How to define a profitable and sustainable growth policy in a changing market? A case study: a small publishing company

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Abstract

A tireless architect founded Grafill, a small book publishing company, at the end of the 80s. He believed that in the real estate and construction sectors there is a lack of practical, reliable and punctual sources of information. To cover such a gap, he launched a monthly review and, started to publish a series of specific books and software to better support engineers, architects, and public utilities in their tasks. During the last two years, both the number of books published and software released, and their relative prices have been sharply increased. Such business strategy contributed to strongly increase company sales revenues, but it didn't generate a proportional growth in company bank balance. Such period has been also characterised by investments in E-commerce and related customer services, which shows a growing contribution in terms of company sales. On the basis of such results, the entrepreneur believes that this is the right way to pursue Grafill's growth. In particular, for the next two years, he foresees to reinforce the number of product to be launched and E-commerce activities. Such growth policy, according to owner's vision, will enhance virtuous circles that will allow the firm to increase direct sales and related margin, so that to finance further business development. A system dynamics modelling approach has been adopted to better understand business areas interconnections, to assess sustainable strategies and to share learning among the entrepreneur and his direct collaborators.

The firm as a dynamic system: implication for business management policies

The continuous changes in technological innovation and its fast development have strongly contributed to increase small businesses' complexity and difficulties in coping with new market dynamics. The relevance of such aspects is obvious in all firms, but it assumes a critical role in small firms. Such companies are very often characterised by limited financial and management resources and, as a consequence, a reactive rather than proactive business growth strategy may easily lead to business failure. A case study has been analysed – by the light of the sustainable growth model combined with the system dynamics perspective – to provide insights and

contributions in helping both small and medium enterprises (SMEs) and academic researchers in better understanding and designing SMEs' sustainable growth strategies.

A prerequisite to define a profitable and sustainable growth policy in a changing market is to understand the interrelationships among company sub-systems and between the firm and its relevant environment. For this reason, it has been adopted a business framework analysis to depict the firm as an interrelationship of variables that continuously interact with the environment. In fact, by adopting a system perspective, a firm can be seen as a dynamic interrelationship of different elements or variables aimed to pursue company goals. In particular, a company can be represented through a combination of three main elements: 1) a *structure* in terms of resources (e.g., capital, personnel, organisation) that represents the backbone of the company; 2) *management activities*, that can be distinguished in operational and strategic. Operational activities are usually short term oriented and focused on efficient utilisation of available company resources (e.g., equipment, human resource). Strategic management activities are long term-oriented decisions, aimed to define company targets and related policies and organisational structure. Indeed, in SMEs such distinction becomes very hard because they are often characterised by unstructured management organisation (e.g., not well-defined personnel roles) and what can be defined as 'operational' in the short term could become 'strategic' in the meantime (Bianchi and Bivona, 2000). For instance, operational management activities through an efficient utilisation of company resources based on costs reduction, a standard customer's services (i.e., based on low lead time) can also generate strategic outcomes that may allow the firm to easily catch up business goals. And, finally, 3) *management results* represent the third aspect of the firm. Management activities are often measured by using indicators to take into account *financial* (e.g., return on investment, return on equity, debts/equity ratio), *competitive* (e.g., market shares, number of customers) and *social* (e.g., personnel, shareholders and financial institution satisfaction) *results* and to capture business growth. In particular, business growth can be analysed according two dimensions: a 'quantitative growth' characterised by an increasing in company turnover, human resources, etc., and a 'qualitative growth' in terms of human resources skills, innovation, business flexibility in adapting to environmental changes. Such distinction is helpful to identify *apparent* (i.e., only quantitative) and *short term* from *real* and *sustainable* medium/long term business growth.
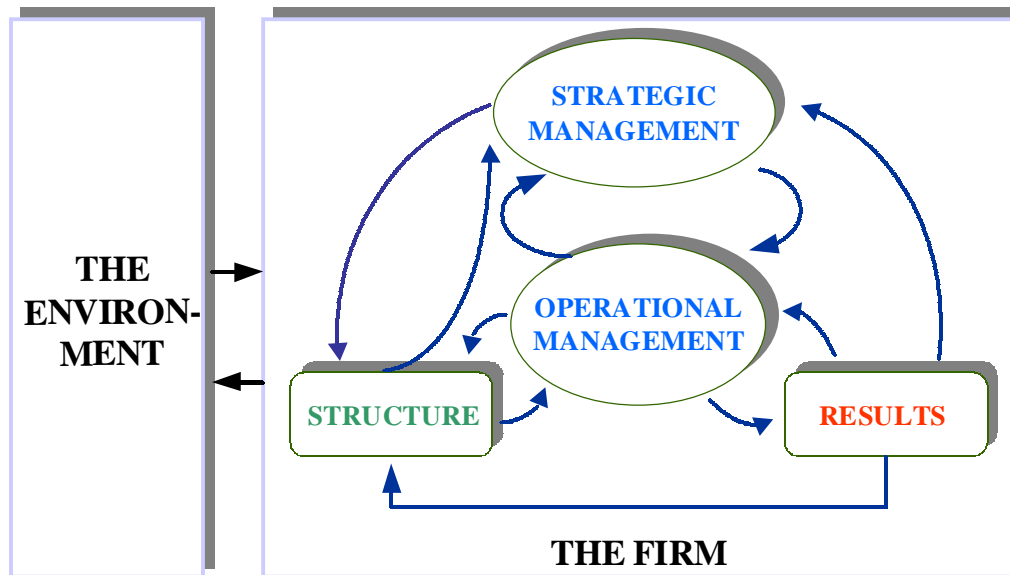
Figure 1 – The Business System

(Source: Coda, 1989)

As we can see from the above figure, efficient operational management activities and effective strategic management activities could modify the business structure of the firm, on the basis of the environment's changes, leading to firm growth. Such modified business structure could foster virtuous circles that may allow the firm to reach/maintain both a sustainable competitive advantage and financial business equilibrium. On the contrary, inconsistent management activities could generate eroding processes of company resources leading to business crisis. In fact, if business growth is generated by chance and is not well supported by coherent strategic and operational management activities, a potential business failure may eventually result.

The above framework is an important first step to define the main forces that have to be taken into consideration to sketch a growth policy for a firm. However, to focus on the relevant aspects that could influence business growth, it is necessary to follow a selective approach. Often, one of the main problems for management is the following: given several external forces, how can the firm monitor all environmental conditions? In defining an effective environmental framework of analysis, Grant (1995) suggests to distinguish *vital* from *merely important* forces. In particular, he suggests that a firm should focus on its network of business relationships that is formed by competitors, suppliers, and customers. He also states that this is not to say that general environmental factors such as economic, social or political trends are unimportant, but they may be critical determinants of the threats and opportunities a company could cope with in the near future. Indeed, in a changing and unpredictable business environment company strategies can not neglect

to take into account macro-environmental forces such as technological, social, national/international developments that in today's economy are strongly affecting firm dynamics (i.e., "the new economy"). Understanding business internal interconnections and the relationships between the firm and the environment in which it operates will help us in supporting how to define a business growth strategy and to seek for relevant forces that could play a crucial role in such analysis. In defining a business growth policy the strategic and accounting literature suggest to take into account the sustainable growth model. In particular, this paper aims to combine such an approach with the system dynamics perspective and apply it to a case study.

