

Where perhaps this review has differed from the perspectives of the two books, is its emphasis on technology as a driving force. Certainly the cultural implications are important, very important. But they are being driven by engineering as well as commerce.

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Business Incubators in Economic Development: An Initial Assessment in Industrializing Countries

Rustam Lalkaka & Jack Bishop (Eds)

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This A4 format book reports on a study sponsored by the United Nations Development Programme's (UNDP) Private Sector Development Programme, which aims to assist governments and private enterprises to establish effective self-sustaining ventures in developing countries.

The book brings together studies of incubator programs in seven developing countries: Brazil, China, Czech Republic, Mexico, Nigeria, Poland and Turkey. It is divided into two parts: Part One contains four chapters which summarise the role of incubators in small enterprise development; and Part Two contains the seven country studies. These studies were first presented to a specialist workshop held in the Peoples' Republic of China in September 1995. They were then modified prior to publication in response to feedback received at the workshop.

The preface outlines the general methodology for the study and briefly discusses the role of business incubators world-wide, noting the lack of firm empirical evidence to determine their role in economic development. A business incubator is defined as

a controlled work environment designed to foster the growth of new and emerging companies (and) ... intended to create a collegial climate for the training, support and development of successful small entrepreneurial and profitable businesses. (p. viii)

There are approximately 1500 business incubators worldwide, an increase of five-fold from 10 years ago. Each incubator has approximately 10–30 tenant companies and Government agencies normally help to establish the incubator facilities and support their early operation.

The bulk of these incubators are in developed countries but around 250 are now operating in developing countries. Of these, 140 were surveyed for the workshop, so the data in this book can be expected to be representative of this group. The preface also notes that constraints of time and funding meant that the seven country studies used different specific methodologies, so the material presented is not always directly comparable, and some case studies go into more depth than others. The countries selected for inclusion in the study each had up to 3 years experience with incubator programmes. These experiences were both positive and negative so overall the book helps to fill some of the major gaps in our knowledge of the incubator as an economic tool.

Part One of the study (four chapters) provides an overview of the role of incubators. Chapter 1 opens by discussing incubators in the context of small enterprise development.

It defines small enterprises (SEs) as those which employ up to 200 people, and notes the difficulties created by varying definitions of SEs between countries.

Using the ecological descriptions of small companies derived from earlier studies, the chapter describes most developing country SEs as 'mice—informal, cottage and family enterprises, each with less than 5–10 employees' (p. 3). Within this metaphor there are also 'lions' which pursue opportunities relentlessly, but most economic growth comes from 'gazelles' which grow at rates of 20–30% per annum. The aim of the incubator, then, is to find the lions which should be gazelles, and help them grow.

The locus on enterprise development aligns with the aims of incubators in the US and UK,¹ which are likely to be able to choose their tenants from a wider pool of companies which have links with leading universities and which have demanding domestic customers. If, in contrast, incubators operating in developing countries are dealing overwhelmingly with 'mice', then this must influence the way in which they choose their tenants. Readers are left to analyse this issue for themselves by reading the country studies, as it is not dealt with elsewhere.

Chapter 1 also contains some very useful data which enables the reader to compare the characteristics of the case study countries with the main features of incubator programs in the US, Europe and Singapore. While the latter do not provide complete coverage of the developed world (and Australia is missing altogether), there is sufficient to enable a general picture to emerge on a range of key issues that need to be considered when analysing incubators in the context of small enterprise development: regulatory frameworks, finance, support programs, advisory services and networking. The US appears to have the most complete data, which can be compared with industrialising countries; unfortunately similar detail on other developed countries is lacking.

Discussion moves on to the economic conditions which surround these businesses: policy and regulatory systems, small enterprise support programs, finance and management/technical advisory services. There are examples of such systems and support in Europe and the US, and a very useful 'typology of support services' (Fig. 1–1, p. 7). This summary sets the scene very effectively for the next chapter, *Characteristics of Incubator Programs*.

Chapter 2 begins with history of business incubators, which:

... support the transformation of selected, early stage businesses with high potential into self-sufficient, growing and profitable enterprises. (p. 20)

Incubators can be classified according to the client firms that they seek. Here, nine types are identified: targeted population (e.g. social minorities, graduates); international (seeking foreign investment); industrial sub-contracting (built on linkages to large enterprises); single business (e.g. sectors such as biotech, software); university (for university spinoffs); technology focus (selected within the context of national economic objectives); regional/rural (geographic); hub (a central incubator which supports smaller, satellite incubators); and virtual (an incubator by management but without a single location). As can be seen from the list these categories are not mutually exclusive. The discussion here would have been helped by a table which outlined the key characteristics of the different types and perhaps referred the reader to examples of these in the country studies.

