ABSTRACT

This paper not only considers what might be viewed as “normal” small firm growth, but also other types of growth which might be considered “abnormal”. The literature offers theories about small firm growth, and a number of growth archetypes have been put forward - usually revolving around some concept of a normal growth trajectory, typically following a classic “S” shaped curve. Conventional approaches in SME growth studies often consider stunted and inflated growth as two phenomena characterised by completely different rules and rationales; however, this paper sets out to show that the two phenomena are closely related – two sides of the same coin - and that certain fundamental structures and processes underpin both forms of “abnormal” company growth behaviour.

A research programme involving case studies, reviews of the literature, and analysis with both qualitative and quantitative models has identified imbalances in key strategic assets as the critical factor contributing to the problems in abnormal growth situations. The models replicate well the kinds of stunted and inflated behaviours observed in real cases, and further, the models demonstrate that subtle but achievable changes in owner/entrepreneur attitudes and in the intensity of growth objectives could enable both forms of company to be revitalized. Framing and understanding the structure of such business systems can suggest to owner/entrepreneurs and other stakeholders possible pathways to follow in order to prevent crisis and pursue a long-term business life following a more “normal” growth trajectory. This work contributes to the theory and understanding of growth dynamics, especially the importance of the balanced management of strategic assets in what might be consider normal growth situations, and how abnormal growth patterns, as exemplified by the dwarf and gigantism cases, can easily occur when imbalances are allowed to arise.

INTRODUCTION

The literature on small business growth focuses on many aspects of growth including offering practical advice, typically describing growth strategies, tips to support growth, and identifying the challenges. Other parts of the literature theorise about small firm growth, and a number of growth archetypes have been put forward. These usually revolve around some concept of a normal growth trajectory, typically running through start-up, early establishment, a growth phase and finally business maturity. Of course, what constitutes “normal” is open to debate, but it might be interpreted as the ideal, hoped-for, or even a mathematical predetermined pattern of growth. The classic growth curve is “S” shaped, with firms’ sales eventually flattening to a sustained plateau. The plateau results from there being some form of externally enforced “limit to growth”, such as the maximum market share achievable or the total
market for a niche product. On the other hand, research conducted by the authors of this paper has identified two forms of abnormal growth – business “dwarfism” and “gigantism” – which can lead to missed opportunities for owners/entrepreneurs and local economies, and even to business crisis and collapse. Conventional approaches in SME growth studies often consider stunted and inflated growth as two phenomena characterised by completely different rules and rationales, while this paper sets out to show that, in fact, the two phenomena are closely related and that certain fundamental structures and processes underpin both forms of “abnormal” company growth behaviour.

The authors have undertaken a programme of research into what might be considered as abnormal growth patterns in small medium enterprises, including micro-firms. The research consisted of two stages. The first was detailed case studies of a total of twelve real world small firms. These comprised both small firms that have survived, and arguably thrived, through many years and possibly several generations of family ownership, but have consistently remained smaller than their environment and circumstances would seem to have permitted, and other very small firms that suddenly grew very rapidly but unsustainably, with this growth stimulated by significant injections of public funding.

From these case studies and reviews of the literature, imbalances in key strategic resources were identified as the key factor contributing to the problems in both situations. Quantitative models were therefore constructed which captured the mechanisms relating to the building and depletion of key strategic resources, including finances, human resources, productive capacity, and product/service quality. These models replicated well the kinds of stunted and inflated behaviours exhibited by the case study companies. Further, the models were able to demonstrate that subtle but achievable changes in owner/entrepreneur attitudes and in the intensity of growth objectives could enable both forms of disabled company to be revitalized - the dwarfed firms could turn into growing firms, and the gigantism companies could achieve sustainable but still creditably ambitious growth.

Modelling dwarf business dynamics, based on case-study analysis, has demonstrated that – though oriented to keep their own firms into a micro size – entrepreneurs and other key-players around such firms must develop an attitude to promptly perceive weak signals of change in the relevant environment. Most particularly, they should devote proper care towards a selective perception of signals of change which may threaten business survival in the long time.

