

DEVELOPMENT OF SMALL, MEDIUM AND MICRO-ENTERPRISES IN SOUTH AFRICA THROUGH BUSINESS INCUBATORS

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ABSTRACT

This paper investigates the role that universities could play in supporting business incubators in South Africa. The study was done at a time that South Africa was experiencing immense challenges in identifying opportunities for creating employment. In the first quarter of 2011, the rate of unemployment rose to 25%. Despite the financial support in the form of business management training, consultancy services, and provision of infrastructure, 75% of new small, medium and micro enterprises (SMMEs) fail prematurely after a short period of existence. The present study first looked at the business incubator initiatives in Brazil, China and India as benchmarks. In these countries business incubators have become the nexus points where the industrial world interfaces with the academia. Business incubators are pivotal in spawning the SMMEs in all sectors of the economy, in both rural and urban settings invariably leading to beneficial outcomes such as job creation, technological innovation, skills development and a broad spectrum of goods and services. Business incubation promotes economic development in two ways; first, in business development associated with direct production and second, in the human development index. Business incubators also help diversify economy by broadening tax base. Business incubation can be initiated at establishments such as governmental organizations, local government communities, universities, research institutions and private consortiums. The present work is a desk study that investigates the intervention of South African universities in support of technology-based incubators. The current role of universities in supporting the business sector is determined with focus on business planning, technological innovation and training on essential business disciplines such as legal matters, accounting and financial management, marketing and information technology. The paper recommends the underlying critical success factors for university-linked business incubation. These include emphasis on the customer-driven business ethos where demand pull overrides product push. The universities being the repository of technological know-how should proactively generate business ideas for many unemployed university leavers rather than merely react to infrequent calls of a few budding entrepreneurs.

Keywords: Business incubators, small and medium enterprises, employment creation, universities, South Africa.

1. INTRODUCTION

Small, medium and micro enterprises (SMMEs) are increasingly seen as playing an important role in the economies of many countries [1]. Governments throughout the world focus on the development of the SMME sector to achieve economic growth, contribute to job creation, alleviate poverty, increase competition, exploit niche markets and diffuse technology. In South Africa, SMMEs contribute 56% of private sector employment and 36% of the gross domestic product [1]. South Africa's unemployment rate stands at 25% [2]. New SMMEs are seen as a significant component to South Africa's development thrust. Ironically start-ups struggle due to lack of knowledge and skills. They require support with financing, access to suppliers, advertising, as well as finding premises and competent staff [3]. Since the attainment of independence stakeholders have come up with a number of SMME support initiatives and the South African government introduced the following pieces of legislation:

- the National Small Business act of 1996 that opened the way for the Department of Trade and Industry to address SMME development in South Africa;
- the Skills Development Act (SDA) of 1998 that sought to enhance the skills levels of employees by providing a framework for training to take place within the workplace;

- the skills Development Levy Act (SDLA) of 1999 that provided a means to fund training at workplace; and
- the National Qualifications Framework Act (NQF) of 2008 that provided a national framework for education and training in South Africa [4].

In addition to these instruments 85% of the government spending on goods and services was directed to SMMEs, thereby cushioning them against competition from large retailers [3].

The government also supports SMMEs through Ntsika Enterprise Promotion Agency and Khula Enterprises Finance Limited. Ntsika Enterprise Promotion Agency provides non-financial services to SMMEs whilst Khula Enterprises Finance Limited provides financial support.

Other role players that augment government effort in supporting SMMEs are NGOs, local business service centres (LBSCs), community based organisations (CBOs), foreign donor agencies and tertiary institutions [4]. These role players enhance entrepreneurship in SMMEs through business skills training, technical skills training and entrepreneurial skills training [4].

With the above instruments and infrastructure in place, a decrease in unemployment rate, a more equitable income distribution, increased globalisation, and a stimulated economy was expected [3]. Surprisingly, the impact has not been significant. In the first two years of starting SMME failure rate in South Africa is at 75% and this is one of the highest in the world.

This work is a desk study that analyses business incubator models in Brazil, China and India. Lessons learnt from these countries are then drawn for South Africa to integrate into its SMME support initiatives.

2. RESEARCH OBJECTIVE

In view of the challenges the South African economy is facing in creating and supporting employment, this study has the following objectives.

- To investigate the extent to which the concept of business incubation is embraced in South Africa.
- To compare South African business incubation model against models in Brazil China and India.
- To investigate the role of South African universities in setting up and supporting business incubators.
- To identify areas for improvement in the South African business incubation model.