Company sustainability

According to the business management literature, a firm in pursuing business goals has to take into account either internal (e.g., owners, employees) and external (e.g., banks) business key-actors expectations and it has to maintain an economic and financial equilibrium. In particular, a firm to reach a sustainable pattern should be able to dynamically take into account all previous remarks. For example, business success based on aggressive commercial policies that generates in the short-medium term financial shortages could cause banks' complains and, as a consequence, a reduction in available bank credit leading to a business liquidity crisis and subsequently a company failure. From the above statements it is possible to observe that a company to sustain or reach a given market position has to be able to:

a) promptly adapt its business structure to new market conditions (*Durability*);

b) self-finance its business activities in pursuing business goals (*Autonomy*), and
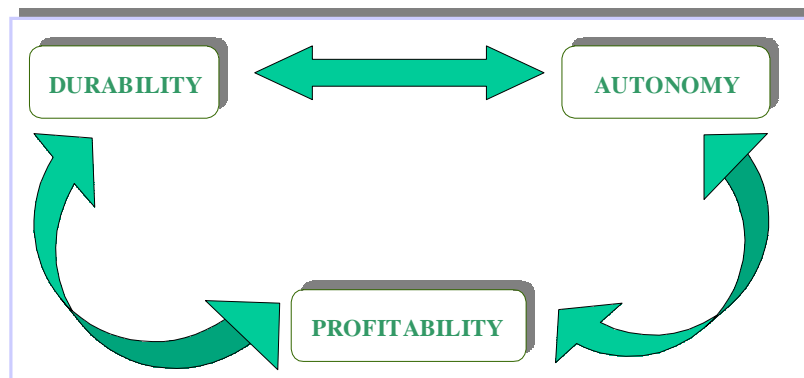
c) achieve a financial equilibrium (*Profitability*).

Figure 2 – Business interrelationship between Durability, Autonomy and Profitability
(Source: adapted from Airoldi, Brunetti, Coda, 1989)

4

The structure reported in figure 2 allows one to capture the basic factors that can lead to virtuous business cycle. Nevertheless, to define a sustainable growth policy all previous aspects have to be combined with a business growth rate suitable with the competitive arena dynamics. Such business growth has also to be in consonance with a balanced financial structure according to the equity owners' strategies and external key-actors' expectations (e.g., banks and financial institutions). In other words, a sustainable growth strategy has to allow the firm to achieve a satisfactory business growth, profitability and liquidity ratio taking also into account environmental dynamics and owners' requests.

Traditionally, the relationships between growth, profitability and assets changes have been analysed through the *sustainable growth model* (Zakon, 1966). Such a model is one of the cornerstones in the financial literature, to which both researchers and practitioners have been referring over the last decades. This model suggests that growth could be internally sustainable, if the net assets growth rate is not higher than the retained earnings growth rate. A first version of the *sustainable growth model,* that is the sustainable 'internal' growth model, is only based on the current internal flow of funds (Current Income + Depreciation). Such statement is due to the following assumptions: (1) capital investments are considered as a scarce resource, both in terms of equity investments and debts, and (2) the management desire to maintain the actual financial structure. In other words, market difficulties to find out financial sources, on a side, and the financial structure desired by the management, on the other, force the firm to finance business growth through current internal flow of funds.

According to such model, a company can grow – without external capital investments and changes in the financial structure – according to its ability to generate internal flow of funds. In particular, if company internal sustainable growth rate is expressed as 'Delta equity percentage' and the current internal flow of funds as Retained earnings percentage divided by equity, company internal sustainable growth rate (g) can be seen as follows:

$$[1] \qquad g^1 = \frac{\text{Retained earnings}}{\text{Equity}}$$

If we observe that 'Retained earnings' is equal to 'Net income – Dividends', through some mathematical operations, the previous formula can be expressed as follows:

$$[2] \qquad g^2 = ROE\,(1\text{-}d)$$

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[1] g = company internal sustainable growth rate (% changes in initial equity); Retained earnings/Equity = current internal flow of funds %

[2] Some of the most common used measures to evaluate business profitability are: the 'Return of Investment' ratio (ROI), which shows the ability of the operational activities to generate income from a given level of investment, and the

In other words, if a company foresees to reach a ROE = 20% and to distribute the 30% of the Net income (d = 0,3), it can self-finance an assets growth equal to 14% (20%* 0,7).

In reality such model embodies some limits related to the ability of the firm to find out new financial sources and owners' willingness to accept changes in the business financial structure. Such limitations can easily be overcome by reviewing the previous formula.

$$[3a] \quad G^{*\,3} = \frac{\Delta A_{(t)}}{A_{(t)}} = \frac{\text{Retained Earnings}}{\text{Equity}_{(t)}} + \frac{\Delta \text{ New Equity Investments}_{(t)}}{\text{Equity}_{(t)}} + \frac{\text{Debts}_{(t+1)} - \text{Equity}_{(t+1)}}{A_{(t)}}$$

As we can observe from the above formula [3a], the business sustainable growth rate is characterised by three components:

1. Retained earnings/$\text{Equity}_{(t)}$ = changes in assets % due to changes in current internal flow of funds;

2. Δ New Equity Investments$_{(t)}$/$\text{Equity}_{(t)}$ = changes in assets % due to new equity investments;

3. (Debts$_{(t+1)}$ – Equity$_{(t+1)}$)/$A_{(t)}$ = changes in assets % due to changes in the debts/equity ratio.

A raise in all these three factors contributes to increase the business sustainable growth rate. In fact, an increase in retained earnings, equity investments and in the amount of debts, by generating financial resources, encourages company growth. In particular, it is worth remarking that high dividend if, on a side, satisfies business-owners' requirements and expectations, on the other, drains financial resources that could fuel further business growth. As a consequence a company that wants both to maintain a specific growth rate and to reward equity investments according to business-owners' expectations has to increase business operating profitability and/or its debts to equity ratio. Nevertheless, an increase in debts could provide new financial resources and, hence, generate further growth if the cost of borrowing is lower than the return on net assets. Such statement is directly related to the correct use of *financial leverage*. In fact, in such a case an increase in net profitability generates new financial resources leading to further business growth. An example will help the reader to better understand the above formula [3a].

'Return on Equity' ratio (ROE), which is the relation between the net income generated by all business activities and the amount of the equity invested.
ROE = Net Income/Equity
d = Dividends paid % (Dividends Paid/Net Income).
[3] g * = sustainable growth rate
A(t) = Ending total assets from the previous period
Equity(t) = Equity at the beginning of the budget period
Equity(t+1) = Equity at the end of the budget period
Δ A(t)= Changes in Assets.