This paper draws the conclusion that although related to completely different behaviour modes, the logical structures underlying inflated and stunted growth dynamics are very similar to each-other, and further that they are both manifestations of unbalanced managed of strategic assets. In this respect, they are simply two sides of the same coin. Therefore, framing and understanding the structure of such business systems can suggest to owner/entrepreneurs and other stakeholders possible pathways to follow in order to prevent crisis and pursue lifelong business existence. This work contributes to the theory and understanding of growth dynamics, especially the importance of managing balanced critical strategic assets in what might be consider normal growth situations, and how abnormal patterns, as exemplified by the dwarf and gigantism cases, can occur when imbalances are allowed to arise. Further, by presenting the models in “management flight simulator” form, they can be used by a variety stakeholders to learn about growth, experience normal and abnormal growth trajectories. This supports the development of sustainable growth strategies for their own firms, or for the small firms that they advise or fund, and for the development of efficient and sustainable small firm sector support and encouragement policies.

**“NORMAL” AND “ABNORMAL” GROWTH TRAJECTORIES IN SMALL FIRMS**

Growth strategies for small and micro enterprises is, understandably, a hot issue for academic research and an important focus for small firm support agencies, specialist consultants and advisers, and the owner/entrepreneurs themselves. The reasons for this attraction are not hard to define, as growing firms offer:

- enhanced opportunities for the owner-entrepreneurs, or family owners, to maximise the financial benefits from their efforts and ingenuity; and
- expanding opportunities for employment and trickle down business for the local and regional communities and economies that accompany the progress of the individual firms.

The small business literature concerns many aspects of growth – commending growth objectives, developing and implementing growth plans, identifying the challenges growth brings – and there are a number of growth archetypes. These usually revolve around some form of normal growth trajectory...
involving start-up, early establishment, a growth phase and finally business maturity (see, for example, Churchill & Lewis, 1983; Scott & Bruce, 1987). Of course, what constitutes “normal” is open to debate, but it might be interpreted as an ideal, hoped-for, or even theoretical growth pattern. The classic growth curve is “S” shaped, with the firm’s size flattening to a sustained plateau. This plateau results from there being some form of externally imposed limit to growth – this might be the maximum market share achievable, total market for a niche product, etc. (Penrose, 1995; Barth, 1999).

However, case study analysis has identified two forms of abnormal growth trajectory – what might be called “business dwarfism” and “business gigantism” (Figure 1). In the dwarfism case, a firm’s growth has plateaued well below the natural, or external, limit to growth, implying that the reason for plateauing early is internally generated. In the case of the “business giant”, early growth has shot ahead of what might be considered a normal growth rate. Such growth is likely beyond the capabilities of the firm, causing it to over-reach itself, and is thus unsustainable and may lead to business crisis – so-called overshoot and collapse.

Both behaviours are important because they suggest firms that are either underperforming presently (in terms of sales volumes, revenues, or income), or, with gigantism, may presently be over-performing, but with a major risk of crisis and collapse in the future. In either case, the dual benefits to business owners and to other stakeholders might not be achieved, or might only be partially achieved. This paper aims to cast light on how such behaviours might arise, what the implications are, and to suggest that system analysis and simulation offer a way of educating entrepreneurs and stakeholders to the risks and opportunities, and, potentially, to support them in their search for ambitious but sustainable growth strategies.

CAUSES OF ABNORMAL GROWTH BEHAVIOUR

Two quite distinct forms of small firm growth that deviate from the normal s-shaped curve relate to business dwarfism and business gigantism.

Dwarfism

The term business dwarfism (in Italian nanismo aziendale) has been adopted in recent times in the Italian political and socio-economic debate to label a stereotype of business marginality and entrepreneurial mediocrity, based on a structural disengagement from growth. Such firms may well be “successful” in the sense that they have survived over many years, maybe multiple generations of family ownership, and have been profitable or have provided the owners with what they consider an adequate quality of life. Such firms may have had significant growth potential but the owners have seemingly been unaware or unconcerned that the firms remain small, or “stunted”. “Dwarf” firms are commonly characterised (Russo 1988) as those small and micro firms whose structure and management routines have been kept unchanged over several decades in terms of structure, processes, and relational systems. An implicit assumption is that those firms which have not been increasing their size for a long time are
affected by a “structural disease” and support systems and tax incentives have been proposed to remedy this malaise. This may support owners whose firms are stunted despite their efforts and intentions, but does not address the circumstances of those whose “disease” is purposefully chosen (Bianchi et al., 2004).

