (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, etc.) or internal events (e.g. shortages in financial, personnel, production capacity resources, conflicts in the business-owning family, etc.). It is a kind of *muddling through* [10] which very often does not allow a formal or conscious definition and planning of strategies to be pursued. From these considerations the conclusion does not emerge, however, that small firms do not have any strategic information need 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 entrepreneur is able to discern relationships between current decisions (or short-terms objectives) and long-term wider business goals.

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[9] Landsberg I., "*Human Resources in Family Firms: The Problem of Institutional Overlap"*, in Organizational Dynamics, n. 12 (1), 1983.

[10] On the role played by *muddling through* in decision making see: Limbloom C., "*The Science of Muddling Trough*", in: Public Administration

The debate on role and process for business planning in small firms

Some critical issues on which both scholars and practitioners have been debating particularly in the last two decades are related to whether business planning:

- is *beneficial* to the management of small firms' growth;
- has to be different according to the particular *growth stage* of the firm;
- ought to be based on *formal or informal* documents and *structured* or *unstructured* procedures (related, e.g., to data acquisition, "actors" involved, and information provided), on *simple* or *sophisticated* techniques;
- ought to be structured on different *hierarchical levels* (corporate, business unit and functional area) and focused on several responsibility centers, or instead oriented to corporate activities;
- ought to be done either on a *regular* basis (e.g. at the beginning of each financial year) or, instead, *occasionally* (e.g. in the start-up stage or in order to get loans and/or financial grants from private or public institutions);

To this list, it is possible to add some other ones, to which this paper is particularly addressed - it is also possible to question to what extent the business planning process:

- only involves the entrepreneur and other "key-actors" who operate within the firm, or also some other external "actors", who have a stake in the process;
- should be seen as a *bureaucratic constraint* (i.e. a duty to be fulfilled), more oriented to the use of internal accounting databases and to extrapolative techniques, rather than as a *learning tool* which may help entrepreneurs to be aware of the "business formula" that is going to be adopted.
- following from this: utilizes *sources* from which to draw relevant data may be drawn when business planning is seen as a learning-oriented tool, and *approaches* (as well as tools and techniques) that could be used.

Business planning, environmental uncertainty and small firm performance.

Schwenk and Shrader [11] have conducted a review of past studies on relationships between (formal) *strategic planning* and *small firm performance*. They argued that different and controversial results were been achieved by scholars, specifically:

- Armstrong [12] examined the effect of formal planning on the performance of twelve firms, in the perspective of five main variables, i.e.: (1) setting objectives; (2) generating strategies; (3) evaluating strategies; (4) monitoring the process; (5) commitment to the process. He concluded that formal planning benefits firms.
- Shrader *et al.* [13] classified over sixty case-studies into three categories: (1) formal long-range planning *vs.* performance; (2) planning typologies *vs.* performance (3) planning salience *vs.* performance. They concluded that there is not apparent systematic relationship between formal planning and performance [14] and that there is a great disparity in the measurement of formal planning across studies.
- Robinson and Pierce [15] conducted a comprehensive review of the literature on the effects of formal strategic planning on small firm financial performance. They observed 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. To

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[11] Schwenk C. - Shrader C., "Effects of Formal Strategic Planning on Financial Performance in Small Firms: a Meta-Analysis", in: Entrepreneurship Theory and Practice, Spring 1993.

[12] Armstrong J., "The Value of Formal Planning on Strategic Decisions", in Strategic Management Journal, 3 (3), 1982.

[13] Shrader C. - Taylor L. - Dalton D., "Strategic Planning and Organizational Performance: A Critical Review", in: Journal of Management, 10 (2), 1984.

[14] Of a similar opinion are: Kallman E. - Shapiro H., "The Motor freight Industry: A Case against Planning", in: Long Range Planning, 11 (1), 1978; Unni V., "The Role of Strategic Planning in Small Business", in: Long Range Planning, 14 (2), 1981; Robinson R. - Pearce J., "The impact of formalized Strategic Planning on Financial Performance in Small Organizations", in: Strategic Management Journal, 4 (3), 1983; Robinson R. - Pearce J. - Vozikis G. - Mescon T., "The relationship between stage of development and small firm planning and performance", in: Journal of Small Business Management, 22 (2), 1984; Orpen C., "The effects of long-range planning on small business performance: A funther examination", in: Journal of Small Business Management, 23 (1), 1985; Robinson R. - Logan J. - Salem M., "Strategic versus operational planning in small firms", in: American Journal of Small Business, 10 (3), 1986; Shrader C. - Mulford C. - Blackburn V., "Strategic and operational Planning, uncertainty and performance in small firms", in: Journal of Small Business Management, 27 (4), 1989; Watts L. - Ormsby J., "Small Business performance as a function of planning formality: a laboratory study", in: Journal of Business and Entrepreneurship, 2 (1), 1990.

[15]

them, the main reason fir the lack of conclusiveness in research on formal planning in small business is simply that small firms do not plan [16].

- In contrast, Bracker, Keats and Pearson [17] found that small electronics firms that engaged in sophisticated strategic planning performed better than unstructured planners. Similarly, Shuman [18], Van Hoorn [19], Jones [20], Ackelsberg and Arlow [21] show the positive relationships between formal planning and financial performance. Bracker and Pearson [22] proposed a classification of sophisticated plans in small firms. Foster [23] has shown the merits of scenario making in small firms as a tool to manage uncertainty. Gibb and Scott [24] particularly emphasize the role of planning as a tool to manage change.

More particularly, Schwenk and Shrader conducted a statistical meta-analysis on fourteen articles on the subject and referred to two types of performance measures: (1) *growth in sales or revenues*; and (2) *growth in return (on assets, sales, investments)*. They demonstrated that strategic planning - in general - is a beneficial activity, even for small firms. It may be either conducted through highly sophisticated techniques, or facilitated by "outsiders" [25], or simply accomplished in spite of severe resource constraints [26]. However, the above authors argued that, in such business environments, the small improvement of performance might not be worth the effort involved in strategic planning, unless a firm is in a very competitive industry where small differences in performance may affect the firm's survival potential. On the basis of their analysis, they conclude that a critical research question is not whether strategic planning affects small firm performance, but instead: "under what conditions is performance enhanced by small firms strategic planning".

Matthews and Scott [27] focused on the relationships between *environmental uncertainty* [28] and formal sophisticated planning in small firms. The two authors remarked the minimal empirical attention given by scholars to strategic and operational planning issues in small firms. They particularly raised the question of why - although there is a number of studies which has shown positive effects of planning on small firms' performance - some small businesses plan and others do not. From data gathered from 130 small business ventures and entrepreneurial firms, they observed how the perception of a higher environmental uncertainty by owners/managers of small firms discourages formal planning. Under conditions of environmental uncertainty, strategic planning processes are more indicative of *incremental* - rather than *rational* - decision processes [29], so that business plans may be directed at 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

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16 Of the same belief are (among others): Sexton D. - Van Auken P., "A Longitudinal Study of Small Business Strategic Planning", in: Journal of Small Business Management, 23 (1), 1985; Gable M. - Topol M., "Planning Practices of Small Scale Retailers", in: American Journal of Small Business, 12 (2), 1987.

17 Braker J. - Keats B. - Pearson J., "Planning and Financial Performance among Small Firms in a Growth Industry", in: Strategic Management Journal, 9, 1988.

18 Shuman J., "Corporate Planning in Small Companies. A Survey", in: Long Range Planning, 8 (5), 1975.

19 Van Hoorn T., "Strategic Planning in Small and Medium sized Companies, in: Long Range Planning, 8 (2), 1979.

20 Jones W., "The Characteristics of Planning in Small Firms", in: Journal of Small Business Management, 20 (3), 1982.

21 Ackelsberg R. - Arlow P., "Small Businesses do plan and it pays off", in: Long Range Planning, 78 (5), 1985

22 Bracker J. - Pearson J., "Planning and Financial Performance of small, mature firms", in: Strategic Management Journal, n. 7, 1986.

23 Foster M., "Scenario Planning for Small Businesses", in: Long Range Planning, vol. 26, 1993.

24 Gibb A. - Scott M., "Strategic Awareness, Personal Commitment and the Process of Planning in Small Business", in: Journal of Management Studies, vol. 22, n.6, Nov. 1985.

25 Robinson R., "The importance of "outsiders" in small firm strategic planning", in: Academy of Management Journal, 25 (1), 1982

26 Braker J. - Keats B. - Pearson J., *op. cit.*

27 Matthews C. - Scott S., "Uncertainty and Planning in Small and Entrepreneurial Firms:an Empirical Assessment", in: Journal of Small Business Management, October 1995.

