

A conceptual development framework for management and leadership learning in the UK incubator sector

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Keywords

Learning, Leadership, Incubators, Small to medium-sized enterprises, United Kingdom

Abstract

Focuses attention upon a recent phenomenon promoted by public sector policy and government funding and adopted within the private sector as a vehicle for wealth creation, where wealth can mean the development of different forms of capital such as financial, intellectual and social. Incubators and incubation programmes have established themselves across the globe as part of the enterprise landscape and are achieving substantial growth rates in numbers, with expectations for further growth in the near future. Emphasises the finding of recent studies suggesting that the nature and experience of incubator management and leadership positively affect client perceptions of the value and impact of their incubation experience. In conclusion, there is an emerging demand for greater professionalism within the sector and the role that current national incubation benchmarks may have on supporting management and leadership capability building. Suggests that focusing on management and leadership capability building across the sector is an important policy consideration for government in enhancing the overall performance and effectiveness of the industry.

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Background

Recent incubator and incubation studies have suggested an association between the role of incubation management and perceived client value (for example see Hannon and Chaplin, 2001; Albert *et al.*, 2002; CSES, 2002) and there has long been recognition that the role of manager, particularly within an incubator context, is complex and often paradoxical (Hannon, 1993, 1995). For example, the manager can have many disguises, as Table I illustrates.

Despite this probable relationship between management and client value, there has been, until very recently, no established national benchmarks or standards for management performance evaluation. More crucially, there have been no management development frameworks for the incubation sector to guide and inform management capability building for those engaged in incubators and incubation.

Some studies have proposed a need for improving the quality of incubation management to enhance performance standards of projects and user firms (UKBI, 2003; Albert *et al.*, 2002; CSES, 2002). The establishment of clear management frameworks may help to address sustainability issues concerning the recruitment and retention of high quality managers. There exists no current focus for professional development within the industry in the UK.

But what does make an effective incubation manager and what would be appropriate and relevant management education and support?

The first aim of this article is to provide a conceptual base from which to build an appropriate management development framework for supporting the learning and development needs of managers and key decision makers across the incubation community. Second, this article aims to demonstrate how such a framework can be applied to meet the education and development needs of incubator and incubation managers and leaders across the UK.

Developing an understanding of incubator management need

In the UK, the interest in the effect of management and leadership upon the



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Table 1 The many disguises of the incubator manager

Professional business consultant	Project manager	Hard-nosed buyer
Business trainer	Policeman	Persuasive sales rep
Free legal adviser	Everybody's agony aunt	Font of all knowledge
Computer expert	Housekeeper	Endless source of contacts
Health and Safety officer	Trusted counsellor	Rent collector
Social worker	Ambassador to all	Arbitrator

performance of the centre and its clients was explored during the 1990s in terms of clearly identifying the management development needs of centre managers providing support services. The DTI funded a UK-wide study, conducted by the author [1] to explore the nature of the role of the manager and to develop a management development framework for use in informing managers and their employer organisations of opportunities for improving manager performance (Hannon, 1993, 1995). This tool further acts as a mechanism for assessing changes in management performance capability.

By the mid 1990s business centre/incubator managers across Europe were recognising the need for establishing performance standards and management development support linked to impact measurement in local economic regeneration (European Symposium, 1995).

From the USA, Rice and Abetti (1993) in their study of interventions by incubator managers concluded:

It seems likely that the majority of the interveners [the incubator managers] are not well prepared by education, experience and orientation to be effective, regardless of the availability of resources and support of top management.

They further comment that the institutional sponsors of the incubator and its manager are ill-prepared:

By knowledge, skills or experience to play their roles effectively, and often their impact is neutral or negative.

In 2003, ten years after the DTI study, similar points about management capability and performance continue to be made. In the USA, a more recent report (of the Boston incubator sector) recognised management as part of the cause of a recent wave of incubator failures:

The real added value is in ... management advice and not in real estate or facilities. ... success depends on the kind of services they offer and the quality of persons offering them (Carroz, 2001).

Wilcock's (1999) study of incubation practice identified a number of factors influencing incubator service utility, including the need for "well-educated incubator management", especially for technology incubators. Such a view has been supported in general terms regarding the key determinants of incubator impact relating to the level and quality of management assistance (Woods and Rushing, 1995) and the need for competent management (Autio and Klofsten, 1998).