SMMEs are discussed in the context of the definition provided by the National Small Business Amendment Act Number 26 of 2003. This act defines SMMEs based on the number of paid employees, turnover and asset value. Table 1 gives the act's definition of SMMEs.

Table 1: Classification of SMMEs in South Africa[5]

Industry Asset	Size of class	Full-time Employees	Turnover	Gross
Agriculture	Medium	100	R5m	
R5m	Small	50	R3m	
R3m	Very small	10	R0.5m	
R0.5m	Micro	5	R0.2m	
R0.1m				
Mining and Quarrying	Medium	200	R39m	
R23m	Small	50	R10m	
R6m	Very small	20	R4m	
R2m	Micro	5	R0.20m	
R0.1m				
Manufacturing	Medium	200	R51m	
R19m	Small	50	R13m	
R5m	Very small	20	R5m	
R2m	Micro	5	R0.20m	
R0.1m				
Electricity, Gas and Water	Medium	200	R51m	
R19m	Small	50	R13m	
R5m	Very small	20	R5.10m	
R1.9m	Micro	5	R0.20m	
R0.1m				
Construction	Medium	200	R26m	
R5m	Small	50	R6m	
R1m	Very small	20	R3m	
R0.5m	Micro	5	R0.20m	
R0.1m				
Retail and Motor Trade and Repair	Medium	200	R39m	
R6m	Small	50	R19m	
Services	Very small	20	R4m	
R3m	Micro	5	R0.20m	
R0.6m				
R0.1m				
Wholesale trade, Commercial Agents	Medium	200	R64m	
R10m				

and Allied Services R5m	Small	50	R32m
R0.6m	Very small	20	R6m
R0.1m	Micro	5	R0.20m
Catering, Accommodation and other R3m	Medium	200	R13m
Trade R1m	Small	50	R6m
R1.9m	Very small	20	R5.10m
R0.1m	Micro	5	R0.20m
Transport, Storage and Communications R6m	Medium	200	R26m
R3m	Small	50	R13m
R0.6m	Very small	20	R3m
R0.1m	Micro	5	R0.20m
Finance and Business Services R5m	Medium	200	R26m
R3m	Small	50	R13m
R0.5m	Very small	20	R3m
R0.1m	Micro	5	R0.20m
Community, Social and Personal Services R6m	Medium	200	R13m
R3m	Small	50	R6m
R0.6m	Very small	20	R1m
R0.1m	Micro	5	R0.10m

3. LITERATURE REVIEW

Business incubation is a concept that was originally developed in the USA and is regarded as a cost effective way of promoting innovation and creating sustainable entrepreneurial ventures [6]. In its generic sense, the term incubator is often used to describe an organisation that, in one way or another, helps entrepreneurs develop their ideas from inception through commercialisation [6]. Services offered by incubators are both tangible and intangible. Tangible services include physical work-space, shared office facilities such as secretarial services and business equipment. Intangible services are in the form of in-house consultancy, mentorship, marketing, business planning, legal services and accounting [7]. Business incubators support emerging businesses in their early, most vulnerable stages. They promote new firm growth, technology transfer, economic development and diversification [6]. As such the incubators constitute a source of new innovation and growth for an industry, encouraging the emergence of new technologies, entrepreneurship and the creation of new jobs. This focused help to selected early stage companies also increases the chances of survival of SMMEs three to four-fold when compared to those starting outside an incubator [8].

3.1 GENERIC MODELS OF BUSINESS INCUBATORS

According to Chandra, business incubators come in many forms and they fit into the following three types:

- *Technology incubator*:- has a university affiliation along with a focus on a specialised technology that coincides with the area of expertise at the university;
- *Traditional/Community-based incubator*:- is supported by the state and local development agencies as well as by local chambers of commerce; and
- *Private/Corporate incubator*:- initiated by private companies that would like to grow businesses related to their specific technology needs [7].

Despite the differences, all incubators should have tenants within their walls. If an “incubator” has no tenants within its walls, it then loses the defining features of an incubator. It becomes a traditional small business development centre [6].

3.2 SPONSORS OF INCUBATOR FACILITIES

Sponsors of incubator facilities are quite diverse and their objectives often differ.

Private sector corporations and investor groups are primarily interested in property development, transferring and commercialization of technology and investing in opportunities identified in tenant firms.

Public sector sponsors are primarily interested in job creation, poverty alleviation, regional development, equity and economic diversification.

Education sector organisations such as universities and vocational-technical schools have a thrust on empowerment of students through training and establishment of commercial outlets for research outputs.