28 They distinguished three different kinds of uncertainty: a) *state uncertainty*, i.e. "the inability to understand or to predict the state of the environment due to a lack of information or a lack of understanding of the interrelationships among environmental elements"; b) *effect uncertainty*, i.e. related to "the consequences of environmental changes on the organization"; c) *response uncertainty*, when "either the decision-makers do not know what the response options are, and/or they do not know what the likely consequences are of pursuing a particular option". The two authors referred to the first type of uncertainty. On this subject, see also: Milliiken F., "Three Types of Uncertainty about the Environment: State, Effect and Response Uncertainty", in: Academy of Management Review, n. 12, 1987.

29 Fredrickson J. - Mitchel T., "Strategic Decision Processes: Comprehensiveness and Performance in an Industry with an Unstable Environment", in: Academy of Management Journal, n. 27, 1984; Milliiken F., *op. cit.*; Mintzberg H., "Strategy-Making in Three Modes", in: California Management Review, n. 16, 1973; Nutt P., "Models for Decision-Making in Organizations and Some Contextual Variables Which Stipulate Optimal Use", in: Academy of Management Review, n.1, 1976; Quinn J., "Strategies for Change: Logical Incrementalism", in: Sloan Management Review, n.

conditions of growing environmental uncertainty. Rather than engaging in formal planning such firms focus on *doing*, on entrepreneurial *intuition* and "flair for business" [30].

However, they also remarked how - other conditions being equal - entrepreneurial firms are generally more concerned with a higher sophisticated planning than small firms overall. In fact, entrepreneurial ventures' main goals are profitability and growth with a long-term market dominance; they are characterized by a higher innovation in products, processes or practices. The greater "entrepreneurial intensity" of the business owner(s) and the need of perception of a greater environmental control, leads the firm to resort more to strategic planning.

Business planning and small firms' critical growth stages.

A useful framework to focus the potential role of business planning in small firms' growth is given by Churchill and Lewis [31]. Their model stems from an analysis of the literature concerning the life-cycle of organizations [32]. On the basis of an empirical research conducted through a questionnaire distributed to 110 owners and managers of successful small companies in the $1 million to $35 millions sales revenues range, they criticized past research for three main reasons: (1) it assumes that a company must grow and pass through all stages (e.g.: creativity, direction, delegation, coordination, collaboration [33]) of development or die in the attempt; (2) it fails to capture the important early stages in a company's origin and growth; (3) it measures company's size only in terms of sales revenues, so ignoring other relevant factors such as: value-added, number of locations, complexity in product line and rate of change in products or production technology. Consequently, they proposed a *non-deterministic* approach, based on five different sequential phases of development (i.e.: existence, survival, success, take-off, resource maturity) for a growing small firm, each of them being characterized by an index of size, diversity and complexity and described by different management factors, among which business planning and control systems play an important and different role according to the particular growth stage of the firm.

The *Existence* stage concerns business start up [34]. Main problems are related to building a sufficient customer and sales base and to get the necessary liquidity to feed initial financial needs. A critical resource is equity-owner's entrepreneurial ability in managing by him/herself all relevant business functions, matching personal and business goals and finding proper monetary resources. When the firm reaches the second stage (*survival*) it has demonstrated to be a workable business entity. It has accumulated a minimum credibility in its market as is able to satisfy its customer base with its products. Critical resources are the same as in the previous scenario. Cash management is particularly critical, as cash flow from consolidated products have to feed financial needs from current operations and to support growth (i.e. investments in new products, processes, management systems, human resources, etc.). In the *survival* stage, the company may either grow in size and profitability and move on to the next stage or remain at this phase for some time, earning marginal profits and eventually go out of business.

Even though, in the above two stages, systems and formal planning are minimal to non-existent and the company's strategy is simply to remain alive (in the first phase) or to consolidate its market position (in the second phase), drawing up a formal business plan (either for internal or external use, e.g. for banks) or even sketching an informal plan in the entrepreneur's mind may be very helpful to support growth management awareness. In the last decade, there has been a growing trend of small firms utilizing formal business plans as a modeling tool in the start-up phase; 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 a *learning tool* which may help them to be aware of the *business formula* that is going to be adopted. 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, macro-economic, etc.) that do not allow entrepreneurs to understand the structure of the dynamic system where the firm will operate.

On the contrary, conceiving business planning in a learning-oriented 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 competences, 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

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[30] Bhide A., "How Entrepreneurs Craft Strategies That Work", in: Harvard Business Review, March-April, 1994.

[31] Churchill N. - Lewis V., "The Five Stages of Small Business Growth", in: Harvard Business Review, May-June 1983.

[32] Greiner L., "Evolution and Revolution as Organizations Grow", in: Harvard Business Review, July-Aug. 1972; Steimetz L., "Critical Stages of Small Business Growth: When They Occur and How to Survive Them", in: Business Horizons, Feb. 1969; Rostow W., *The Stages of Economic Growth*, Cambridge University Press, Cambridge, 1960; Scott M. - Bruce R., "Five Stages of Growth in Small Business", in: Long Range Planning, n. 3, 1987. See also: Normann R., *Management for Growth*, Wiley, 1977 and Tepstra D. - Olson P., "Entrepreneurial Start-up and Growth: a Classification of Problems", in: Entrepreneurship Theory and Practice, Spring, 1993.

[33] Greiner L., *op. cit.*

approach to business plan drawing up is likely to support the entrepreneur to understand *cause-and-effect* relationships between *cash flows* generated or absorbed by *consolidated* and *new products*, as well as *trade-offs* between *support and development investments* [35]. 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, etc.) on sales revenues, current income and cash flows in a short and longer time horizon. For instance, too a sharp increase in customers' terms of payment and inaccurate short term profit withdrawals by the equity-owner, together with too a high "debts-to-equity" ratio, could undermine financial structure, because of delayed higher current financial needs caused by growing net working capital [36]. Such a 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. Other relevant issues to which business plan as a learning tool could be applied in the *survival* stage are related both to the possibility to simulate and figure out future scenarios related to alternative growth and harvesting strategies and to timely detect internal *limits to growth* related to resource scarcity (e.g. production capacity) [37].

The third stage (*Success*) implies two alternative scenarios: (1) disengagement; (2) growth. In the first case, the firm has attained sufficient profitability, size and product-market penetration to ensure economic success. As far as the "rules of the game" in the firm's market niche will not change, the company will be able to stay in this stage also indefinitely without investing cash flows in new product development. The firm has grown large enough to require functional managers to take over some activities and tasks formerly performed by the owner. Also a professional staff *technostructure* is usually built and a controller drives a formal budgeting process, supporting functional delegation. In the second case, the business-owner is more concerned to build strategic resources and to plan future growth. Matching current with future cash flows requirements and building competences through hiring managers are critical issues in this sub-stage. Not only a formal budgeting, but also a formal strategic planning process is enhanced.

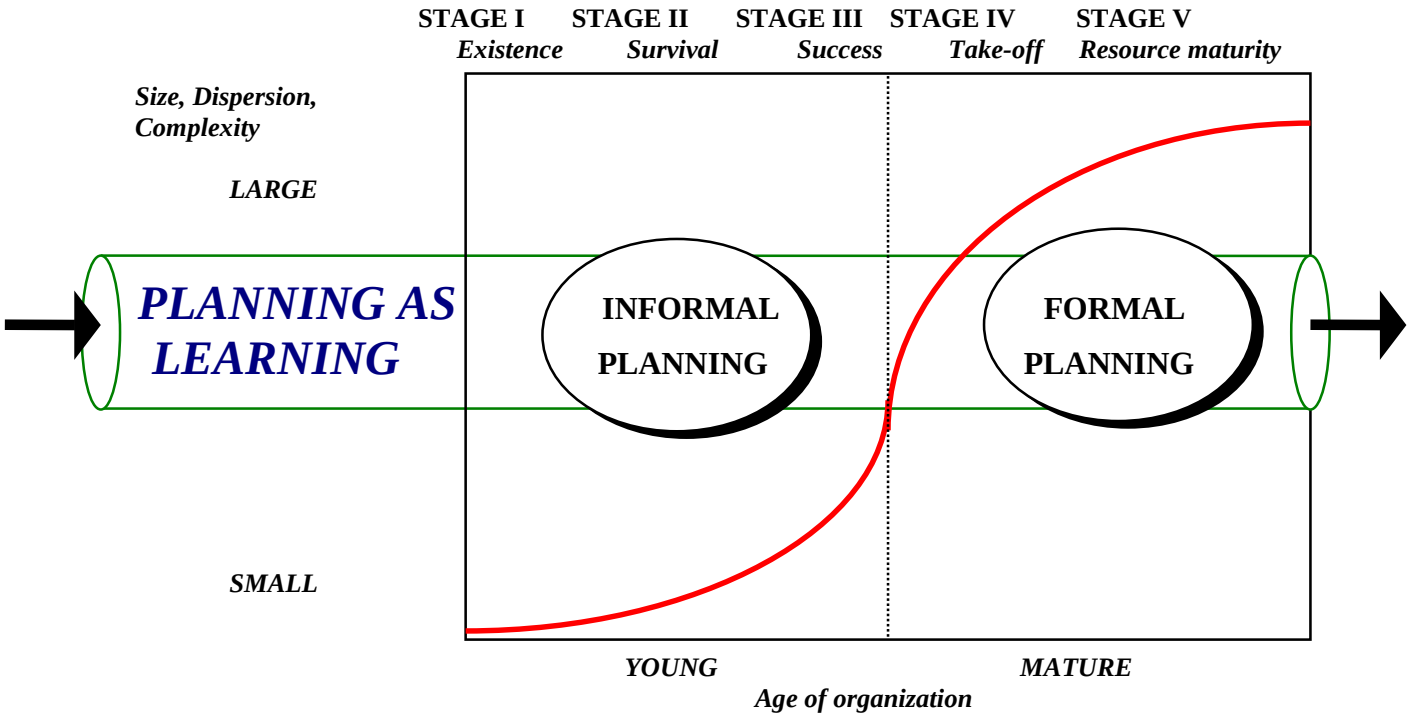

FIG. 1: The role of business planning in different critical stages in small firms growth (adapted from: Churchill N. - Lewis V., op. cit.)