In their global review of the literature, Hannon and Chaplin (2000) identified that:

The critical input factors in incubator practice would appear to be the incubator management, and the approach adopted by the incubator managers and staff in the implementation of incubation policies.

Their report concluded that:

Developing the capacity and capability of managers/management will be crucial to enhancing quality and raising industry standards in governance, management, policy and practice (Hannon and Chaplin, 2000).

Enhancing professionalism and management capacity within the UK incubation industry is also a key recommendation of the recent UK national study of incubation best practice (Hannon and Chaplin, 2001):

A self-development framework for incubator managers ... should be established, particularly for newer managers entering the industry. Use of the framework as part of managers' continuing professional development should become part of the responsibility of any incubator board ... the framework could be developed to match the different competence and development needs managers across all stages of incubator and firm development and within different incubator environments.

More recently this need has been emphasised in the conclusions of the EC Enterprise Directorate commissioned study (CSES, 2002):

There is a need to "professionalise" the occupation of business incubator management ... the quality of the management team is a key to successful incubator activities. At present there is no recognised professional qualification or

standard in this field although specific incubator management functions are of course areas where standards exist.

Study approach and method

Key parameters of the study

The study reported in this paper is focused on an exploration of incubation management and leadership and not incubator development. Within the context of this study, the term "incubation" is used to refer to the business development processes employed to support pre-start, launch and early start and growth phases of a new venture and not specifically the growth of an existing venture *per se*, although it may involve the growth of an existing technology, product or process if this is undertaken through the creation of a new venture. In essence then, for this study, incubation is taken as meaning supporting the identification and successful exploitation of an opportunity for new venture creation. The term "new venture" is used to refer to any business established to exploit an identified opportunity. It is not presumed that in all cases the new venture will be a wholly independent, privately owned or profit-orientated.

Effective incubation is primarily about creating a supportive environment in which market-led ideas and new ventures can be developed and are given the chance to fulfil their potential by giving them access to opportunities, a wide range of development resources and tailored support services. The emphasis of business incubation is on accelerated development processes.

Across the UK there is likely to be a significantly diverse range of individuals, entrepreneurs and new ventures that are likely to engage with incubation support processes. Each user is likely to require a mix of general and specific support components as individual needs will vary from user to user depending upon the configuration of many factors such as incubator context, aspirations, experience base and market environment conditions. To provide flexibility to cater for this diversity, and to develop appropriate and relevant management capability, it will be important to design a learning framework for management development that provides a generic set of core components for supporting incubation, as well as context-specific components accessible for particular users and/or purposes.

The full study, commissioned by EMDA, and undertaken by DMU in collaboration with The Incubation Practice, comprises four phases through 2002/2003. This article reports the findings of the first two phases. These two phases of the study were completed during 2002 and directed by the author in association with research colleagues[2].

The first phase of the study is a review of known published work on incubation process models and frameworks. A consultation process with incubation professionals gains views on incubation processes to refute or confirm existing knowledge. From these activities, an overall conceptual framework for the study is derived. This framework informs phase two of the study that aims to provide an indicative management development framework for incubation professionals.

The findings of the first phase of the study are now presented below.

Phase one findings: a review of incubation process models

This section of the paper outlines the outputs from the literature review phase of the study and includes summary references to new venture creation and development approaches; models of commercialisation and technology transfer; and relevant training programmes. Within this article it has not been possible to provide significant detail of specific models. Some are summarised for the benefit of coherence and clarity for the reader.

The purpose of this review was not to undertake a comprehensive critique of all published materials on business incubation, but to select those specific published articles that appeared to be most relevant to this study.

A context for incubation

The presentation of the main literature review outcome is clustered around a number of key building blocks for creating a generic frame for incubation management development. The three clusters are:

- (1) the stages or phases of development of the incubation initiative;
- (2) the core processes involved in incubating ideas;
- (3) the nature of management focus and the level of management experience.

In the following sections, each of the building blocks is now discussed in relation to the findings of the literature review.

1. The stages or phases of incubation development

Incubation process components

In order to build an incubation process model, this study has been informed by a number of different approaches. For instance, a common theme in the literature is the use of stages models of venture development that describe new venture development as a series of linked phases or stages through which the venture passes from its inception through to venture maturity. Models can range from 3 to 11 phases but all appear to involve some common patterns.