This chapter also discusses some general issues arising from the decision to set up an incubator: partnerships and general support, objectives, performance, operating characteristics, finance for tenants, staffing, counselling/training, and the role of the private sector. It draws on data from the case studies and includes cameos from these as boxes inserted in the text, for example, the relationship between Malaysian incubators and technology parks (Box 2–1, p. 25). This is where the lack of uniform methodology starts

to have an impact e.g. extracts from the Brazilian case study show incubator structures, number of tenants and size of work spaces; whereas extracts from the Polish case study provides date of startup and structural information. This difficulty occurs throughout the book and mars the reader's ability to compare the case studies. Nevertheless the case studies do provide a wealth of useful information and their value should not be underestimated.

'Modality' is a term used in this book to describe the use of business incubators as a tool of economic policy, and is the focus of Chapter 3. Discussion begins with an overview of some relevant programs, for example, the World Bank's Trade Expansion Programme, and several US and European incubator programmes. From this discussion is derived a set of 10 assessment criteria that might be applied to incubators in order to assess their effectiveness. These are termed (feedback) 'loops' but in reality are quantitative measures which can assist with evaluation. Not all of these measures are available for all case studies and the chapter only covers two in detail: enterprise and employment creation.

Following this analysis a profile is developed of a 'typical' incubator. The profile includes size, investment requirements, job creation, 'graduation' rates and sales. It also projects changes that might be expected over the first 6 years. This profile for developing country incubators is then compared with a 'typical' European business innovation centre, and recommendations are developed for policy towards incubators in industrialising countries.

The final analytical chapter in Part One (Chapter 4) deals with implications for policy and research. Box 4-1 outlines the key questions that need to be addressed while developing incubator policies, e.g. their role in relation to other enterprise support programs. The determinants of success are presented as a diagram (Fig. 4-1) but most of the factors depicted could easily apply to any innovating company: supportive national policies, linkages with universities, technical infrastructure, market opportunities, management training, finance, professional services. The specific additional services provided by an incubator—selection of tenants, 'champion' sponsors, and training of incubator management, are only discussed briefly. Some important factors identified in US research of university-based incubators, such as access to equipment and students are also omitted.² The chapter concludes with an outline of future research required to fill in some of the gaps in knowledge.

Part Two of the book presents the country studies in seven separate chapters which range from 8–12 pages. As previously noted, these are somewhat different in form and content because of differences in methodology. For each, however, there is a map, a detailed list of incubators with some key performance indicators, and a discussion of national policy. There are usually 2–4 case studies of individual incubators within each country, and a discussion of their differences. The tables repeat some information provided in the analytical section, but otherwise provide a good range of data on incubator schemes in these countries.

The text concludes with a bibliography and short author biographies, but unfortunately, there is no index. Overall, it is a worthwhile book that is well presented and easy to read.

References

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2. S.A. Mian, 'Assessing value-added contributions of university technology business incubators to tenant firms', *Research Policy* 25, 3, 1996, pp. 325-335.

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Universal Service Obligations in a Competitive Telecommunications Environment

Committee on Information, Computer and Communications Policy (ICCP) Organisation for Economic Co-operation and Development (OECD)

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As more and more countries open up their telecommunications markets to competition, the definition of universal service and how to quantify this service (that is to share the costs among competing telecommunications operators) have become increasingly significant factors in their regulatory regimes. In a competitive market place the concept of universal service is a referential framework in the debate over whether improvements in telecommunication services are best achieved through intervention by the central government or through competition. Now it is claimed, that in an era of rapidly changing technology, competition is an effective way of not only delivering universal service obligations, but that this can be done at a lower price with greater service diversity—including further network expansion. Not surprisingly given the OECD's previous publications on opening up monopoly telecommunications operators to multi-operator competition, this is the starting point of *Universal Service Obligations in a Competitive Telecommunications Environment*, report number 38 in the ICCP series.

The report was prepared by Patrick Xavier (Swinburne University of Technology, Australia) with Martin Cave (Brunel University, UK) contributing Chapter V on Costing Universal Service Obligations. Less concerned with debating the appropriateness of universal service objectives in member countries, the authors of the report had the aim of assisting member states '... in the task of developing such policies and programmes for the provision and funding of universal service'. In attempting to realise this aim the authors have provided a framework and a set of principles for (re)considering the identification, costing, funding, reporting and monitoring of universal service. The motive for doing this, it is claimed, is that OECD countries will need to forge common principles concerning universal service and related programmes in order to develop a 'more broadly consistent approach to universal service'; an important factor given the 'likelihood of increasing globalization of telecommunication markets' (p. 16).

This does not mean that OECD member states are expected to adopt a uniform position on universal service, for in a world of multifaceted variety there can be no single strategy for implementing universal service obligations. However, adopting a consistent approach to such obligations, we are told, would enable member states to accommodate changes in telecommunications technologies and at the same time recognise each other's unique characteristics in which 'specific objectives, targets, policies and pace of implementation ... might vary from country to country according to national circumstances and priorities' (p. 16).

Following a short introductory chapter extolling the virtues of competition (Chapter I) the remaining five chapters cover the concept and rationale of universal service