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[35] On such dynamics see: Wolstenholme E., *Systems Inquiry. A System Dynamics Approach*, Wiley, Chichester, 1990, pg. 31 and foll.

[36] Net working capital related to current operations equals to: Inventories + Accounts Receiveable - Accounts Payable. On such dynamics see: Bianchi C. - Mollona E., "A Behavioural Model of Growth and Net Working Capital Management in a Small Enterprise", in: Proceedings of the 1997 International System Dynamics Conference, Istanbul. See also: Merikas A., "The Theoretical Relationship Between the Strategic Objective of Sales Growth and the Financial Policy of the Entrepreneurial Firm", in: International Small Business Journal, 11,3; Peel M. - Wilson N., "Working Capital and Financial Management Practices in the Small Firm Sector", in: International Small Business Journal, 14, 2.

[37]

In the fourth stage (*Take-off*) the firm becomes more complex as more strategic business units are active, because of new product development and decision-making delegation. Key management factors are particularly the owner's ability to delegate, the availability of significant cash flows [38] to foster growth, and of qualified formal structures and systems. Both budgetary and strategic control are fundamental to the. The owner tends not to perceive the company as his own creature, even though she/he is still the person having a major charisma as well as stock control. When the company enters the last stage (*Resource maturity*), it consolidates and controls financial gains generated by growth and retains, at the same time, the advantages of small size, related to flexibility and entrepreneurial spirit. In this last stage coordination between different departments and units is pursued by a stronger resort to formal strategic and operational planning.

Although in the last three stages (and particularly in the last two) formal and more sophisticated planning is used as a coordination mechanism, it is possible to assert that also in these scenarios - in spite of structured budgeting and planning procedures - the learning-oriented approach may play a significant role in fostering both an interfunctional view of the business and communication through trade-off analysis (thereby reducing the risks of bureaucratization). Moreover, particularly when the firm operates in the *success-growth* stage, such an approach may also support the management of cash flow dynamics and a deeper understanding of dynamic relationships between the firm and its competitive system.

From the above considerations emerges how the entrepreneur *always* needs a learning support which might help him/her to understand the *structure* of the system where the firm operates, even though the particular shape of complexity and unpredictability in the first two stages of small business growth discourages the use of formal and structured planning systems,. Conceiving the planning process as learning means to develop the ability to understand what are relevant (internal and external) variables, cause-and-effect relationships between them, policy levers on which to act in order to affect key-performance-indicators (e.g. cash flows, current income, ROI, ROE, time to market, knowledge, etc., all related to *key-factors*), external constraints, time delays between actions and related effects, non linear relationships between variables, etc. Through a continuous and intelligent comparison of the system's *structure* with its *behavior* (i.e. matching simulated dynamics with past and actual results) such an approach may allow the entrepreneur to question his own policies and to adapt his mindset and mental models [39], according to an endless learning process whose purpose is to follow a *moving target*: i.e. an objective (though fuzzy, multifaceted and dynamic) *reality*. In this perspective, drawing up business plans according to a learning-oriented approach is a philosophy crossing and enriching the all planning process, regardless the level of its formalization and the growth stage of the firm (fig. 1). Such an approach may substantially help particularly new entrepreneurs to evolve their business ventures through the next growth stages. Nevertheless, two main critical issues are to be taken into consideration in order to introduce the business plan as a learning-oriented tool in a small enterprise:

- new entrepreneurs' personal business attitudes;
- available flexible and user-friendly modeling methodologies and software tools.

Factoring in entrepreneurs' personal business attitudes and other main "actors"

Both empirical findings from past research [40] and preliminary results from our first field work described later, show how particularly small business entrepreneurs, whose firms are in the early growth stages, are usually absorbed by day-to-day operational problems, have neither time nor staff to invest in strategic planning and take their decisions primarily on the basis of their experience and intuition. Although such business contexts might appear as the least suitable for any kind of planning, a learning-oriented approach could allow one to exploit their major wealth: i.e. entrepreneurial creativity, "flair for business" and company key-actors' mental databases [41], which can become a powerful engine for growth. In order to deal with the above "dilemma" (i.e. low managerial culture, human, financial and time resources *vs.* considerable *human-brain* available resources), a significant role in educating small business entrepreneurs can be played by those "actors" who can be involved from outside the firm in the business planning process (fig. 2).

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[38] Hutchinson P. - Ray G., "Surviving the Financial Stress of Small Enterprise Growth", in: Curran J. - Stanworth J. - Watkins D., *The Survival of the Small Firm*, Gower, Brookfied, 1986, chpt. 4.

[39] "Mental models are deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action. Very often, we are not consciously aware of our mental models or the effects they have on our behavior". See: Senge P., *The Fifth Discipline*, *op. cit*., pg. 6.

[40] See footnotes 15 and 16.

[41] On the importance of mental database see: Forrester J., "*Policies, Decisions, and Information Sources for Modeling*", in: Morecroft J. -. Sterman

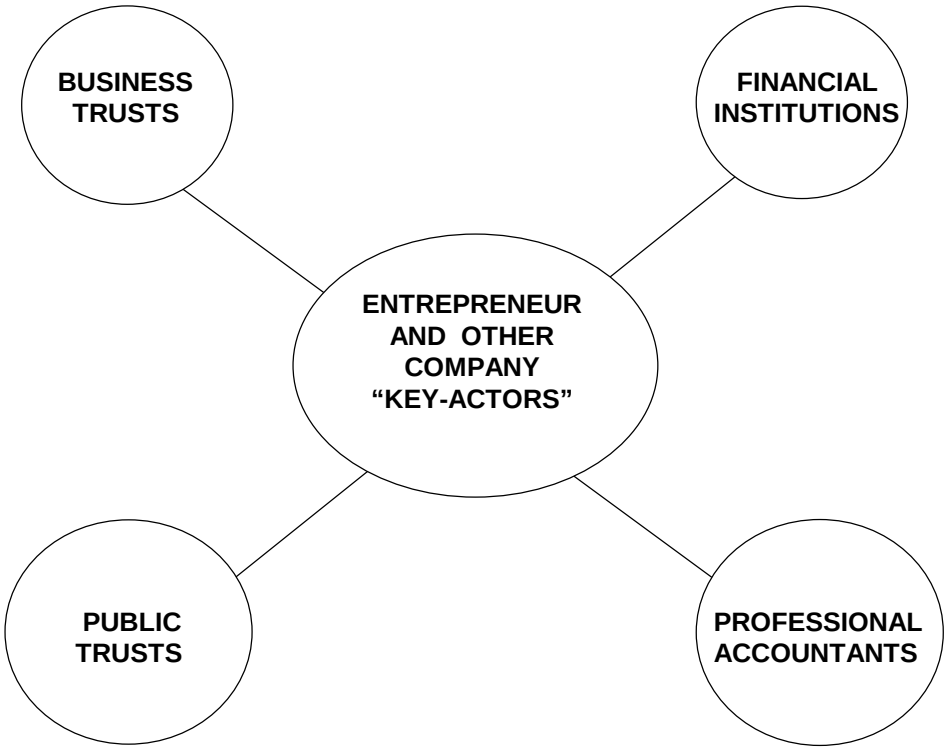

FIG. 2: Main "actors" involved in the business planning process in small firms

Particularly during start-up stages, very often *professional accountants* are asked by entrepreneurs to draw up formal business plans, mainly in order to benefit by financial grants and to get credit from banks. Both procedures to be followed and information that such plans have to provide are usually standardized by those institutions who give grants, such as *public trusts*, *banks* and other financial entities. For example, in Italy, the Ministry of Industry sets standards - software spreadsheet model included - to be followed by entrepreneurs to draw up their business plans to benefit by grants [42], in order to finance long-term investments (e.g. new premises, machinery, etc.). The Ministry entitled some banks to evaluate business plans according to well defined parameters such as: "equity-investment ratio", percentage of requested grant (on total investment), new employees related to the investment, environmental quality of the project and regional area where investment will be done. Likewise, a national youth business trust [43] defines standards to be followed to draw up business plans and benefit by grants to start a new business. A very important role in promoting new entrepreneurship is also played by *private trusts*, who also help proposers to identify weaknesses in their business ideas through formal plans drawing up, according to a less standardized process. The above categories of "actors", who have a stake in the business planning process of a small firm, could significantly help entrepreneurs to experience business planning as a fundamental step to figure out future growth, rather than as a bureaucratic constraint to be fulfilled by professional accountants through the use of extrapolation linear techniques applied to past data. Consequently, a pre-requisite for such a "shift of mind" is that the above "actors" include among their roles also the promotion of new business culture oriented to learning.