One particular model (Bolton, 1996) based upon research of technological development in the context of new enterprises suggests ventures move through the following stages:

- *Embryo*: the product moves from a demonstration unit into a fully working prototype which can be shown to potential clients.
- *Nurture*: the product moves on to the point where it can be sold and the business begins to trade.
- *Fledgling*: the business develops and moves into profit, the market expands and the company offers a range of products.
- *Maturing*: the business grows to a size that is operationally viable and it achieves an established position in the market place.
- *Business*: this stage is generally a sequence of consolidation and expansion phases.

More simply, in considering the early development of high-tech small firms only, Koschatzky (1997) divides the process into three phases:

- (1) *Initiation*: the formulation of the product idea, market research and the development of the business plan.
- (2) *Development*: testing of prototype products, development of links with potential customers and the establishment of the management team.
- (3) *Market introduction and build-up phase*: securing the financial and other resources required, launching the business, and managing the production and marketing effort.

Borrowing from the biological sciences, Cardozo *et al.* (1995) suggest a process-oriented model of growth that proposes there are a number of elements that occur:

- *conception and gestation*: the process begins with a business concept or vision;
- *assembling*: resources are needed to turn the vision into reality;
- *reaching, exploring and attaching*: finding appropriate niches in order to attach itself – these may be defined in terms of products/services and markets and may involve iterative trial-and-error or experimentation;
- *expansion*: once attached, it expands (from the first sale);
- *replications*: sales made to similar customers that require no change in product or marketing;
- *replicating with modification*: departing from original customers and products or services;
- *varietizing and proliferating*: adding new customer segments, product lines, models;
- *differentiating*: specialisation with the firm rather than the marketplace;
- *identification*: reaching out to new prospective acquisition targets;
- *annexing*: some targets may be annexed to the growing firm;
- *absorbing*: some of these annexed targets may be absorbed by the growing firm.

Finally, and more recently, UKBI[3] has been undertaking a project to develop standards for the benchmarking of incubators in the UK. In an initial focus group for the project, incubation experts suggested that there were three different stages of incubation:

- *pre-incubator stage*: ideas and teams were nurtured;
- *incubator stage*: once there is a business plan prepared; and
- *post-incubator stage*: when enterprises move out to “grow-on” space.

Many stages/phases models of firm or product/market development could be presented here[4], such as the well-known Greiner and Churchill and Lewis models. A typology of particularly interesting examples is presented in Table AI in the Appendix.

A key observation is that, in the main, all the above studies relate to the stages or phases of development of ventures or firms, and not to incubation initiatives. However, it can be

argued that incubation programmes and incubator projects are also new ventures or small businesses and hence are subject to similar dynamics and nature of development. In accepting this approach it is possible to apply the above models and frameworks to incubation contexts. Although such models can be criticised for taking a simplistic and linear approach to new venture development that is typically complex, uncertain and highly dynamic, the models enable a degree of orientation if applied with caution.

One core element then in building management and leadership capability is understanding where the initiative is "located" within its own life cycle.

Another key management element or building block in the literature is the identification and understanding of the core processes driving incubation. The following section explores this aspect.

2. Core incubation processes

Innovation, commercialisation and technology transfer

In order to construct a management development framework for building the capability of incubation managers, it is necessary to first understand what are the building blocks that go to make up the incubation process, i.e. the processes of transferring ideas, knowledge or research to the marketplace.

The incubation process can include support for the processes of business development, from the formulation of an idea, to the recognition of its potential in a commercial sense, planning and preparation of a business plan, entry into the marketplace, and development of the business to the point where it is self-sustaining. Carter and Jones-Evans (2000) propose the key steps in a generic incubation process (see Figure 1).

According to Tornatzky *et al.* (1996), technology incubation is all about integrating: talent (people); technology (ideas); capital (resources); and know-how (knowledge). The most difficult task is in linking the talent, technology and capital with market pull. Technology incubators can help accelerate the learning process through entrepreneurial education, peer counselling, know-how networks and university ties.

The report by the Gatsby Foundation (1998) comprehensively identifies the key tasks in the technology transfer process (as it relates to university research/ideas) (see Figure 2).

From this approach, incubator managers dealing with the commercialisation of ideas will therefore need to have capability across a range of core process areas, such as: IPR protection (e.g. patenting); prototyping activities; market research; product development; company formation; business plan writing; licensing and royalty agreements.