Generally the central focus within much of the literature has been on debating the topic of stunted or capped growth, or even simply non-growth, rather than “dwarfism” per se. Holmes and Zimmer (1994) distinguish Growth Capped from Growth SMEs. In the former, growth is sought and plans are developed to facilitate it, though growth will only be financed by additional equity inputs by the owners or bank debt. If new equity from outside sources is not an option, such firms experience an internal limit to growth. Conversely, the latter kind of firm is more prone to accept external capital sources to foster growth, which allows them to reach a larger size and promote change. Gibson (2002) asserts that “the notion that firms may have a capped growth objective is evident in many areas”. This work believes that there are thus many small firms, where owners take actions that suggest they are concerned with maintaining a stable business and that growing out of this stability is not regarded as a primary objective.

In an empirical study oriented towards understanding growth and non-growth motivations for an entrepreneur, Perren (1997) defined a number of relevant factors, such as:

- owner’s growth motivation,
- management expertise for growth,
- resource access,

and identified that such firms share a common set of negative motivations towards growth and these effects are particularly significant when the market shows a rising pattern of demand. Similarly, Brown and Kirchhoff (1997) have investigated the effects of resource availability on entrepreneurial orientation, and they distinguished two important factors: perceived environmental munificence and resource acquisition self-efficacy.

Past research has focussed on an empirical analysis of more than ten detailed case-studies showing different profiles of dwarfism (Bianchi et al., 2004). Based on this field research, the authors have developed a conceptual model and a simulation model aimed at depicting the crucial factors characterising the phenomenon in a dynamic resource-based view (Bianchi & Winch, 2005). We have also tested the model with a number of entrepreneurs in order to verify its usefulness in an education context (Bianchi et al., 2006).

Gigantism

We view “business gigantism” as the emergence of unbalanced and unsustainable rapid growth that is typically stimulated by the “unnatural” injection of disproportionately very large levels of funding. This might be through over-optimistic plans and compliant, if well-intentioned, funding agencies - often with government grants specifically ear-marked for encouraging small firms and/or regional economic development. This phenomenon naturally juxtaposes the dwarf business situation: firms suffering from business gigantism have grown too big in comparison to their earlier size and state, and have in effect overreached their capabilities. Past research by the authors has also shown that gigantism and dwarf businesses crises are often interlinked. In common with the dwarfism phenomenon, a lack of understanding about the strategic resource system, delays, and the inertial effects of external factors on the firm underlie the problem (Bianchi & Winch, 2005, 2006, 2008).

The authors have studied two specific cases in depth where small firms secured substantial funding to support new developments. In both cases the funding was via public agencies, and in both cases the funding was secured on the basis of formal business plans which included a need for owners’ co-funding. Unfortunately, the static and mechanistic nature of these plans seems to have concealed the perils facing the firms if they attempt to grow too quickly. Specifically they understated or ignored the need to develop other new strategic resources (e.g. knowledge, prototypes, commercial contacts). In this way, they also seemed to have ignored the need for further equity injections and the time lags in bringing plans to fruition. By contrast, the optimistic views reflected in the plans, which were shared by owners, their consultants, and funders alike, seem to have implied that investing large amounts of money virtually guarantees growth and healthy profits.

THE LINKS BETWEEN PROCESS STRUCTURE, SYSTEM BEHAVIOUR AND GROWTH PERFORMANCE
In order to support the various key actors in better framing the systems which generate dwarfism and gigantism behaviours, the authors have used the System Dynamics methodology. System dynamics is an approach for mapping system structures and using these to help analyse possible system behaviours over time – possibly with support of quantitative simulation versions. The underlying principle is that if process structure determines system behaviour, and system behaviour determines company performance, then the key to developing sustainable strategies to maximise performance is understanding the relationship between processes and behaviours and managing the leverage points.