In other words, they are the entry points for change to which primarily to refer. Fig. 3 offers a picture of how different actors could contribute to a business planning process leading to a written document, according to different growth stages of the small firm. It shows how the support of professional accountants, banks and public (as well as private) trusts can be significant, especially in the first two stages commented above. Even though the business planning process has to be standardized by funders - in order to guarantee uniformity in criteria used for proposals evaluations - and the resort of the firm to business planning is only occasional, a learning-oriented approach is to be used to involve entrepreneurs (and their professional accountants) to understand the logic which lies behind values embodied by the plan with reference to different time periods. This allows a smoother introduction of business planning in the firm culture and

[42] This is according to the law n. 488/1992.

[43] Such institution is *Società per l'imprenditorialità giovanile SpA*; it allows grants according to the law n. 44/1986.

will be helpful in moving towards next growth stages, where the firm will more regularly recur to business plans (e.g. at the beginning of each financial year), and will develop them according to critical functional areas (e.g., Finance, Marketing, R&D, etc.), with the support of professional accountants.

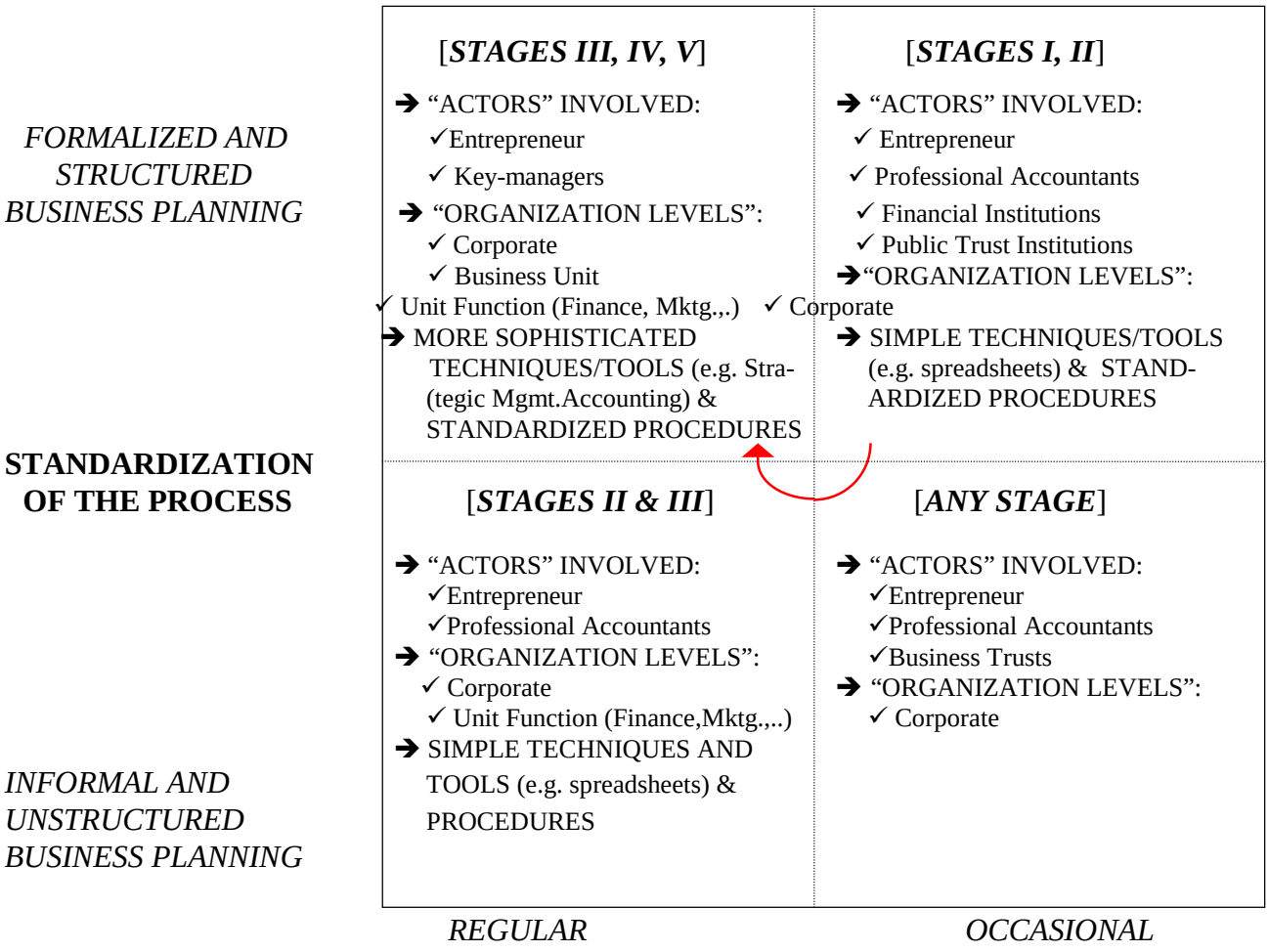

FIG. 3: Role of different "actors" in the small business planning process in a perspective of growth.

A wider resort to business planning, according to a learning-oriented approach, will allow firms to evolve smoothly through more advanced growth stages, which will imply a more formalized and structured process that will involve managers from different units and the use of both more sophisticated techniques and tools. It is also worth remarking that the above framework does not necessarily imply that each "scenario" automatically excludes others. It is intended only to support a qualitative reasoning about small business planning evolution pattern; it likely that even more developed companies draw up "ad hoc" plans to be presented to banks or public trusts. Moreover, as previously referred, even though small business entrepreneurs do not write formal plans in the start-up stages, they have implicit (i.e. non-written) plans in their mind. Finally, it is to be observed that the role business trusts can play in the planning process as an external "actor" may be relevant at any stage of small business growth.

Flexibility and user friendliness of modeling methodologies and tools and the role of System Dynamics

Beyond the general principles of relevance of business planning approaches, there are important critical issues to be faced in order if business planning is to be viewed as a learning-oriented approach. These are related to available modeling methodologies and software tools, and concern the accessibility and assimibility of information by the entrepreneurs trying to use them.

Accounting (and accounting-related) *models* can be considered as the main source of information in a small firm. They mainly draw data from transaction systems which may feed different tools, such as General and Factory Ledger,

accounting ratio analysis, etc.. Usually such information is only *periodically available* (e.g. at the end of each financial year) and is focused on a *sectoral* and *static perspective*, as it is based on records concerning single transactions, relating to well-defined items, and referring to a given period of time (i.e. it does not allow simulations). Transaction systems and financial accounting also gather a *detailed database* which is oriented to the evaluation of single particular "objects" (i.e. specific assets or liabilities, costs and revenues, etc.), often leading to *non-relevant* and *fragmented information* for strategic control. Accounting models are also based only on a *financial* approach rather than on qualitative or non-monetary evaluations. Such a perspective may be a serious drawback if information needs are related to growth management, where strategic key-performance-indicators (for example: supply delay, throughput time, product quality, knowledge, firm's reliability, customers or employees loyalty) can be measured only through non-financial parameters.

Spreadsheet simulation modeling, based on balance-sheet data extrapolation on a periodical basis, could help decision makers to better understand dynamics related to business growth. Many business plan projections are based on conventional spreadsheet modeling. However, very often, such an approach does not allow decision makers to face their strategic information needs. In reality, spreadsheet models generally lack flexibility: they are usually based on a linear, static and narrow approach. Their perspective is *linear* and *static* as it is based on the extrapolation of balance-sheet data and omits to consider feedback loops; it is *narrow* as it does not consider some relevant variables, like for instance competitors' policies [44]. Only apparently simplifying systems analysis allows one to reduce complexity [45]. Complexity and unpredictability ought to be understood and properly handled through modeling:

- interdependencies between variables
- relationships (sometimes of a non-linear shape) between policy levers and affected variables
- delays between causes and effects.