The British Technology Group (BTG) is a world leader in technology transfer and it generates revenues by protecting and licensing new technologies and acquiring innovations from academic and corporate sources world-wide. BTG's technologies are underpinned by the effective management of intellectual property rights. The key processes are presented in Figure 3.

The Harmony Project was initiated in 1998 and is largely funded by the EU and has project partners in Finland, Germany, Spain, France, Switzerland, Japan, the USA, and Australia.

Harmony is designed to give the business manager a framework for assessing business ideas, deciding whether or not to proceed with commercialisation and preparing them for further commercialisation processes (whether inside or outside the research organisation). See Figure 4.

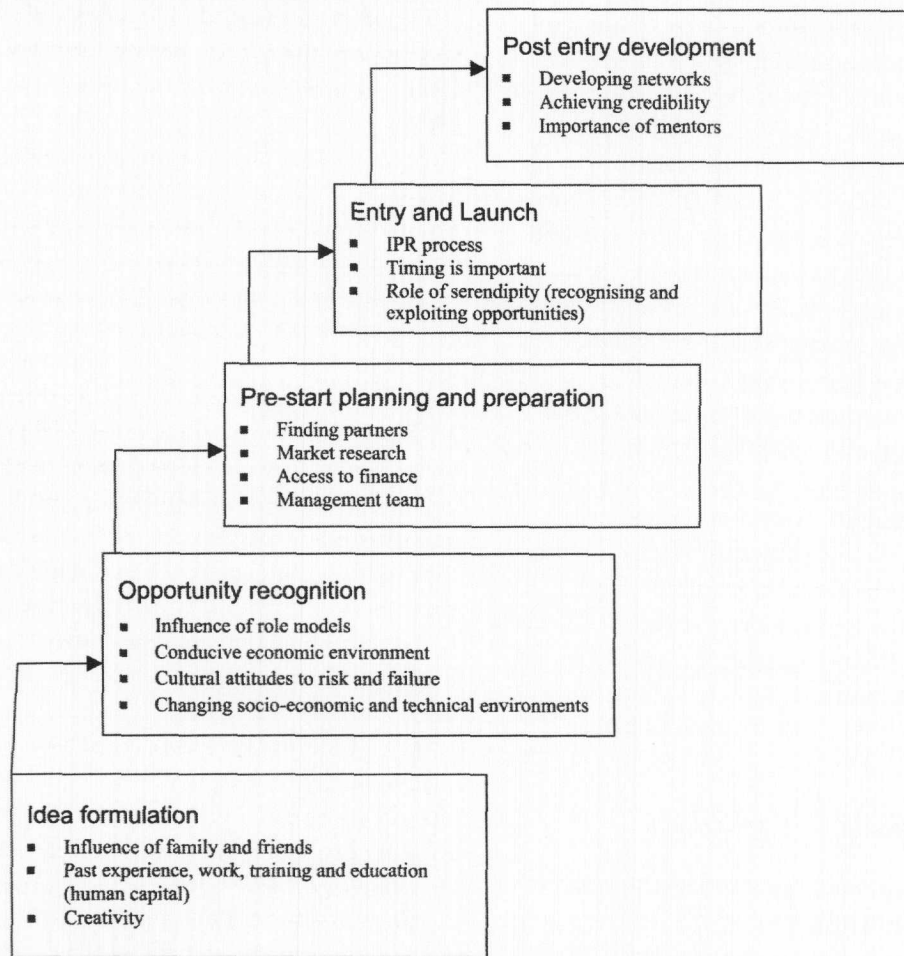
In taking a different perspective, by looking at how incubation processes may be supported, in this instance by a university[5], an exploitation strategy is proposed:

- *Evaluation process*: a review of the idea and its ownership and exploitation options; a scientific and commercial assessment; and a decision.
- *Protection strategy*: what method to use, when to implement.
- *Exploitation strategy*: what options are available (spin-outs, joint ventures, licenses), decision factors and implementation.