In their original work on dwarf businesses, Bianchi and his co-workers suggested a set of possible business structures based on feedback thinking and structural diagrams reflecting a resource-based view of the firm (see, e.g., Amit & Schoemaker 1993; Dierickx & Cool, 1989; Warren 2002). Our continuing studies of both the dwarf and gigantism phenomena have confirmed that the management of strategic assets, and more specifically the maintenance of an appropriate balance between the assets, is the key to sustainable growth. (Strategic assets is a catch-all term and includes a range of assets or resources critical to the success of a firm.) The emerging models all centre on the building up and decline of key core assets:

- financial assets,
- the quality of products or services,
- customer base, and
- delivery capacity (e.g. human resources, machinery).

Each of the strategic assets can to some extent be controlled in isolation of the others; however, where there is not balanced growth or coherence in the assets, then firms will likely be unable to grow to achieve maximum potential, or might grow in a non-sustainable way.

Analysis of the dwarfism situation looks at two critical aspects of small firm management – the level of satisfaction, or complacency, of the owner/entrepreneurs with the current size of the companies and their inclination to actively manage for growth rather than just maintenance of the status quo, and the inter-relatedness of the strategic assets. Taking a look at some of the important linkages between the strategic assets identified above, an appreciation of how dwarfism can arise and how sustainable growth can be achieved if the owners chose to turn to this objective – and manage the linked set of strategic assets in a balanced way. Figure 2 presents some of the relevant links, which create three feedback loops, and show how dwarfism and “normal” growth are linked.

Even in the dwarf situation it is important that owners watch the balance of assets – for example, they have to maintain adequate delivery capacity to satisfy demand, and they have to enjoy financial assets to fund capacity maintenance, technology upgrades and so on. Specifically, Figure 2 reflects the way that Financial Assets support the maintenance of Product & Service Quality, which in turn supports the maintenance of the Customer Base. The customers obvious provide the sales which feeds back into Financial Assets. This forms a balancing feedback loop (B1) and will cause the company to “control” at the level of the Target Financial Assets. (Other loops B2 and R1 relate to other aspects of loss and replenishment of customers not discussed in detail here.) Critically, if the owner/entrepreneur is satisfied with a dwarfed state, then this target is likely to remain constant, but it is still important that the loop is active so that loss of assets – for example as the owners draw down dividends – are replaced. Should the control be sluggish then control theory suggest that the system will display cyclical behaviour, which has been observed in dwarf firms. On the other hand, if the firm has an objective of sustained growth, then Target Financial Assets will continually grow, and the system must control to this upward trajectory. Success as a dwarf company and success as a continuously growing company rely on the identical asset control mechanism, with the difference only in terms of growth objectives.
Similar issues concerning the dynamics surrounding strategic asset management and asset balance also apply in gigantism situations. Our detailed case analysis focused on two such companies which experienced rapid growth stimulated by major injections of development funds. Figure 3 depicts the main causal structures and three key feedback loops applying in one of these cases – an engineering firm – that can be examined to explain the “overgrowth and collapse” of the company.

Figure 3 – Key Loops in a Case Study Firm Experiencing “Gigantism” Type Growth
The reinforcing loop - R1 - shows the intended growth the owners wished to foster when seeking funding. The high funding reflected the objective of hiring a large number of employees and associated increase in production capacity (machinery). Since both the increased staffing and production capacity raised costs and reduced income, the company also aimed to boost turnover by allowing clients more generous credit terms. In this way, higher sales orders were expected to increase sales revenues and liquidity, though these effects would be after delays associated with both the time to complete orders in the industry, and the remarkably generous payment terms. The effect of both delays was, on one hand, to neutralise the reinforcing growth-oriented loop the owners wished to pursue, and, on the other hand, to bolster the balancing loop - B1, which represented a considerable limit to the firm’s operational growth. In fact, it was a major cause of lower sales collections, in spite of a higher order rate.

Financial crisis ensued as the firm tried to sustain increasing cash outflows to pay salaries and purchases, while it suffered significant problems with inflows due to the long production and sales collection delays. Therefore, rather than increasing bank balances and fostering further growth through capacity acquisition, the firm had to draw down liquidity from its bank credit. This raised financial costs and soon generated losses and negative cash flows reducing bank balances even further.