When a small business entrepreneur perceives such information gaps, she/he is used to follow the same paradigms related to the development of information and control systems in bigger companies [46]: this particularly implies an improvement of accounting models. Very often an *industrial accounting system* is adopted in order to calculate, through a database which is (for the most part) common to financial accounting, costs and revenues related to different processes, products and strategic business units. Even though a functioning industrial accounting system may be useful in a small firm, not always it is the most consistent and proper answer to business strategic information requirements. In fact, industrial accounting is based - similarly to financial accounting - on analytical and hierarchical databases which give rise to a detailed reporting which does not fit in small firms for three main related reasons:

1. it implies that somebody (e.g. a controller) in the firm should be in charge of reporting analysis to feed the control process. However, it is difficult to find such an organizational unit in many small firms, owing to the tendency to centralize managerial tasks and to cut fixed costs to reduce economic risks;
2. reporting delivered by industrial accounting is usually related to *responsibility centers* in order to allow managers to support performance evaluation and budgeting procedures. However, small firms often lack of a technostructure and formal procedures to evaluate performance and to formulate budgets involving different functional units and responsibility centers;
3. the entrepreneur and his direct collaborators usually do not have enough *technical competence* and *time* to analyze a detailed reporting and operate a diagnosis to correct, if necessary, adopted policies.

The potential for System Dynamics in fostering "double loop" learning in drawing up business plans

It should be also observed that while industrial accounting improves the accounting database, it does not fill information gaps that spreadsheets fail to satisfy. When the firm operates in a complex and dynamic system, and if mental models are only supported by the accounting system, it is likely that entrepreneurial decisions will be oriented to a conservative approach that will give rise to a *single loop* learning process [47]. *Single loop* learning implies that organizational routines are not questioned by decision makers for a relatively long period of time, and change mainly occurs through discrete events. According to such a view, strategic management is only seen as a matter of long term decisions and a sharp distinction is made between strategic *design* and *implementation* (fig. 4). The perils of *single loop* learning concern the possibility that current decisions and actions are taken according to a defined strategy which ceases to be consistent with the modified set of relevant system's variables. The higher systems complexity and unpredictability is, the bigger is such a risk. In order to overcome such weaknesses, it is necessary to enhance a *double loop* learning, which allows decision makers to evaluate consistencies in their "mindset", i.e. the way how they frame problems and strategic issues.

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[44] Richmond B., "*Competing in the '90s: Systems Thinking, Ithink and Organizational Learning*", in: VV.AA., *Introduction to Systems Thinking and Ithink*, High Performance Systems, 1994.

[45] Shrage "*Spreadsheet: Bulking up on data*", in: Los Angeles Times, 1991.

[46] This concept is particularly emphasized in: Gibb A. - Scott M., *op. cit.*

[47]

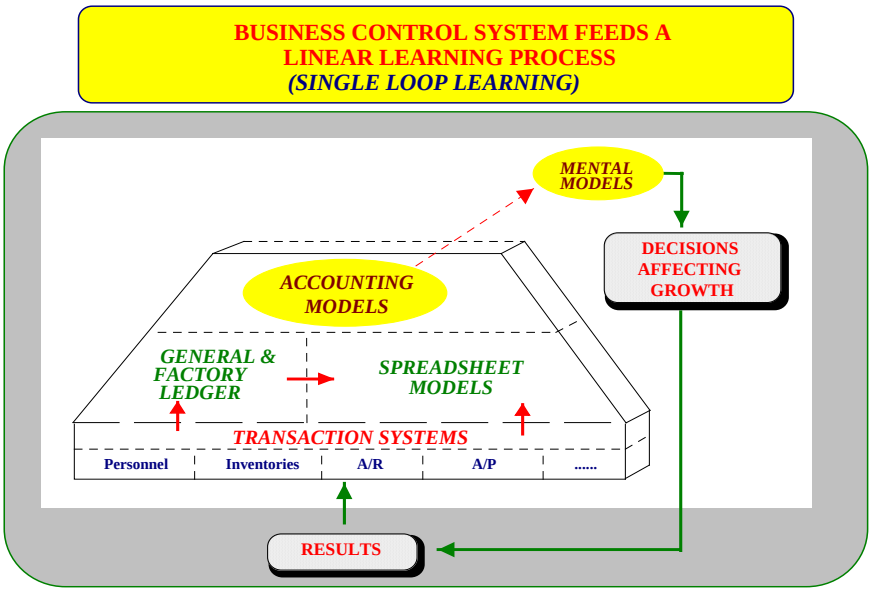

FIG. 4: Single loop learning from the use of only accounting models to support business planning

Double loop learning may be fostered by the System Dynamics methodology because this approach specifically allows the user/manager to make mental models explicit; to assess mental models consistency; and to improve mental models. A *dynamic simulation model* [48] is based on *explicit statements of policies* underlying the decision making process, according to conditions (information on *levels*, time delays and external input constraints) arising within the system. In accordance with the systems feedback view, decision making is seen as a *continuous process of converting information into signals* which feed *actions* oriented to change *levels*

Such a conversion process is not always clear and explicit in organizations and may concern different decision makers. The development of a system dynamics model is a highly interactive process involving members of the planning team in a small company (i.e. the entrepreneur and his direct collaborators), sometimes also professional accountants, other external "actors" and the modeler, who is usually a consultant. The process is coordinated by the modeler, who has to practice not only his/her technical abilities, but also *maieutics* [49]. In fact, he/she has to articulate and, then, to coalesce the views of participants through a process involving [50]:

- representation of company and business structures;
- capturing decision processes;
- specification of best-guesses and alternative scenarios for the economic and competitive environment;
- model simulation of the business to predict system behavior;
- reconciliation of behavior and performance with structure and decision processes.

Making decision processes more explicit [51] through dynamic modeling and improving them over time may substantially help people to better understand *a same objective reality* concerning day-to-day problems' structure, which they usually perceive differently because of their several *mental models*. Such a learning process leads to improve participants' mental models and helps them to achieve a common shared view of reality. System dynamics models may particularly allow one to:

- *improve learning* of the system (as a whole);
- *improve effective communication among key-actors;*
- *exploit the entrepreneur's experience and perceptions* about business;

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[48] Forrester J., *Industrial Dynamics*, Productivity Press, Portland, 1961; Forrester J., *Principles of Systems*, Productivity Press, Portland, 1968.

[49] *Maieutics* is a Socratic mode of inquiry, oriented to bring out a person's latent ideas into clear consciousness.

[50] Winch G., "Consensus Buiding in the Planning Process: Benefits From a "Hard" Modeling Approach", in: System Dynamics Review, vol. 9, n. 3, 1993.

[51] The process of knowledge elicitation though system dynamics modelling has been considered in depth by a number of authors. See: Vennix J., *Group Model Building*, Wiley, 1996; Richardson G. - Andersen D. - Maxwell T. - Stewart T., "Foundations of Mental Model Research", in: Proceedings of the 1994 International System Dynamics Conference, Stirling; Winch G., *op. cit.*; Richardson G. - Vennix J. - Andersen D. - Rohrbaugh J.- Wallace W., "Eliciting Group Knowledge for Model Building", in: Proceeding of the 1989 International System Dynamics

- *point out different policy levers* on which it is possible to act and *evaluate* different *effects* they may produce in the short and long term;
- *improve the key-actors continual experimentation*;
- *improve an interfunctional approach* to management problems, taking into consideration not only the financial value of information, *per se*, but particularly *trade-offs* between different business functions. This benefit is very important also in a small firm, although its organization structure is usually very simple, as it allows an entrepreneur (who is generally more oriented to a given business function) to perceive some implications for other sub-systems within the firm, relating to his/her decisions;
- *allow a non linear analysis* of inter-relationships between relevant variables;
- provide a *flexible user interface*;
- provide *microworlds* which can be quite easily modified, according to evolving real problem (and system) dynamics.

System dynamics models can support decision makers in a timely perception of rising negative feedback loops which make growth slower, giving rise to a resource waste for the company. Such an awareness may allow the company to better explore the opportunity to pursue new policies, levering on new input variables in order to reinforce the same or to enhance other positive loops. Likewise, dynamic models may also help decision makers to understand how to neutralize vicious circles, i.e. which policy levers to act on in order to promote negative loops that could lead to stability.