The UKBI focus group further suggested that the core processes of incubation include:

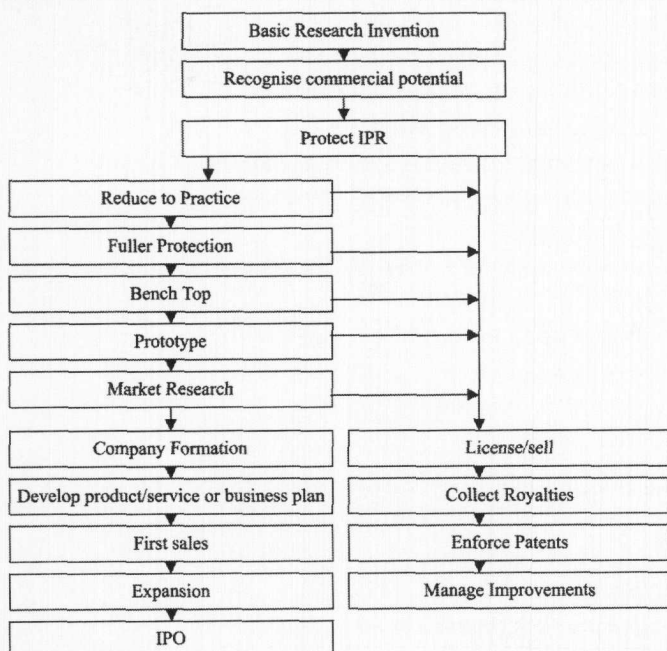
- *selection*: the right ideas/proposals and people;
- *building the community*: creating the right environment, culture, networks; and
- *exit*: preparing the clients for an independent, self-sustainable future.

Figure 1 Key steps in a generic incubation process



Source: Carter and Jones-Evans (2000)

Figure 2 Technology transfer from university to industry



Source: Gatsby Charitable Foundation (1998)

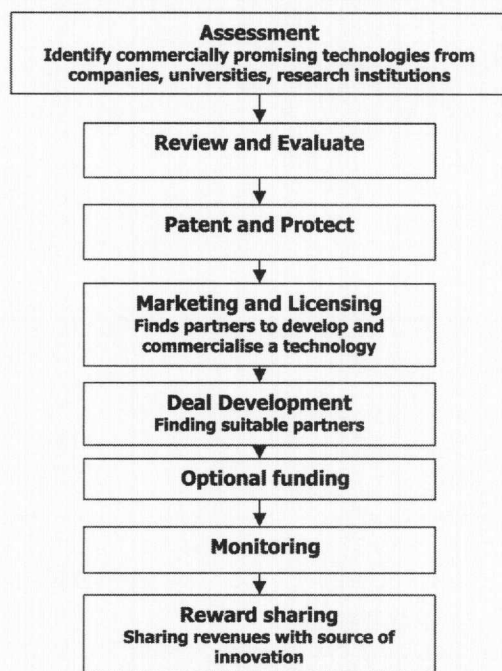
In summary, it is clear that there is no one single process model applied to incubation, although models in use are context-specific. However, there are also common patterns of components that can be drawn together to build a base generic framework of incubation processes. A second core element then in building management and leadership capability is understanding and applying incubation process models.

A further area to explore is the nature of the management focus and the level of experience of the incubation management. This is now discussed below.

3(a) The nature of management focus

In considering the management of the incubation process, few examples were available in the existing literature. Hannon's early study of the management of centres and

Figure 3 The BTG Technology transfer process model



Source: BTG website and promotional material

workspaces[6] suggested three key management functions:

- (1) managing the centre or workspace as a business;
- (2) managing the enterprises; and
- (3) managing the real estate.

This early study has been adapted and presented as Figure 5.

A US study also suggested three principles of successful business incubation (Rice and Matthews, 1995):

- focus the energy and resources of the incubator on developing companies;
- manage the incubator as a business, i.e. minimise the resources spent on “overhead” and develop a self-sustainable, efficient business operation; and
- develop a sophisticated array of services and programmes that can be targeted to companies, depending on their needs and stage of development.