Common aspects characterising crisis and failure in dwarf businesses have been linked either to a misperception of external factors which may weaken strategic assets, or to an overestimation of the level and consistency in such assets. While the former factor has a major impact on the outflows depleting strategic assets, the latter affects the inflows. Lack of understanding about the strategic resource system, delays, and the inertial effects of critical external factors are common to the two phenomena.

THE CRITICAL IMPORTANCE OF BALANCED ASSET MANAGEMENT IN ACHIEVING SUSTAINABLE GROWTH

In the examination of dwarfism and gigantism, the focus of attention has been the balanced management of key strategic assets. Models constructed to capture the inter-relationships between these have replicated the characteristic behaviours of both dwarf and gigantic companies. Much more critically, however, the exact same structural models, with only changes to parameters, also show how sustained growth can be achieved – by unleashing dwarfed firms into growth mode, or by gigantic firms moderating their unrealistic growth objectives to achievable sustainable, but still ambitious growth aspirations. This demonstrates that not only are dwarfism and gigantism closely related, both being manifestations of inappropriate growth objectives combined with the need for balanced asset management though on opposite sides of the normal growth trajectory. Further, the mechanisms that contribute to these “abnormal” behaviours, if more appropriately managed, can also lead to maintained and sustainable growth.

The two common features in strategic asset management are the requirement for consistency between strategic assets (Figure 4) and the need to actively manage each strategic asset to maintain balance. The critical assets we have focussed on here are: financial assets, the quality of products or services, customer base, and delivery capacity (e.g. human resources, machinery). These are likely to be critical in most, if not all, firms but might not be a complete list - for example, in certain businesses a strong distribution network might be of fundamental importance, while the ability to undertake successful R&D is likely to be vital in hi-tech industries.

The active management of each of these assets involves the same basic system structure in each case, as in Figure 5. There are two key loops. Loop B reflects that strategic assets are not immortal, and can be lost over time through a variety of processes – plant deteriorates, customers are lost, quality relative to competitors falls, and so on. Loop A reflects that firms probably have a target for the strategic asset, hopefully explicit but maybe only tacit, and will take remedial action if the assets fall, or fall significantly, below that target.

In the dwarf firm where growth is not a top priority and perhaps where the entrepreneur is really focused on day-to-day operations, then asset management might be overlooked and assets might be expected to fall away over time (Bianchi 2002). This effect could almost be seen as a self-fulfilling mechanism in that accepting the weak asset position is likely to militate against activities that could lead to growth, and could, if uncorrected, lead to crisis. Such firms are unlikely to have an active programme of replacing lost assets, so the loss could go on for a period of time. In a gigantism firm, over-emphasis on a few assets deemed critical to growth, or an under-capitalisation, might prevent other key to grow in unison, resulting in an asset imbalance – and the inability to harness all necessary resources.
THE NOTION OF A THEORY OF “NORMAL” AND “ABNORMAL” GROWTH AND THE IMPLICATIONS FOR SME STAKEHOLDERS

This review of linked research projects relating to SME growth has shown that business dwarfism and gigantism are two different manifestations of unbalanced growth. Business dwarfism means that a firm has almost certainly underperformed against its potential; gigantism suggests unsustainably rapid growth, causing a firm to over-reach itself, and a longer-term inability to maintain balanced growth.
might ultimately lead to “overshoot and collapse”. At first glance, these may appear to be quite unrelated.

In order to encourage small/micro firm owners and other key players to learn from recurrent errors, these two phenomena can be framed through modelling. The process of diagramming is a powerful tool for surfacing ideas, sharing mental models, and talking through consequences. The learning process encouraged by such an approach can be expected to produce a change in decision makers’ mindsets, i.e. their mental models. This is not an easy and automatic process, since conservative behaviour and resistance to change are often major barriers discouraging so-called double loop learning (Argyris & Schon 1978; Senge 1990).