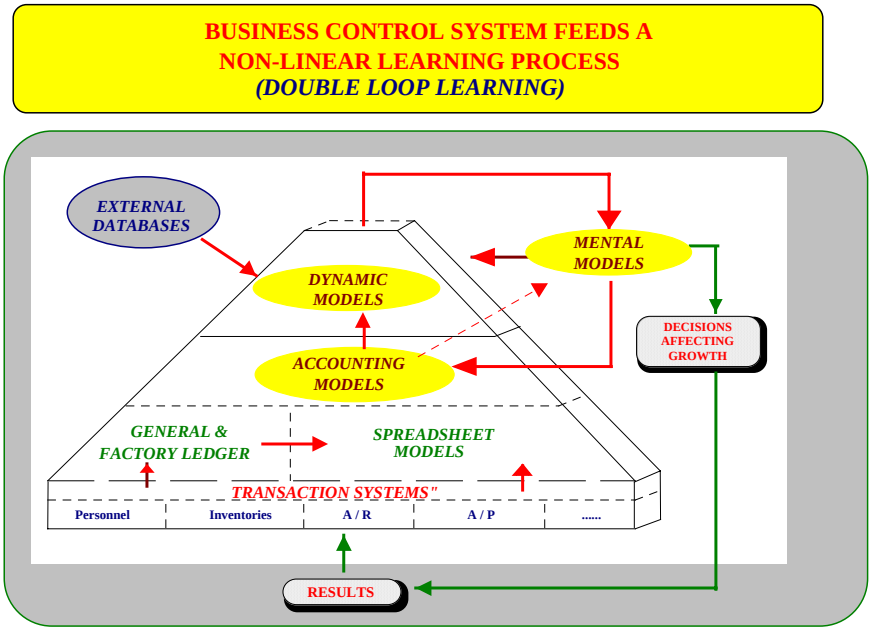

Fig. 5: Double-loop learning from a combining system dynamics and accounting models

An interactive periodical information exchange between accounting and dynamic models is likely to be more supportive to decision makers. The sharp difference between them does not mean that they are mutually alternative, but instead that they are complementary as they may satisfy different information needs [52]. As it is possible to see from fig. 5, the use of dynamic models allows one to feed a *double loop learning*, which supports mental models' improvement through an "intelligent" analysis of business phenomena, which are observed according to the feedback view, through the use of accounting models, of entrepreneurial mental database, as well as external sources of data.

Initial Fieldwork on small firms and other "actors" in their planning process in U.K. and Italy.

As a complement to the above analysis on business planning and models/tools which may better support a learning-oriented approach to business planning in small firms, some preliminary fieldwork has been conducted to investigate some of the relevant issues with small companies and other "actors" who have a stake in their planning processes - professional advisers and fund providers. This fieldwork has been carried out in the Sicily in Italy and in the Southwest

peninsular in England. These regions display certain similarities in industrial formation, are both towards the periphery of the European Union, and both share a critical dependency on the small firm sector for regional employment and economic health.

This informal first survey process sought to confirm our working hypotheses that small business entrepreneurs are generally more inclined to action than to planning, and resort to written business plans primarily for external reporting (e.g. to get grants or loans). Such plans are usually drawn up according to linear hypotheses. Most of the interviewed entrepreneurs are aware of inconsistencies underlying extrapolative business planning. To overcome such deficiencies some of them also recur to more detailed written operational plans, based on spreadsheets and on a reactive (rather than proactive) approach, for internal reporting. In many other cases, due to lack of management competences, time and human resources, written plans for internal reporting are not used. A summary of main issues from more significant cases is sketched here.

Leisure/Tourist Attraction. *This business is based around a restored classic Victorian garden, and with entrance fees and retail sales has grown over the last few years to a turnover of £4m (pounds sterling). The entrepreneur (who is the main driving force) has a clear picture of the type of business he wants. He has a clear view, in his mind, of the impact the firm has on the area and what influence he wishes it to have. Employment and suppliers has been kept local where possible. The belief that the local business environment is maximizing the potential is central to the thinking. The reality may be somewhat different from this view! Despite this very experienced business entrepreneur, marketing being his main strength, he readily admitted that they had not understood the dynamics of money which in a period of high growth caused problems. Discussion confirmed that a model that could run growth scenarios would have had an impact on the understanding of the potential problem before it became damage limitation. The role of funders/lenders/grantees was criticized at this interview. Major funding applications were taken very seriously but the smaller applications were handled by people in the funding agencies or banks who lacked the vision of the entrepreneur. It was felt that those scrutinizing the applications for funding were not sufficiently skilled to deal with the more daring initiatives.*

Recreation equipment manufacturer. *This small firm, established on a small business park in Cornwall, manages to sustain a business with a wide international distribution system for its product. In its particular market sector - promotional and 'sports' kites - it holds a considerable share of the global market. The management here have a stronger background in financial management and, like the previous study, and had recently experienced a period of high growth. They were able to foresee the problems and acted to restrict sales in order to prevent over-trading. Once again they had not envisioned the problem early enough and the move was reactive rather than proactive. The interviewee confirmed the duality of business planning by stating that he had two plans one for the bank and one for the actual operations. Applications for grants/development loans were always accompanied by a business plan that was completed with the reader's wishes at the forefront rather than the businesses. It was also explained that with some kinds of grant initiatives, funds received could only be used for certain purposes, that the applications had to be directed to aspects of the business, but may actually be utilized in areas of actual need once funds were received. There was an implication than grant givers were aware of this switching - and 'colluded' in the process provided they felt that the funds would be best used that way.*

Ceramic Arts Small Business. *For the past three generations, this business-owning family has been involved in local arts (from 'hard-cart' handcrafting in the early stages, to ceramic art decoration in the last decades). Such activities have been carried on as craftsmanship till the year 1986, when - in order to give a permanent job to his four daughters - the entrepreneur started a co-operative firm. Until he was an artisan, the entrepreneur was fully involved in current working activities; after he started the firm he understood that he needed to plan for growth. However, he has never used written and formal plans; he intuitively manages commercial activities. Attending international fairs, contacting importers, agents and retail franchisees and studying market (on the field) are his main activities. His daughters and other members of the family work in the administration and production areas. The entrepreneur does not believe in formal budgets. The only time when the firm drew up a written plan was related to the need of a long-term loan from a financial institution. Informal, implicit and intuitive planning is instead done by the firm. The entrepreneur said that, during the start up stage, their goal was to employ 20 people in the next 10-15 years. Now employees are 52 and about 50 more independent artisans receive orders from the firm when its production capacity does not allow to face the demand. Such a sharp (and, in some way, unexpected) increase in demand happened particularly in the '90s, when the firm's sales revenues have risen from about US$110,000 to US$1,650,000. The entrepreneur is at the same time enthusiastic and worried about such a sharp growth. Sometimes it happens that production capacity (i.e. available ovens and employees) is not sufficient to face sales orders. This forces them to recur to overtime, which sometimes stresses their people. Consequently, the entrepreneur feels that a proper balance between success and stability could be reached with a US$1,350,000 sales turnover. Otherwise, it would be necessary to buy a new oven and to hire new employees; however, it takes some time to train artisans, as the firm cannot teach its craft and style. People can only learn on the job: many of their employees work in the firm from their childhood. The entrepreneur is now pursuing an external growth strategy, by starting new firms in related industries: i.e. wood and iron handcrafting, all located in Sicily. He feels that a simulation and learning-oriented approach to soft-planning could help him to manage the above issues.*

Small Hotel Firm. *The firm belongs to a wider holding whose main activities range from real estate management to sanitary fittings trade, whose equity belongs to a same family. The hotel (a "4 stars" category networked to an international chain) is located in a old aristocratic building of the 17th century and has been completely restructured since the beginning of the '90s. The entrepreneur, who is a 35 years old graduated in Business Administration, said that when he proposed his father to take over the building and to restore it, his idea was considered quite bizarre for many reasons. Such an opinion was due to: a) the big investment that was needed; b) the many uncertainties related to the dynamics of the tourism industry in Sicily; c) bureaucratic constraints related to*

difficulties to make reliable forecasts on the amount of investments to be done. Since 1990 the family owning the business has invested nearly 10 millions $ to restyle and restore about 80% of the building. Nearly 60 rooms are available and the target of 90 rooms will be reached in a few years, when all works will be completed. Even though the entrepreneur recognizes the potential utility of business plans, the firm has never recurred to them. He said that tourism is an industry where conventional business paradigms cannot be applied. The firm has a very simple annual budgeting procedure, which implies that sales revenues and costs are forecasted on the basis of past results. A particular attention is devoted both by the entrepreneur and the manager to effectiveness in the procurement and use of resources. Main problems are related to cost management and to "product" positioning, as competitors (i.e. to the entrepreneur, other 4 stars hotels) and tour operators very much compete on price, while selling at a premium price is the firm's policy. A very pragmatic and intuitive approach is used to plan commercial strategies. Long term goals are not made explicit.