The UKBI focus group (2003), mentioned above, suggested two core functions:

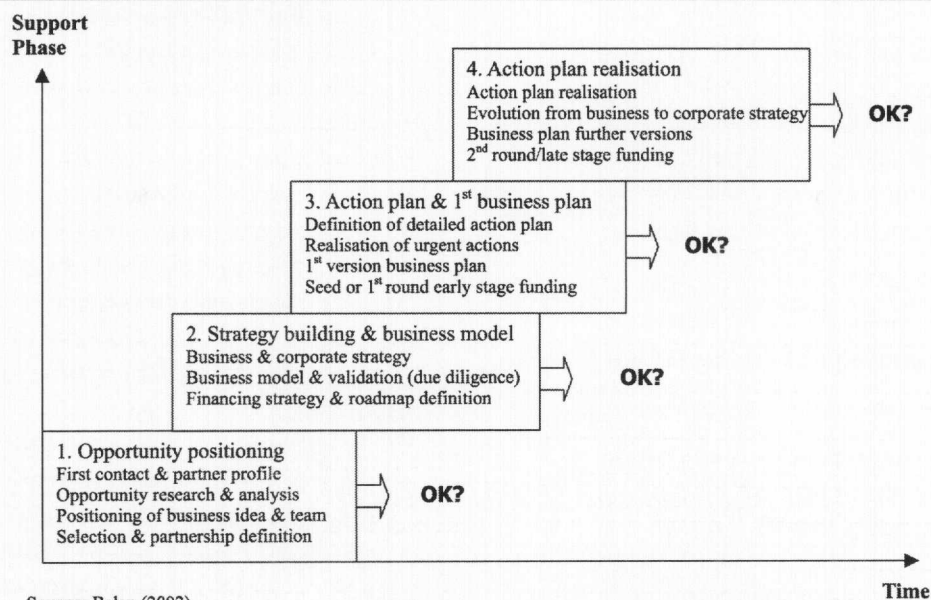
- managing the incubator as a business; and
- managing the incubation process (i.e. assisting clients).

3(b) The level of management experience

In the literature there is little direct exploration of the influence of the level of management experience on client perceptions of value or measures of performance and impact. Any references emphasise the need for effective and high quality management. Only Hannon in the UK has explored and published research on the development of a management framework adaptable across all levels of management experience, as discussed earlier in this article (Hannon, 1993).

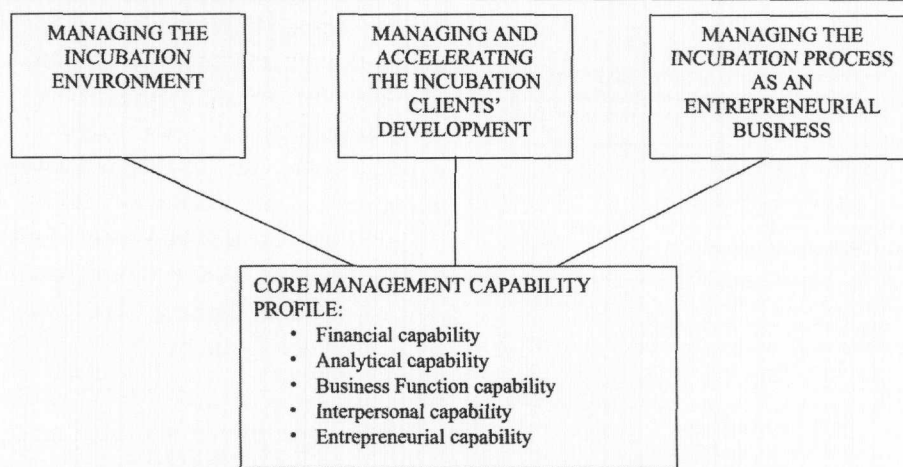
The application of such a framework provides opportunities for:

Figure 4 The Harmony reference process



Source: Balan (2002)

Figure 5 The nature of management focus



Source: Adapted from the author's original work funded by the DTI in 1992

- identifying current management capability;
- clarifying the purpose and role of the manager;
- setting out clear performance criteria for manager and staff;
- raising awareness and understanding of key roles;
- preparation of job specifications;
- a basis for staff recruitment policies;
- a framework for self-development;
- a framework for comprehensive training programmes for induction and advancement;
- a benchmark against which management performance can be measured/compared; and
- a guide for the enhancement of management quality, efficiency, effectiveness and efficacy.

Such uses can be applied by managers themselves, by management staff and functions, by management teams and boards and by incubator boards and sponsors, as well as economic development officers and planners within local authorities.