At the beginning of the budget period, a company appears as follows: Assets (A_0) = 1000, Equity$_0$ = 500 and Debts$_0$ = 500. For the budget period, the company foresees:

- ROE = 20% (Net Income/Assets$_0$);

- d = 0,4;

- New Equity Investments $_0$ = 100;

- Debts/Equity ratio target (Debts$_{(t+1)}$/Equity$_{(t+1)}$) = 1,5.

On the basis of such figures, at the end of the budget period Equity could reach 660 (initial equity, 500, plus net income retained, 60, plus new equity investments, 100) and the amount of the debts could be equal to 990 (Debts$_{(t+1)}$/Equity$_{(t+1)}$ = 1,5 and, hence, Debts = 660*1,5=990).

$$[3b] \qquad g^* = \frac{100*(1-0,4)}{500} + \frac{100}{500} + \frac{990-660}{1000}$$

Hence,

$$[3c] \qquad g^* = \quad 0,12 \quad + \quad 0,20 \quad + \quad 0,33 \quad = 65\%$$

The above formula shows that the:

- company can internally finance business growth equal to 12% (100*(1-0.4)/500);

- new equity investments contribute to increase business growth rate for 20%, and

- changes in debts provide an increase of the 33% of the company sustainable growth rate.

In conclusion, such figure shows that the assets at the end of the budget period could grow up to 1650 (+ 65%) in compliance with the business financial structure desired by the management.

The above formula [3a] provides a simplified schema to figure out the relationships between the variables embodied in the business system. Understanding such links allows the management to improve business decisions aimed to achieve the desired business growth rate under a pre-defined profitability and debts to equity conditions. Such discussion can be reviewed on the basis of the diagram portrayed in figure 3. The causal and effects diagram shows how the three main business variables/decisions (e.g., retained earnings, new equity investments and the amount of debts) could foster or slow down company growth. In particular, an increase in retained earnings could generates internal flow of funds, enhances further business growth and gives rise to operating (ROI) and net (ROE) investment returns. Such business growth, by increasing ROE, will decrease the debts/equity

ratio and, as a consequence, the interest cost. Then, a reduction in interest cost will produce a further increase in ROE. Such interrelationships will generate, in the short time period, a virtuous circle that can easily feed business growth. But as equity will increase ROE will fall down. Afterwards, low returns could arouse owner's complains leading to a reduction in retained earnings. Consequently, the entrepreneur has to find out new ways to generate further growth. Furthermore, in case the debts/equity ratio is reaching high value, banks and/or suppliers could start to reduce company available credits, so that it will be necessary to restore the level of debts by increasing equity investments. But, if on a side such policy could re-establish the debts/equity ratio to a suitable level, on the other it will fall down 'again' net business returns. Such side effect represents a strong limit to business growth. In fact, low margin will produce equity owner's complains leading to an increase in dividends, a reduction in financial funds and as result business growth will slow down.
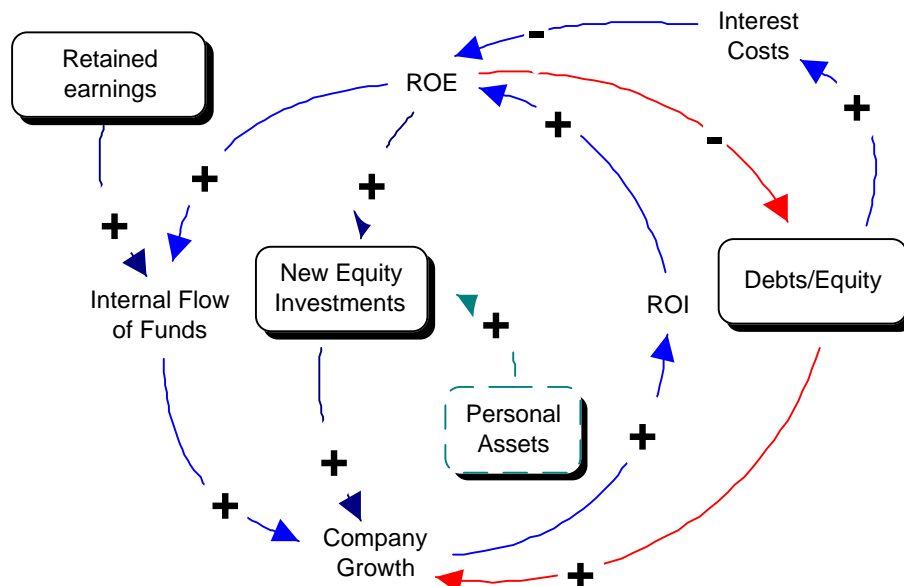
Figure 3 – The sustainable business growth model

Figure 3 also embodied a new variable: 'Personal Assets'. This variable has been added because it captures a peculiar aspect in SMEs' context. In such firms, family asset is often the main means to fulfil business growth. In fact, when financial institutions and/or business suppliers are not willing to increase firm credits and, hence, to finance further company growth, a firm can only try to win their reluctance by bringing new equity investments. In the following section the sustainable growth model has been applied a case study.

A small publishing company

At the end of the 80s, a tireless architect founded Grafill, a small book publishing company. He believed that in the real estate and construction sectors there is a lack of practical, reliable and punctual sources of information. To cover such a gap, he launched a monthly review and, started to publish a series of specific books and software to better support engineers, architects, and public utilities in their tasks. During the first 6th years Grafill faced a growing trend in the number of review subscribers and clients that never seemed to end up. Both sales revenues and bank accounts grew up, and a new employer was hired. But, such positive trend stopped at the end of the 7th years. As consequence, the owner starts to ask himself the following questions: how can be explained such a raise and fall in number of subscribers? What could cause such a decreasing pattern? How can a sustainable growth policy be designed and achieved? Does company growth requires further equity investments?