***Electronic products company**. The firm was founded in the year 1994 and produces electronic telecommunication parts, such as amplifiers, power supply units, multiplexers, headends, splitters, antennas and other related products. It is managed by its four founders, each of them has his own specific competences and background (from R&D and production to logistics, scheduling and purchasing, to administration, marketing and sales) and employs 10 people. Its products are differentiated from those of bigger competitors as they are made according to specific requests of their clients, which are both installers and department stores. In the last years the firm has significantly increased its activity volumes and sales revenues (nearly 500,000 $) and is now planning for future sales expansion both to Northern Italy and in other European countries. Till now it hasn't been used any planning tool, but the firm is interested in applying a learning oriented approach to business plans. The owners feel that System dynamics may help them: a) to better understand financial issues and particularly net working capital dynamics (although they reinvest their profits, their "debts-to-equity" ratio is quite high); b) how to approach the competitive system and c) to match commercial with production and R&D efforts (an important key success factor in the industry is delivery time).*

***Local Arts Trust**. Such organization has been contacted to discuss the three year plan which it had to be submitted to funders. Although it is a trust, it has to have financial accountability and has managed in the last few years to turn a loss situation into one of profit by adopting business management techniques. The three year plan was compiled to meet the needs of the funders in a style that they requested, this turned out to be a re-run of the last years with little thought to the future. Business plans here were not used by the participants in addressing real issues that would arise for future management. They felt the need of a model as a tool to express their ideas of the future and the presentational properties for conveying them to committees by making the planning process more dynamic and robust. They also felt that the process would move from being one persons prospective of the future to a more group view. A model would focus attention on specific areas and concentrate ideas rather than the usual macro view of their operation. They, like many planners, spent lots of time on exogenous factors over which they had no control.*

***Local City Based Small Business Support Group**: This group offers support to new businesses starting up within their city boundaries. They are often the lender of last resort. Despite this, they have experience of businesses they rejected, returning for further development loans when they have successfully traded for some time. They accept that "massaged" business plans are a reality and advise on presentation to secure funding. They also confirmed that the nature of the business plan was not a learning experience for the emerging business. They confirmed that a visioning tool/game/learning environment would aid this process and allow a mutually beneficial zone in which to examine business potential from a perspective, that was not available by traditional linear planning. The interview indicated that there was a change in the applications for funding, and the quality of applicants is improving both in ideas and desire to work on their own. Applications from the currently unemployed (i.e. those forced by circumstance to start own business venture) were decreasing as normal employment prospects improve.*

***National Youth Business Trust**. This United Kingdom group provides similar support at a national level, but specifically aimed at young people are particularly active in the Southwest because of the traditional links and the nature of employment in the region. The regional coordinator agreed that the nature of traditional business planning for applications was somewhat flawed. He expressed interest in the idea of a learning/planning environment accessible by both sides in the business start up process. This idea of an arena for discussing the business from a neutral non-threatening perspective was appreciated, and the need for a more robust planning tool that aided the business to articulate its ideas and allow assumptions and scenarios to be tested was confirmed. Their own bureaucracy tended also to lead to manipulation of the loan application process.*

***Professional Accountant**. A professional accountant involved in drawing up business plans on behalf of small firms has been interviewed. He helps small business entrepreneurs to sketch their business ideas by articulating them in formal documents to be presented to public and private funders. When asked about approaches commonly used to draw up such business plans, he confirmed that a linear extrapolating point of view is usually applied, because of two main reasons: (1) as entrepreneurs do not like to spend their time in planning, they give him all main internal data and ask him to gather marketing data and, through them, to draw up business plans; (2) both frameworks and software tools to be used to sketch business plans are rigidly pre-defined by funders. He would like to apply a more learning-oriented approach and agrees on potential benefits related to it, but he feels that in Italy cultural barriers are a major constraint.*

Towards a taxonomy of "key-actors", approaches and applications in System Dynamics introduction

Preliminary characterization and analysis of these first fieldwork interviews has enabled an early attempt to be made to construct a taxonomy relating entrepreneurial types, approaches for intervening with system dynamics support, and its potential areas of application. Although an entrepreneur's mental database is one of the most important information

aware of the need to improve their mental models. In order to introduce system dynamics modeling as a visioning approach to support growth management, it is necessary to figure out different key-actors who are involved in decision making and to understand different roles they can play in the process. In fact, both the dynamic model building process and the use of the model itself can be related to two main contingent variables: a) the kind of entrepreneur's *personal business attitudes*; b) the nature of *decision making process*.

In terms of their *personal business attitudes*, it is possible to distinguish:

1. *gut-feeling* entrepreneurs
2. *technocrats*
3. *coordinators.*

Gut-feeling entrepreneurs are those who do not have any particular management skill, on a technical point of view; their actions are moved by a *vision* about firm's goals, sometimes even only by contingent opportunities. They 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. They are usually almost only involved in *current activities*, as they are not prone to delegate: time (even more than money) is their scarce resource and the major threats to their business survival are excessive growth rate and the difficulty to perceive the "border" between the firm's and business-owning family's resources [53]. It is difficult for a *gut-feeling* entrepreneur to timely understand to what extent desired growth may be sustainable by the firm. The fast and unmanageable bustle characterizing flow of activities in such contexts and the low level of managerial expertise of both entrepreneur and his/her collaborators are often the main cause of failure even for the brightest entrepreneurial projects. ***Technocrat*** entrepreneurs are those who are able to master a specific area of management, which 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 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. For example, improving products technical requirements (e.g. reliability) may be too expansive, if compared to the increase in relative market share and sales revenues. ***Coordinators*** are those entrepreneurs who have managerial capabilities in one or more functional areas. They are more able than the other two figures commented above to manage their time. The main problems related to management of growth policies for a *coordinator* entrepreneur are referred to the need of understanding the extent to which business growth may be internally (i.e. increasing investments in machinery, personnel, distribution systems, etc.) or externally (i.e. through networking or even mergers and acquisitions) pursued.

The second variable above stated, *decision making process*, may be characterized by the centralization present. A *centralized* process implies that all decisions impacting on business growth are taken by the entrepreneur. In such cases it is likely that both employees and other members of the equity owner's family are involved in operational activities. A *decentralized* decision making process implies that the entrepreneur is supported in his/her decisions concerning business growth strategy by a *technostructure*, i.e. a management consisting of other members of the equity owner's family and/or by employees.

If we cross the above two variables, we can obtain a *3x2* matrix explaining six different contexts - and, hence, strategies - to introduce system dynamics in a small firm (fig. 6). A first scenario may be referred to *basic entrepreneurial firms*, i.e. to those businesses which are run by *gut-feeling* entrepreneurs and whose decision making process is centralized. Dynamic modeling may help *gut-feeling* entrepreneurs to make their mental models explicit and to compare them to reality; learning may allow them to tame their own "growth at any cost" instincts or sometimes their opportunistic short-term profit search behavior. It may also help them to better perceive the "borders" between the business-owning family and the firm and to make decisions about company profits allocation and equity investments.

In order to introduce dynamic modeling in such contexts, a key-role may be played by consultants and, particularly, by professional accountants. They are very often the only category of professionals to whom a *gut-feeling* entrepreneur gives his/her confidence and delegates some activities concerning business administration. However, even though professional accountants' field of activity is related to information systems in a broader sense, the kind of services they are asked to offer does not concern support to business planning and learning, but instead external reporting in compliance with law precepts. This implies that usually main professional accountants' expertise concerns balance-sheets and tax related problems. Although the "profile" of a professional accountant is substantially different from that of a modeler, the role he/she may play to introduce System Dynamics in a small firm may be considerable. In fact, both lack of time and of technical competence on information systems is likely to lead entrepreneurs to delegate to their professional accountant the decision on whether to take or not to use dynamic modeling as an approach to support business. In other words, very often a *gut-feeling* entrepreneur is not able to understand the difference between

[53]

accounting and dynamic models, and between simulation through spreadsheets and system dynamics models - all these tools are implicitly "posted" under the same label of *information systems*.

The main application of system dynamics in *basic entrepreneurial firms* maybe corporate financial modeling, i.e. analysis of financial (and economic) implications related to growth and opportunistic (e.g. niche) policies. Two main evolutionary stages which may characterize basic entrepreneurial firms may be referred to *evolved* and *specialized* businesses. *Evolved entrepreneurial firms* may be distinguished from *basic* ones as they are characterized by a decentralized decision making process. The peculiarity of these companies is a less centralized management style; in fact, other members of the business-owning family and some of more experienced employees are usually more involved in the business administration. In order to introduce System Dynamics in such contexts to support business planning, a leverage point can be represented not only by professional accountants, but also by other (younger) members of the equity-owning family. In this perspective, dynamic modeling may become an approach to train new entrepreneurs and to prepare both the succession process and the shift of the firm to a more professional and technocratic stage. In fact, the more younger members of the family will become more acquainted with system dynamics methodology and of the way how it may interact with accounting models, the more it will be likely that business events will be more consciously interpreted and change will properly planned in the perspective of business continuity and growth.

Another conceptual evolutionary stage of *basic entrepreneurial firms* may be referred to those companies that could be defined as *specialized businesses*. Such firms are headed by *technocrat* entrepreneurs, who are not used to delegate the fulfillment of managerial tasks. *Specialized entrepreneurial firms* substantially differ from *basic* ones as entrepreneur has a consolidated technical expertise in a given functional area. So, dynamic modeling may help *technocrat* entrepreneurs to better perceive interfunctional implications related to their policies. The logical further evolutionary stage of entrepreneurial firms is that of *professionalized* ones. In such companies the entrepreneur is supported by a simple technostructure, which is also made up by other members of the equity-owning family. To introduce system dynamics in *professionalized entrepreneurial firms*, a key-role can be played by managers. In this context, the role of professional accountants is usually less important and the modeler may directly relate to managers and the entrepreneur.