The conclusions to phase one of the study

Management development needs

From the review stage of the study, a number of points can be made:

- (1) There are a number of key components to a generic business incubation model that orientate around:

- finding and/or generating ideas and capturing them;
- building the founding team;
- testing ideas and recognising potential market opportunities;
- proofing/validating market-led product/service opportunities – collecting evidence, confirming underpinning assumptions;
- reviewing IPR/ownership – technical assessments;
- initial planning and business model concept development;
- recognising potential resourcing needs;
- securing resources/developing partner relationships;
- piloting/market testing the product/service;
- evaluating and re-shaping the business model and target market;
- leadership and team development;
- launching the venture;
- developing profitable sales;
- managing the early stages: organisation, operations, market development, resource management.

- (2) There are a number of context-specific factors that need to be accounted for that will significantly impact on likely support need:

- the scale of the proposed venture;
- the scope of the proposed venture;
- the type of proposed venture – manufacturing/assembly/service; profit orientation; sector/process/technology orientation;

- the proposed business model – legal structure; target consumer; route to market; etc.;
 - the level of experience of the founding venture team – new and inexperienced; experienced; expert.
- (3) Around such a generic core incubation process model will need to be built further layers:
- components relating to the management of the process model at a client case level;
 - components relating to the management of supporting an incubation process service through an organisation; and
 - components relating to the management of the embedding of an incubation service within a wider environmental context at a local and/or regional level.

The research literature is very thin in this respect and at best it recognises the potential for conflict between policy and practice, as the realities of managing profitable incubation projects can draw management away from incubation goals toward decisions and actions more likely to lead to maximising and/or securing cash and profit outputs. Such a shift in policy orientation may lead to difficulties down stream when project originators, especially those organised by consortia and partnerships, fail to fully grasp and share an understanding of the underlying purpose of the project. Many hidden assumptions may then rise to the surface as crises appear. These factors can affect the ability of incubation management and leadership to build capability and sustain effective implementation of policy in practice.

Phase two conclusion

A management development framework

It was concluded from the above that, in designing a programme that meets the management and leadership development needs of a diverse range of incubation professionals across a number of incubation contexts and levels of management experience, there is significant potential for a comprehensive portfolio of learning opportunities. Some opportunities could be regarded as core or generic and others as

contextually specific. The underlying emphasis of this study has been an orientation towards those ventures more likely to be at an early “pre-start” and “start” stage of development, and that the focus should be on processes of incubation and not incubator development, although it is recognised that such incubation may be located within an incubator.

Study conclusions and implications

This paper has presented an approach to exploring the management and leadership development needs of the incubation sector in the UK and as such has formulated an underpinning conceptual framework for incubation management and leadership capability building within a number of specific learner groups. From phase two of the study described in the paper, a number of outline indicative management and leadership development options have been able to be presented here. Through further consultations with leading experts in the incubator environment from policy, practice and academia a number of final conclusions can be proposed.

Benchmarking standards and frameworks

UKBI has now completed a national benchmarking study to develop a set of standards for business incubation in the UK. This study aims to provide clarity concerning the meaning of business incubation and to define its key functions and principles and practices. In so doing, UKBI will be able to categorise existing and future initiatives according to their aims, activities and stage of development. As a platform for future applications, this framework is likely to be of significant importance. Regarding the development framework presented in this paper, there is clearly the opportunity for cross-referencing, but more importantly, the framework presented here enables the UKBI benchmarking study outputs to be applied across a range of purposes, possibly providing it with greater value.

Of course there are dangers with the development of subsequent implementation of standards as has been seen in other contexts. It is important that the industry does not perceive the purpose of the standards as

being for compliance, or indeed as representing the lowest common denominator for the industry, i.e. the minimum acceptable level.

CPD/professionalism

An emerging need for continuing professional development (CPD) can be observed. The number of new entrants is growing and expectations of career building and management opportunities are emerging. Practitioners recognise the “professional” nature of their work and are beginning to seek “professionalism” within the incubation “industry”. Managers recognise that they need to meet clients’ expectations of minimum standards and quality across the sector. There is a demand for ensuring incubation retains a clear meaning and differentiation from other forms that clients understand and appreciate. This is a clear purpose of the UKBI benchmarking study identified above.

For the incubator or incubation project it is felt that such an approach will provide acceptable national standards of performance that can have multiple possible benefits. For example, they could:

- form an appraisal framework for use in assessing management performance;
- act as a benchmark for identifying opportunities for improving the efficiency and increasing the effectiveness of incubation policies and practices;
- enhance the image and credibility of the incubation project in the external environment;
- improve the added value to clients and their ventures, and in the wider locality.