The owner-entrepreneur believed that an increase in the number of products launched will strongly contribute to increase Grafill's customers, sales revenues and bank balance. As a consequence, during the last two years, Grafill operational activities have been mainly devoted to slightly increase the number of books and software launched and to regularly publish its monthly magazine.
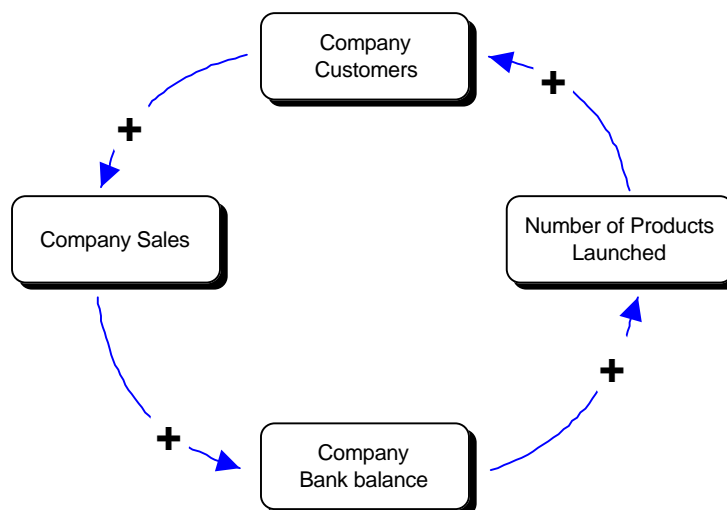

Figure 4 – Owner-entrepreneur's growth strategy

In addition, such period has been also characterised by a resources investment in E-commerce and related customer services, which shows a growing contribution, even if marginal, in terms of company sales.
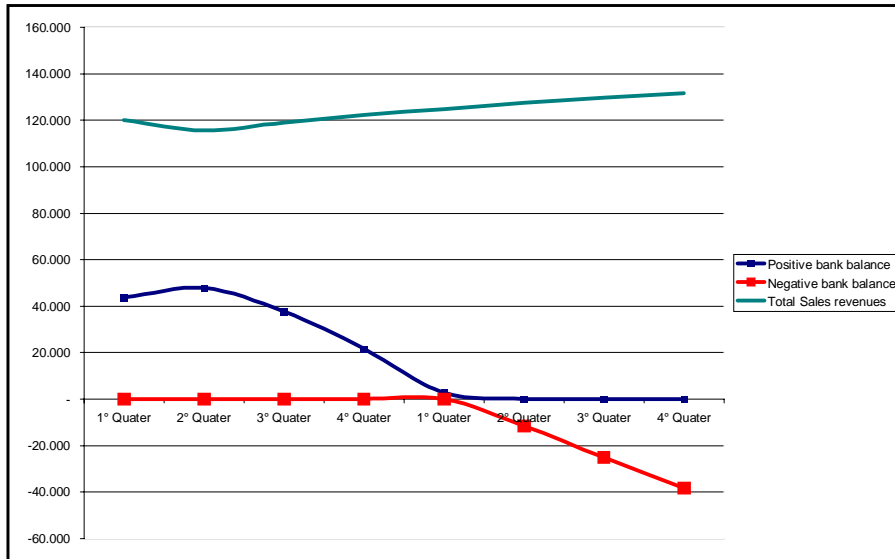

Figure 5 – Grafill's Total Sales revenues and Bank balance

The business strategy implemented by the owner – as expected – contributed to increase company sales revenues, but it didn't generate a proportional growth in company bank balance (see also appendix 1).

As we can observe in figure 5 Grafill's sale revenues grow up, while bank balance shows a decreasing pattern. Even though such strategy requires an increase in financial debts, it allows the company to reach an average operating profitability (ROI) equal to 26% and an average net profitability equal to 17%.

On the basis of such results, the entrepreneur believes that this is the right way to pursue Grafill's growth. In particular, for the next two years, he foresees to reinforce this strategy (that is mainly based on an increase in Grafill's portfolio products, see figure 4) by launching 3 products monthly. Furthermore, dues to market demand changes and Internet development, the entrepreneur is also oriented to invest on customer's E-commerce related services. For this reason, he prognosticates to increase E-commerce investments and to hire a new employer. Such decision aims to establish a direct link with the final customer, to shrink the distribution channel and, hence, increase company sales margin. The owner-entrepreneur believes that an increase in customers' related services tied to the "New Economy" (i.e., on line commerce) will not only increase company customers and sales, but will also improve company image. Such growth policy, according to owner's vision, will

enhance virtuous circles (i.e., based on *word of mouth*) that will allow the firm to increase direct sales and related margin, so that to finance further business development.

This strategy has been 'simulated' through a spreadsheet-based financial model (A summary of Grafill Income and financial statement has been reported in table 1).

	1999	1° Year (FORECAST)	2° Year (FORECAST)
INCOME STATEMENT			
Indirect Sales Revenues	494.309	667.680	908.219
E-commerce Sales Revenues	54.923	225.581	472.713
- Discounts	247.155	333.840	454.110
NET SALES	302.078	559.421	926.822
OPERATING INCOME	102.685	218.269	472.136
NET INCOME	48.227	100.274	225.843
FINANCIAL STATEMENT			
ASSETS			
Equipment (net of depreciation)	5.000	2.500	0
Inventories	364.440	545.788	629.602
Accounts receivables	56.357	68.505	86.421
Positive bank balance	0	0	0
TOTAL ASSETS	425.797	616.793	716.023
LIABILITIES			
Equity	292.867	363.059	521.149
Short terms debts	54.667	58.000	61.333
Negative bank balance	78.263	195.735	133.541
TOTAL LIABILITIES & EQUITY	425.797	616.793	716.023
ROI	24,12%	35,39%	65,94%
ROE	16,47%	27,62%	43,34%
DEBTS/EQUITY RATIO	0,45	0,70	0,37

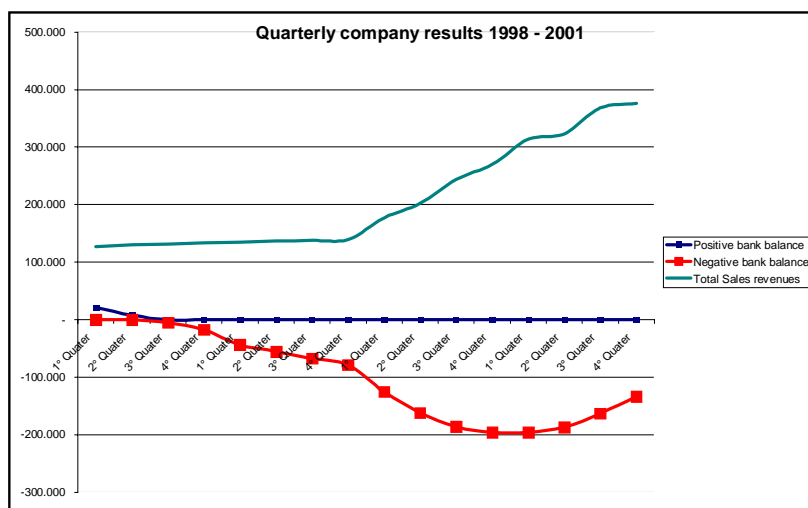**Table 1 – Grafill's results budget (2000 – 2001)**