Two other scenarios occur in terms of *network-integrated* and *group-integrated* entrepreneurial firms. In such contexts, business growth is externally pursued - respectively - through agreements with other firms and/or artisans concerning the fulfillment of some production or distribution activities or through mergers and acquisitions through which it is possible to give rise to diversified holdings. In the case of *network-integrated* firms, the entrepreneur is a coordinator of activities carried out by other small firms. Decision-making process is usually centralized and the *coordinator* entrepreneur has management experience and a relational charisma which can be used as a lever to introduce dynamic modeling to train him and affiliated entrepreneurs in understanding advantages of networking. In *group-integrated* firms, the entrepreneur and other managers (who are often members of the equity-owning family) act as coordinators of activities carried out by the management of other firms belonging to the holding. In these companies, system dynamics may both help the coming headquarters' management to understand how to exploit potential synergies between business units and support functional and interfunctional modeling on a business unit level.

It is worth remarking that the framework discussed above and depicted in Fig. 6 neither pretends to take into consideration all the possible scenarios concerning the introduction of system dynamics models in small firms, nor excludes that specific situations could present concurrently features and problems related to more than one of the above scenarios.

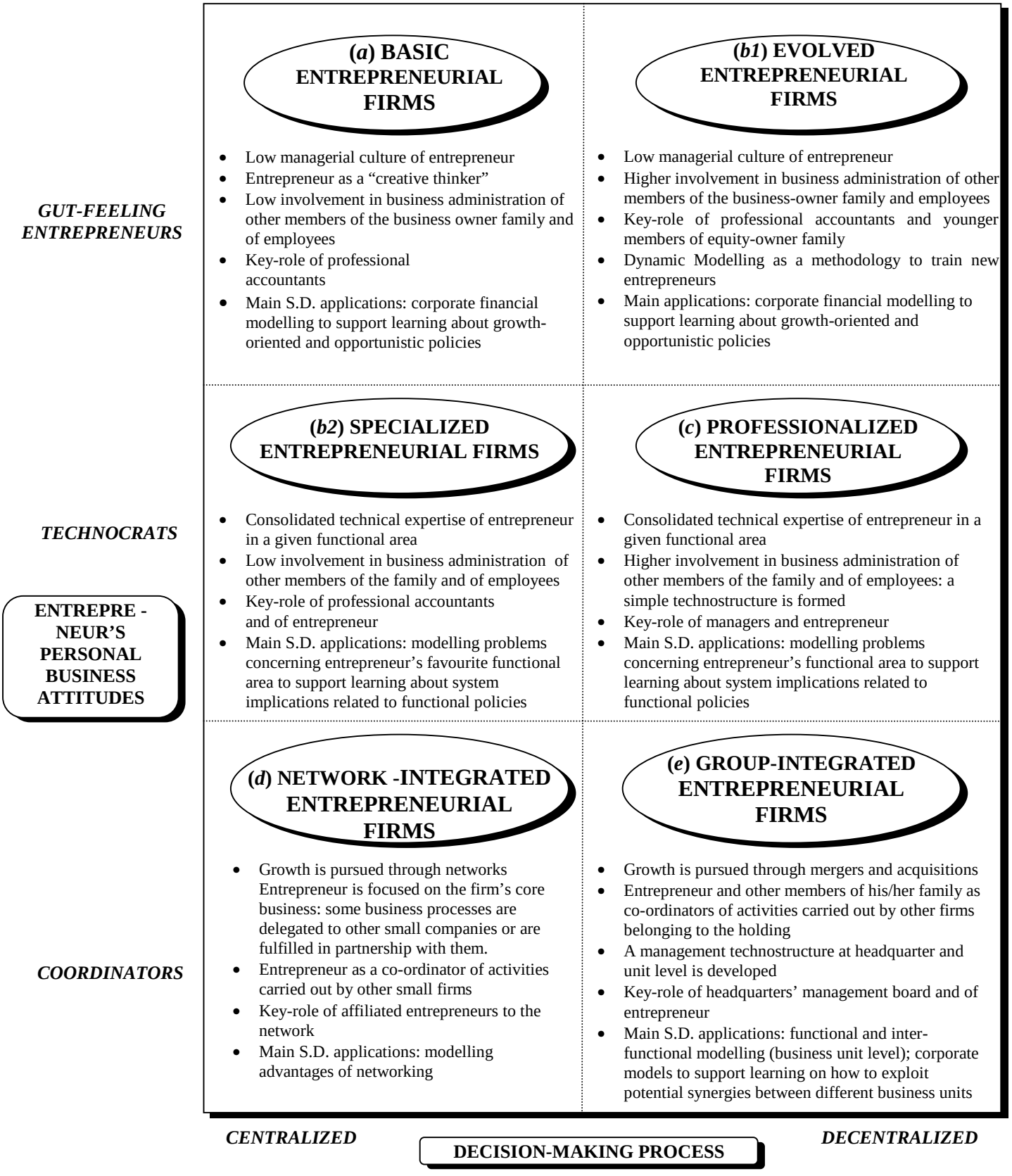

FIG. 6: A taxonomy of main problems and key-actors to taken into consideration to introduce System Dynamics in small entrepreneurial firms

Therefore, the purpose of Fig. 6 is to provide a framework for qualitative reasoning about the role of system dynamics in small firms, from the perspective of different contexts and "actors" who could potentially help the modeler in introducing it as a visioning tool to support business planning and growth management.

Concluding remarks and implications for future research.

This paper has identified an apparently well-known but nevertheless critical deficiency in business planning in enterprises. Such firms frequently prepare formal business plans for the purpose of gaining funds, either as commercial loans or through a variety of governmental or charity grants; these plans are usually developed at the start-up phase, as the firm is going into some form of growth phase, or occasionally to deal with a specific problem (often over-trading). However, there is no guarantee at all that the formal plans prepared to meet the needs and criteria of the funder, actually assist the entrepreneur in understanding the dynamics of his/her firm. Anecdotal evidence from the preliminary fieldwork confirms that such entrepreneurs are likely to have separate ideas, mental models, or even formal plans that serve the operational needs of the firm, and that these may be different in significant ways from any plans submitted to outside agencies. There appears therefore to be a potentially dangerous conflict in that no one single, shared vision of the firm and its future is available to the internal and external stakeholders in the firm.

The analysis in this paper has investigated the critical issues in business planning in smaller firms, and the role and expectations of key actors in the funding of them in relation to these plans. In considering the various modeling approaches to support the planning process, we have offered a rationale for adding dynamic modeling - specifically via system dynamics - to this process in order to bridge the gap between internal plans and plans developed with, or delivered to, the external actors. In a preliminary way our fieldwork also confirmed the potential acceptability and desirability of this addition. The entrepreneurs interviewed frequently acknowledged that they did not always fully comprehend the dynamic consequences of their plans - "…we did not understand the dynamics of money" - and that they would welcome support in improving this. There was also a feeling that greater professionalism and rigor in planning process, both on the part of entrepreneurs and their advisers, would be beneficial to all.

We recognize that system dynamics has probably not impacted on smaller firms to the extent that it has with major, especially multinational, corporations. Though not investigated here, it may be assumed that this is to due to some or all of these factors: the relative expense of developing validated quantitative models, a reluctance in smaller firms to allocate time to planning/learning and away from operational issues ('shifting the product'), a lack of exposure to the method by both the entrepreneurs and their advisors, and a lack of focus towards this sector by system dynamics specialists. We have therefore produced a suggested taxonomy for classifying the problem domains, entrepreneurial characteristics, and style of decision-making in the firms.

The research is now developing through a consortium comprising the lead researchers based in Sicily, Italy, and the Southwest peninsular of England, agencies that fund and support small firm start-up and development, the NatWest Financial Literacy Centre based at the University of Warwick, and entrepreneurs and small enterprises themselves. It is anticipated that there will be an orientation, at least in the early stages, towards organizations that are characteristic of the two regions identified. These both have relatively low economic bases, and owing to their locations at the periphery of the European Union experience common problems of logistics and dying traditional industries (for example, the extractive industry in Cornwall). They consequently have a specific emphasis on wealth- and job-creation through small firm development. The expected initial industries will be the tourism/leisure related sectors, and small scale manufacturers that are relatively labor intensive - including craft industries. The research is targeted towards the development of a practical integrated planning/learning process for smaller firms, and has two related foci:

1. The development, refinement and validation of the taxonomy for system dynamics interventions in smaller firms.
2. The creation of software that can combining formal business planning with operation planning and learning. It is critical that the software be accessible by the smaller enterprise and/or its advisers.

In this second objective, design criteria for the software recognize the inherent problems of cost and engagement of entrepreneurs in the planning process and particularly where quantitative analysis and modeling is involved. The specification therefore is for software that is very easy and attractive in its use, and that can easily and quickly calibrate basic planning model structures to the individual firm. It is envisaged that a computer-aided visioning interface[54] linked to a dynamic model with a flight simulator-type working space will provide a vehicle for this process.

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[54] Winch, G.W., Sturges, S., and McDonald, J., "Frameworks and tools for computer-aided visioning", *Proceedings of the 1997 International*