For the individual manager, any standards or benchmarks could assist in: providing clear performance criteria for guiding decisions and actions; increasing overall personal competence and capability through greater individual awareness and understanding; enhancing personal motivation and confidence; providing further career development opportunities.

For the incubation client, the adoption of national standards and benchmarks could:

- create a better service provision;
- provide effective, relevant and timely support;

- offer more business opportunities;
- enhance confidence in management capabilities;
- effect a higher take-up and value-in-use of incubation support services.

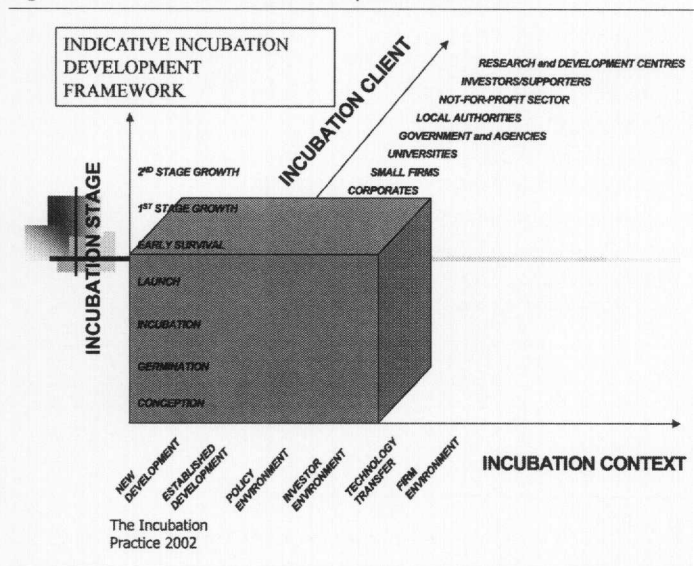
Government incubation policy

The development of the management and leadership framework for the incubation sector should also provide a supportive tool for the implementation of government policy for incubation across the UK. Capital investment in incubation has been significant and could remain so in the near future. Improving the performance of funded programmes is likely to be an imperative for government. The benchmarking standards are likely to inform the selection of projects for funding. However, the key influencing role still remains that of the management of the programme. Ensuring effective management and leadership should therefore be a priority for ensuring that the implementation of government funds are maximised in achieving expected returns on investments, particularly in the business performance of the programme and the performance of the programme businesses.

Embracing incubation diversity

An observable fact about the incubation sector is its continual evolution and development. The sector becomes more sophisticated as understanding, opportunity and client demands change over time. This dynamic, uncertain and complex incubation environment requires an entrepreneurial response with regard to its overall governance, leadership and management. Figure 6 proposes an indicative incubation development framework that illustrates the diversity of the sector and provides insight into the wide ranging contexts and opportunities for building management and leadership capability. It is likely that the sector will continue to evolve and mature further as new models and applications of incubation processes are created and tested. Such a dynamic environment will demand continual learning and development for those incubation professionals actively engaged in all aspects of the incubation opportunity environment.

Figure 6 Indicative incubation development framework



Notes

- 1 Hannon, P.D. (1993) "A management development framework for managed workspace and business centre managers", DTI and DUBS.
- 2 The literature research work was supported by The Incubation Practice and Dr Lauren Read and the framework content design by Dr Kate Job, Derby University. Their contributions are acknowledged..
- 3 UKBI is the UK's national association of incubators and incubation management.
- 4 An overview of such models is provided in a concept paper for the design of an MA module – prepared by P. Hannon (1998).
- 5 As presented by Bob Smalles, Edinburgh University, Research and Innovation.
- 6 A DTI-funded project in 1992 developing a management framework for managers of enterprise centres and workspaces.

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Appendix

Table AI A typology of models

Model type	Main authors
Life cycle (birth to death; metamorphosis; S-curve)	Starbuck (1971); Buchele (1967)
Stages (phases; developmental; abrupt)	Steinmetz (1969); Lievegoed (1973); Flamholtz (1986); Hosmer <i>et al</i> (1977); Churchill and Lewis (1983); Kazanjian (1988); Scott and Bruce (1987); Quinn and Cameron (1983)
Evolutionary (crises)	Greiner (1972)
Transition (organisational change)	Chandler