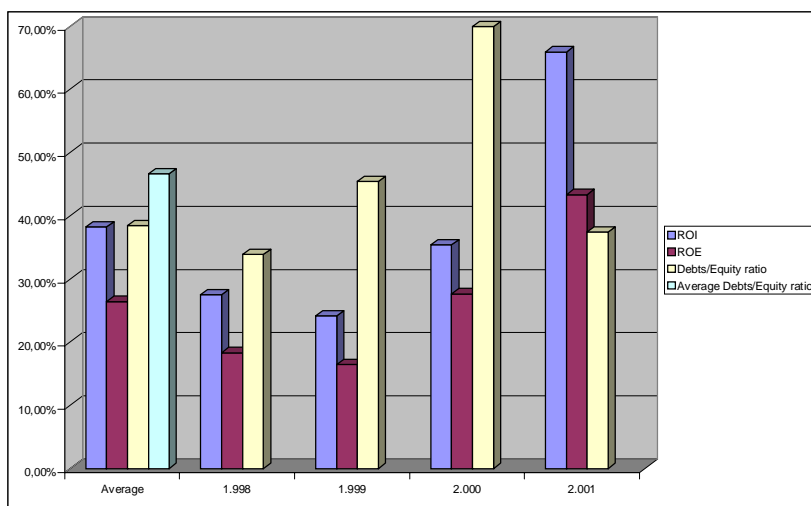**Figure 6 – Grafill's quarterly results (1998 – 2001)**

Figure 7 – Grafill's quarterly results (1998 – 2001)

Figures 7 and 8 reported above show that entrepreneur's growth strategy allows the firm to increase business operating and net profitability. In particular, such a profitability growth is mainly due to a sharply increase in direct sales (E-commerce) that lets Grafill to pursue an increase in sales revenues margin. Another effect of such policy is related to business liquidity. As we can observe from figure 6 company bank balance at end of the first year budget (31-12-2000) shows a decreasing pattern (-195.735), even if it starts to increase during the second year budget (-133.541). It is worth remarking that, at the beginning of the 2000, Grafill's bank balance was equal to – 78.263. In particular, figure 7 portrays Grafill's profitability and debts/equity ratio dynamics. During 2000 the debts to equity ratio shows a strong increase, but during the next year it goes slowly down. On the basis of such results, the owner entrepreneur is asking if this is a sustainable growth strategy. To answer such a question it has been applied the sustainable growth model. According to the Grafill's budget results (2000-2001), it is possible to detect the following information:

- average ROE = 35%; d = 0.3; New Equity Investments $_0$ = 0, and the desired debts to equity ratio (Debts$_{(t+1)}$/Equity$_{(t+1)}$) =1,5.

On the basis of such information the sustainable business growth rate would be:

$$g = 25\% + 0 + 43\% = 68\%$$

In other words, such estimation tells us that the total assets during the budget period can grow up from 425.797 to 715.339 (+68%) without changing the financial equilibrium defined by the owner-entrepreneur. In conclusion, according to the business sustainable growth model and owner's requirements (e.g., dividends, new equity investments debts/equity ratio) the suggested Grafill's

growth strategy which requires an increase in capital invested equal to 68% [716.023-425.797)/ 425.797], can be defined as "sustainable".

During last 30 years, the sustainable growth model has been mainly appreciated both for its simplicity and its useful suggestions during the budgeting process. In particular, it seems to strongly support managers to evaluate *ex-ante* the sustainability of business growth policies, according to a given financial structure and owner's requirement. Such model also looks useful to investigate *ex-post* analysis. In fact, entrepreneurs could evaluate periodically (i.e., quarterly) business reports by detecting possible variances, analysing their causes and implementing new decisions to achieve the desired business results.

However, although it is simple and relatively ready-to-use, it appears more useful for an *ex-post* analysis, rather than to support entrepreneurs in setting their growth policies for the future. Among its limits, it is possible to observe that it does not make explicit causal determinants of profitability and *business liquidity*; it does not take into consideration the 'time' variable (i.e. delays between causes and effects) and the dynamic feedback relationships between growth, profitability and liquidity. As a matter of fact, an analysis aimed to design a sustainable business growth policy can not discard to analyse the 'dynamic' interrelationships between business growth and company health. In order to overcame such weakness it has been built a system dynamics model.

The system dynamics methodology has been applied to take into account the dynamic interrelationship inside the firm and between the firm and the environment in which it operates. In particular, the simulation model 'dynamically' depicts the interrelationships between profitability, liquidity and business growth and the relationships between company perceived solidity and external key actors' expectations/consensus. For instance, available bank credit will increase as company turnover and equity will grow up, and vice-versa. In fact, the system dynamics methodology allows one not only to make explicit and dynamic the *implicit*, *linear* and *static feedback relationships* suggested by the owner-entrepreneur (i.e., see figure 4), but also to explore the existing relation between business results and external consensus (i.e., banks and suppliers requirements). The feedback relationships suggested by owner have been made explicit and embodied in the system dynamics simulation model (see figure 8).
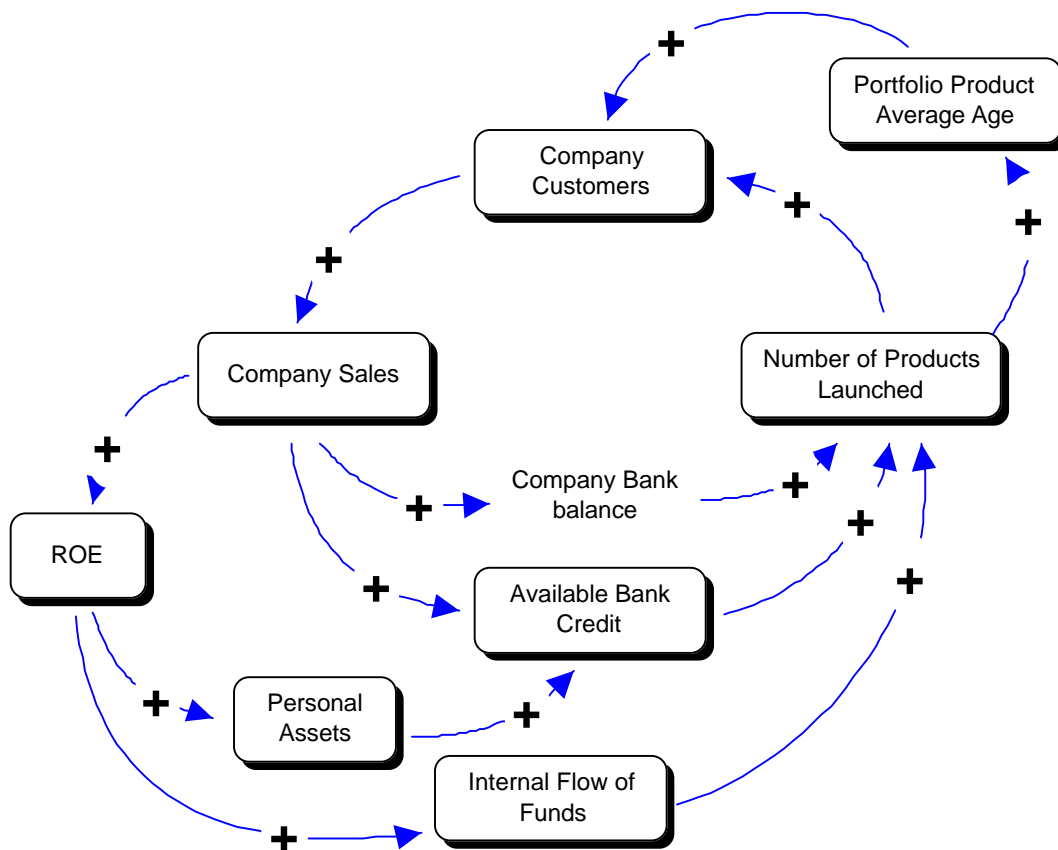
Figure 8 – Main (positive) feedback loops suggested by the owner-entrepreneur embodied in the System Dynamics simulation model