Simulations with the quantitative variants of the models, as described in the earlier papers, have reinforced the analysis and supported the search for policies to achieve improved behaviour. The dwarfism model gave important insights confirming that the application of simple changes in owner-manager attitudes could potentially enable a stunted firm to break out into growth (Bianchi & Winch 2006). However, the experiments also showed that there is a real risk of such a firm gradually degenerating into structural instability. The results also suggest that the stable asset situation beneficial for sustained growth requires owners to move to a more reactive attitude to strategic asset management than is perhaps typical in dwarf businesses. The gigantism simulator was constructed with a very similar set of stock-flow structures, populated with data reflecting an actual “gigantic” company situation (Bianchi & Winch 2008). This simulation model again replicated the sort of crisis that emerged in the real firms, but also showed that slightly more modest targets, though still aggressive and ambitious, could achieve sustainable growth.

A basic analysis of the twin-loop structure in the loop diagram for strategic asset management (Figure 5) suggests that while a reinforcing loop can potentially support and feed growth, if the resource is not protected and allowed to run down then growth is unlikely to be achieved. In this case, growth plateaus, limited by internal constraints, rather than the firm growing until external, unmanageable constraints determine its ultimate size. If assets are allowed to drain away, with owners only eventually taking remedial action, then there will be an alternating pattern of asset run-down then build-up leading to oscillatory behaviour, as observed in dwarf firms. A characteristic of balancing feedback with inbuilt delays is oscillating behaviour, and simulations with the dwarf business model did replicate such behaviour. The key to turning round stunted firms is therefore the active enhancement of key strategic assets. Basic simulations with the model show this, though more advanced scenarios also show that balanced management of interacting assets is necessary to turn the business into a growing business.

With the gigantism phenomenon, the case study companies had adopted highly ambitious growth strategies that actually lead to crisis and failure. The processes most likely to be responsible for this situation had not been identified or had not been analysed fully. The analysis described here has identified processes that could cause unsustainable growth and interlinked them within causal loop diagrams. This includes the loop structures that support growth and those that might kick-in and prevent growth and/or provoke other negative reactions. The quantitative simulators reflect the operations of the case study companies, and experimentation has, through the setting policy of levers to critical values, replicated the kind of behaviour that led to major crises in both these firms.

Simulating system behaviours has suggested that the application of simple changes in owner-manager attitudes and actions could produce sustainable and acceptable growth – in the case of a stunted firm potentially enabling it to break out into growth, in the case of a possible gigantism scenario suggesting more modest ambitions which could deliver strong and satisfying growth without the risk of crisis.

The development of a theory of sustainable growth, or more specifically the avoidance of abnormal growth, reflects three factors:

1. business dwarfism and business gigantism reflect abnormal small firm growth behaviours which are, in fact, closely related;
2. sustainable growth depends on the internal consistency between the key strategic assets (see Figure 4);
3. each asset can be micromanaged through controlling the rates of building up and decline of the asset, within the overall requirement to manage these in a balanced way to maintain consistency (see Figure 5).
Understanding the relationship between normal and abnormal growth, and how to manage small firms to avoid abnormal growth behaviours is obviously of critical importance to all small firm owner/entrepreneurs.

Further, those institutional bodies committed to supporting the small firm sector, reflecting the perceived importance of SMEs to employment and wealth creation and the accompanying need to encourage start-ups and business development in the sector, also have to appreciate the fine line between sustainable beneficial growth and abnormal, often unsustainable growth. It is recognised that in many instances the funding for SME development will not or cannot be met by the private sector, in part or in full, and this justifies public intervention. The task of using any public monies to maximum effect is a difficult one, and Freel (1998) has argued that the notion of “picking winners” for grant and other support is “not a viable alternative to blanket cover”.

Almost by definition, firms undertaking such transformations are being moved into what might be considered an “unnatural state” and the task of funding bodies and advisers is thus to ensure that only the firms with most potential are chosen, and then ensure that support is managed so that firms’ full potential is achieved. (The ultimate irony would be if a dwarfed firm received substantial funding to take advantage of a new opportunity and support an ambitious move into growth mode, only for the injection of funding to be managed in an unbalanced way leading to a gigantism scenario emerging.) We argue that a good grasp of the complex inter-relationships between firms’ assets coming from feedback analysis and simulation should be part of the process of stakeholder interactions in the process of designing sustainable growth strategies that are rewarding, but at the same time prudent and achievable.

References