In particular, figure 8 captures the *positive* relationships between the following variables: 'number of company products launched' and company growth. In fact, an increase in company's products launched could generate a growth in company sales, and by generating new financial resources could feed further business growth. At the same time, a raise in return on assets could boost personal assets that through an increase in business solidity perceived by external actors generates a growth in available bank credit. As a consequence, an increase in financial resources could feed further rise in the number of products launched. On the basis of such relationships, the growth strategy suggested by the owner-entrepreneur has been simulated through a system dynamics simulation model. It is worth remarking that the simulation period has been divided in 192 weeks (4 years) and, while the first two years are referred to 1998-1999 the next two years are referred to the budget period (2000-2001).

As we can see from figure 9, company customers increase as the number of products launched growth up. Such a growth also generates an increase in customers' orders and company sales revenues. In particular, due to entrepreneur's decision to invest in E-commerce activities (see figure 10), for instance, web site improvement, security payment, etc., it is possible to observe a strong increase in direct sales revenues.
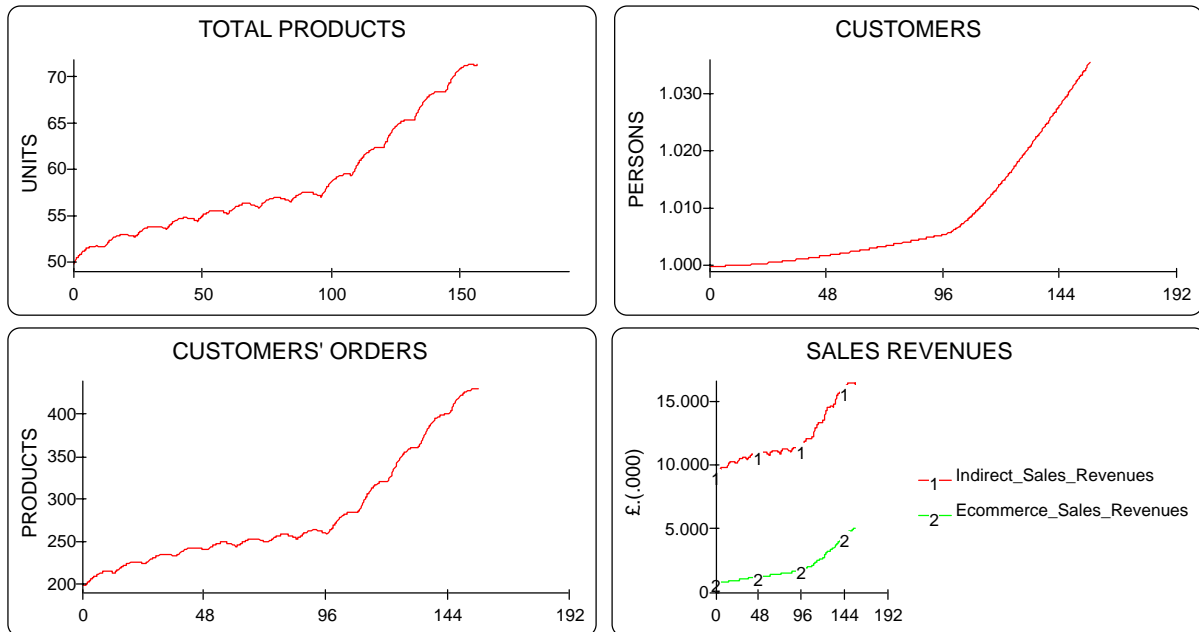
Figure 9 – Grafill's business variables dynamics taken form the

System Dynamics simulation model
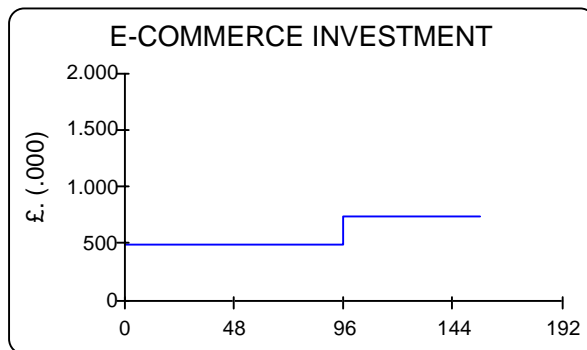
Figure 10 – Grafill's E-commerce investments

The reader will already noted that the above figures portray Grafill's variables dynamic until week 157. Such factor is mainly due to an unexpected phenomenon that by draining financial resources has generated a financial shortage leading to a business crisis.

The owner-entrepreneur's growth strategy based on an increase in products launched and E-commerce investments allows the company to boost sales revenues and to achieve the expected level of profitability foreseen in the budget plan. But, as the amount of books and software released increase, the inventory grows up as well as the accounts receivable. Such an increase generates a higher level of financial resources needed to feed business growth. In fact, as Grafill's net working

capital [4] increases bank balance goes down until it reaches the available bank credit (that is the amount of financial resources provided by financial institutions) leading to a business failure. In other words, even though the business growth strategy suggested is profitable (net income shows positive values and an increasing behaviour), the flow of financial resources generated by such strategy does not allow Grafill to reach and maintain a sustainable growth pattern. Such phenomenon can be observed in figure 11 (Grafill simulated results have been also reported in table 2).
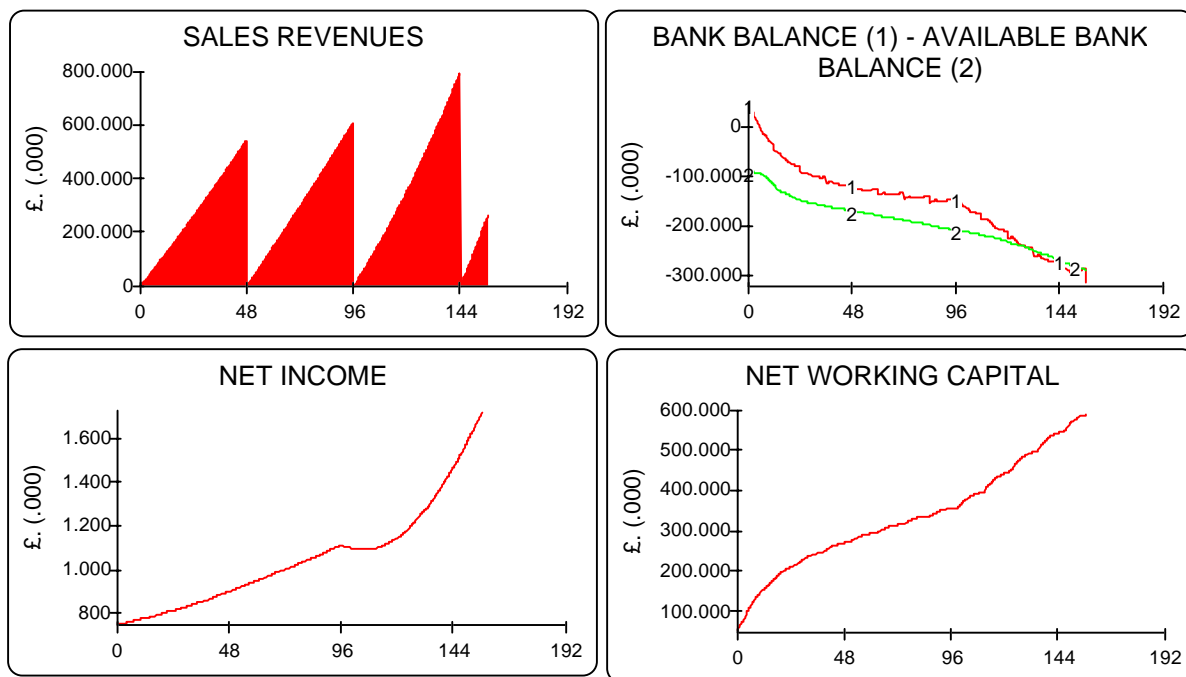
Figure 11 – Grafill's financial results

Why does the system dynamics simulation model portray different results from those generated by the spreadsheet model based on the sustainable growth model?

First of all, besides the sustainable growth model limitations stated in the previous pages it is worth remarking that such model being a 'synthetic' indicator does not capture the main business variables dynamics. In particular, it does not make explicit the dynamic of the financial resources needed during the budget period (Brunetti, 1983). Thus, even if the foreseen profitability and equity changes suggested by a growth strategy, which has been identified as 'sustainable', could be matched 'in reality', it may happen that during the budget period a company could face with liquidity shortages. Such phenomenon, by reducing company bank balance could generate a vicious circle (negative bank balance $\Rightarrow$ higher interest costs $\Rightarrow$ higher negative bank balance) that could

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[4] Net working capital = Account receivables + Inventory – Account Payables.

lead to business failure. Moreover, the existing *delays* between decisions and effects also contribute to generate behaviours that could look different form those foreseen in the budget plan. Introducing a *feedback* and *dynamic* perspective during the drawing up of a company budget allows participants to evaluate the sustainability of a business growth strategy not only by taking into account business variables values at beginning and at end of the budget plan, but also, and in particular, their dynamics during such period. This analysis also provides to entrepreneur and his collaborators an explicit framework to be discussed and modified according to their own vision and external key actors' requirements. Furthermore, the system dynamics simulation model trough a user-friendly interface and a spreadsheet data-interchange [5] allows users to test *ex-ante* in a 'safe' environment their decisions and related 'implicit' expectations. Understanding causal relationships underlying business results it is possible to feed a *double loop learning* (Davidsen 1996; Sterman, 1994) which could support decision makers in detecting inconsistencies in their *mindsets* and, hence, improving the decision making process. Therefore, to design a sustainable growth strategy decision maker needed to take into account the dynamic interrelationships between business growth and its *drivers* in compliance with a balanced business financial structure, a satisfactory business profitability and liquidity, which may allow the firm to gain both internal and external key actors' consensus (Winch, 1993).

In conclusion, this paper aims to highlight some of the limits of the sustainable growth model and to suggest a way to overcome such partial analysis. It has been demonstrated that a *feedback* approach could useful support small business entrepreneurs in assessing their business growth strategies, in compliance with a desired profitability level, a desired balance financial structure and external key actors' requirements.

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[5] The system dynamics model allows users to make their decisions and check business results both in the System Dynamics package and in a spreadsheet model.

Grafill Balance sheet	2000 (SIMULATED)						2001 (SIMULATED)				
	1° Quater	2° Quater	3° Quater	4° Quater	TOTAL		1° Quater	2° Quater	3° Quater	4° Quater	TOTAL
INCOME STATEMENT											
Indirect Sales Revenues	143.382	156.722	171.890	186.012	**658.006**		196.744	0	0	0	**196.744**
E-commerce Sales Revenues	23.958	30.260	38.688	48.106	**141.012**		57.577	0	0	0	**57.577**
Discounts	71.691	78.361	85.945	93.006	329.003		98.372	0	0	0	98.372
NET SALES	**95.649**	**108.621**	**124.633**	**141.112**	**470.015**		**155.948**	**0**	**0**	**0**	**155.948**
Changes in Product Inventory	56.976	52.972	48.286	43.563	201.796		39.434	0	0	0	39.434
PRODUCTION VALUE	**152.626**	**161.593**	**172.918**	**184.674**	**671.812**		**195.383**	**0**	**0**	**0**	**195.383**
Batch related costs	90.000	90.000	90.000	90.000	360.000		90.000	0	0	0	90.000
E-Commerce costs	9.000	9.000	9.000	9.000	36.000		9.000	0	0	0	9.000
VALUE ADDED	**53.626**	**62.593**	**73.918**	**85.674**	**275.812**		**96.383**	**0**	**0**	**0**	**96.383**
Editorial staff	18.526	19.145	19.371	19.453	76.496		19.483	0	0	0	19.483
GROSS OPERATING MARGIN	**35.099**	**43.448**	**54.548**	**66.221**	**199.316**		**76.900**	**0**	**0**	**0**	**76.900**
General & Administrative costs	10.727	11.080	11.486	11.798	45.091		11.956	0	0	0	11.956
Depreciation	353	334	315	297	1.299		281	0	0	0	281
OPERATING INCOME	**30.768**	**38.784**	**49.497**	**60.876**	**179.925**		**71.413**	**0**	**0**	**0**	**71.413**
Interest costs	5.838	7.022	8.310	9.437	30.606		10.305	0	0	0	10.305
NET INCOME BEFORE TAX	**24.931**	**31.762**	**41.187**	**51.439**	**149.319**		**61.108**	**0**	**0**	**0**	**61.108**
Taxes	12.465	15.881	20.594	25.719	74.659		30.554	0	0	0	30.554
NET INCOME	**12.465**	**15.881**	**20.594**	**25.719**	**74.659**		**30.554**	**0**	**0**	**0**	**30.554**
FINANCIAL STATEMENT	31-03-00	30-06-00	30-09-00	31-12-00			31-03-01	30-06-01	30-09-01	31-12-01	
ASSETS											
Equipment (net of depreciation)	5.948	5.614	5.299	**5.002**			4.722	0	0	0	
Inventories	406.212	459.184	507.470	**551.032**			590.466	0	0	0	
Accounts receivable	70.554	75.909	82.683	**89.597**			95.370	0	0	0	
Positive bank balance	0	0	0	**0**			0	0	0	0	
TOTAL ASSETS	**482.714**	**540.707**	**595.452**	**645.631**			**690.558**	**0**	**0**	**0**	
LIABILITIES											
Equity	218.545	229.661	244.077	**262.081**			283.468	0	0	0	
Long terms debts	0	0	0	**0**			0	0	0	0	
Short terms debts	80.212	88.911	92.521	**94.230**			95.121	0	0	0	
Negative bank balance	171.492	206.254	238.260	**263.601**			281.414	0	0	0	
Deferred income taxes	12.465	15.881	20.594	**25.719**			30.554	0	0	0	
TOTAL LIABILITIES & EQUITY	**482.714**	**540.707**	**595.452**	**645.631**			**690.558**	**0**	**0**	**0**	

Table 2 – Grafill simulated results 2000 – 2001

Appendix 1 – Grafill Balance sheet 98 – 99 [6]

GRAFILL BALANCE SHEET	1998					1999				
	1° Quater	2° Quater	3° Quater	4° Quater	TOTAL	1° Quater	2° Quater	3° Quater	4° Quater	TOTAL
INCOME STATEMENT										
Indirect Sales Revenues	108.000	103.950	107.055	109.850	**428.855**	112.365	114.628	116.665	118.499	**462.157**
E-commerce Sales Revenues	12.000	11.550	11.895	12.206	**47.651**	12.485	12.736	12.963	13.167	**51.351**
Discounts	54.000	51.975	53.528	54.925	**214.427**	56.182	57.314	58.333	59.249	**231.078**
NET SALES	**66.000**	**63.525**	**65.423**	**67.130**	**262.078**	**68.667**	**70.051**	**71.295**	**72.416**	**282.429**
Changes in Product Inventory	4.200	4.830	25.347	24.912	59.289	24.521	24.169	23.852	23.567	96.109
PRODUCTION VALUE	**70.200**	**68.355**	**90.770**	**92.043**	**321.367**	**93.188**	**94.219**	**95.148**	**95.983**	**378.538**
Purchase	21.000	21.000	42.000	42.000	126.000	42.000	42.000	42.000	42.000	168.000
E-Commerce costs	6.000	6.000	6.000	6.000	24.000	6.000	6.000	6.000	6.000	24.000
VALUE ADDED	**43.200**	**41.355**	**42.770**	**44.043**	**171.367**	**45.188**	**46.219**	**47.148**	**47.983**	**186.538**
Editorial staff	18.000	18.000	18.000	18.000	72.000	18.000	18.000	18.000	18.000	72.000
GROSS OPERATING MARGIN	**25.200**	**23.355**	**24.770**	**26.043**	**99.367**	**27.188**	**28.219**	**29.148**	**29.983**	**114.538**
General & Administrative costs	6.000	6.000	6.000	6.000	24.000	6.000	6.000	6.000	6.000	24.000
Depreciation	625	625	625	625	2.500	625	625	625	625	2.500
OPERATING INCOME	**18.575**	**16.730**	**18.145**	**19.418**	**72.867**	**20.563**	**21.594**	**22.523**	**23.358**	**88.038**
Interest costs	0	0	0	0	0	0	0	430	941	1.371
NET INCOME BEFORE TAX	**18.575**	**16.730**	**18.145**	**19.418**	**72.867**	**20.563**	**21.594**	**22.092**	**22.417**	**86.667**
Taxes	9.288	8.365	9.072	9.709	36.434	10.282	10.797	11.046	11.208	43.333
NET INCOME	**9.288**	**8.365**	**9.072**	**9.709**	**36.434**	**10.282**	**10.797**	**11.046**	**11.208**	**43.333**
FINANCIAL STATEMENT	**1-01-XX**	1° Quater	2° Quater	3° Quater	4° Quater	1° Quater	2° Quater	3° Quater	4° Quater	
ASSETS										
Equipment (net of depreciation)	10.000	9.375	8.750	8.125	7.500	6.875	6.250	5.625	5.000	
Inventories	168.000	172.200	177.030	202.377	227.289	251.810	275.979	299.831	323.398	
Accounts receivables	49.750	51.167	50.492	51.009	51.475	53.044	53.421	53.761	54.066	
Positive bank balance	50.000	43.700	47.699	37.624	21.609	2.731	0	0	0	
TOTAL ASSETS	**277.750**	**276.442**	**283.971**	**299.136**	**307.874**	**314.460**	**335.651**	**359.217**	**382.465**	
LIABILITIES										
Equity	227.750	236.109	243.637	251.802	260.540	269.794	279.511	289.453	299.540	
Long terms debts	0	0	0	0	0	0	0	0	0	
Short terms debts	50.000	40.333	40.333	47.333	47.333	44.667	44.667	44.667	44.667	
Negative bank balance		0	0	0	0	0	11.473	25.098	38.258	
Deferred income taxes	0	0	0	0	0	0	0	0	0	
TOTAL LIABILITIES & EQUITY	**277.750**	**276.442**	**283.971**	**299.136**	**307.874**	**314.460**	**335.651**	**359.217**	**382.465**	

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[6] Due to privacy reasons all figures have been modified.

REFERENCE

Airoldi G., Brunetti G., Coda V. (1989). Introduction to Business Management (Original title: Lezioni di Economia Aziendale), Il Mulino, Bologna, Italy

Brunetti G. (1983). Managing financial resources (Original title: Il governo delle risorse finanziarie: il modello dello sviluppo sostenibile), in Banche e Banchieri, n. 10, pp. 800.

Bianchi C. and Bivona E.(2000) Commercial & Financial Policies in Family Firms: *The Small Business Growth Management Flight Simulator*, in: Special Issue on "Interactive Learning Environments", edited by Proff. Paal Davidsen e Mike Spector, *Simulation & Gaming*, Sage Publications

Coda, V. (1989). Business Strategic Positioning (Original title: L'Orientamento Strategico dell'Impresa), UTET, Turin, Italy, 7-11.

Davidsen, P. I. (1996). Educational features of the system dynamics approach to modelling and simulation. Journal of Structured Learning, 12(4), 269-290.

Forrester J., (1994). Policies, Decisions, and Information Sources for Modeling, in Morecroft J. & Sterman J. (1994). Modeling for Learning Organizations, Productivity Press, Portland, Oregon, 51-84.

Grant R. M. (1995). Contemporary Strategy Analysis: Concepts, techniques, Applications, 2nd ed., Blackwell, Cambridge Massachusetts.

Sterman, J. D. (1994). Learning in and about complex systems. System Dynamics Review, 10(2-3), 291-330.

Winch G. (1993). Consensus Building in the Planning Process: Benefits From a "Hard" Modeling Approach, in System Dynamics Review, vol. 9, n. 3, 287-300.

Zakon A. (1966). Growth and Financial Strategies , Boston Consulting Group, Boston, Mass.