3.3 REQUIREMENTS FOR SUCCESSFUL INCUBATION

Akomak identified seven key characteristics of a successful business incubator [9]. It should:

- Have clear objectives;
- Have clear selection, entry and exit criteria for tenants;
- Have qualified managers, preferably with business management experience;
- Monitor and assess tenants to see whether they are on the right track and are meeting targets. The assessment could focus on employment, sales, growth, financial position, or innovativeness;
- Have a set of tangible and intangible services that it provides to tenants;
- Assist tenants to network. This is helpful where there is no likelihood of tenants copying or stealing ideas from each other;
- Have the capacity to sustain its operations. In as much as tenants are expected to be self supporting, incubators are also expected to be self supporting.

4. RESEARCH METHODOLOGY

This is a desk study of publications on SMME support through business incubators. Drawing on the experiences of Brazil, china and India, the paper recommends the critical factors that South Africa can adopt in order to have a successful business incubation programme.

5. COUNTRY CASES

Brazil, China and India were chosen because they belong to the same economic grouping as South Africa, i.e. BRICS. China and Brazil together host more than 1000 incubators and are ranked third and fourth respectively (in terms of the numbers of incubators) following the US and Germany [9].

5.1 INCUBATORS IN BRAZIL

Incubators in Brazil are a product of the Triple Helix Model, i.e. an interaction of the government, the industry and universities. The research institutions and universities are a source of knowledge for the tenants. The government, non-governmental agents, private companies and the federation of industries provide funding.

The first incubator in Brazil was established in 1986 and within 10 years there were 40 incubators [9]. In 2003 the number had increased to 200 incubators. The thrust of incubators was shaped by local needs. Their objectives were to commercialize technology, diversify regional economies, foster entrepreneurship, alleviate poverty and generate employment.

The sectors supported were computer software, services, electronics, biotechnology and chemistry, mechanics, and food processing. Some incubators fostered entrepreneurship in cultural activities such as music, art, sculpture, photography and cinema industry [7]. According to Akcomak most incubators were located in a university or a research institute and more than 80% of the tenants were spin-offs from academia [9]. Universities promoted the idea of incubation until incubators were accepted as a tool for promoting entrepreneurship. Other institutions that supported the incubation industry are the Service for Support to Micro and Small Business (SEBRAE) and the Brazilian Association of Business Incubators and Science Parks (ANPROTEC). ANPROTEC was founded in 1987 and is among the strongest incubator/park associations the world over. Moreover there is the National Incubation Support Program (PNI) that organizes forums where incubators share information, experience and expertise.

The combined effort of the above stakeholders has led to the continual growth of incubators in Brazil. In 2009 the number had increased to 400 incubators [9].

5.2 INCUBATORS IN CHINA

The first incubator in China was established in the late 1980s. In the first ten years, China had 100 incubators and the number increased to 500 in 2007. The number of people employed then stood at 600 000 [7]. Incubators in China are bigger than in other countries and they on average house 60 to 70 enterprises [9].

Chinese incubators tend to be more monolithic and technology-focused. The government heavily subsidizes incubator construction as well as incubator operations and is involved in operational decisions of the incubator. Government involvement negatively impacts the incubators' market orientation and entrepreneurial proclivity. They do not make risky investment in their client firms [11]. The country has two categories of incubators, i.e. the state owned enterprise (SOE) incubators and the returned Chinese student incubator [7].

A SOE incubator is housed in and supported by the parent SOE. It creates new technologies for and absorbs redundant workers from the parent company [7].

Returned Chinese student incubators were set up to attract Chinese scholars and students in diaspora. The focus of these incubators is to grow and sustain high-tech businesses.

Incubators in China focus more on providing tangible support, i.e. office space, office equipment, laboratory space and equipment and conference rooms.

5.3 INCUBATORS IN INDIA

The business incubator movement in India took off in the late 1980s as a complementary policy tool aiming at promoting entrepreneurship and stimulating new venture creation. The three pilot business incubators were financed by the United Nations through the UN Fund for Science and Technology [9]. In 2009 there were 78 incubators in India [12]. Today, full-fledged incubators have been established at the Indian Institutes of Technology in New Delhi, Mumbai and Chennai. At Hyderabad, the government of India's Materials

Research Centre has initiated the Advanced Materials Technology Business Incubator (AMTBI) on its campus. AMTBI assists entrepreneurs commercialise materials technology research into advanced products for local and international markets [8].

In addition, India has more than 17 Science and technology parks that are located at Universities. They are sponsored by the Government through the Department of Science and Technology. They also make a contribution in building the capacity of SMMEs. Above all India has a very large pool of young and well qualified technical manpower. The qualified manpower presents an ideal case for knowledge based industry.

The industry sectors supported by the incubators in India are Bio-technology, pharmaceuticals, health, information technology, electronics and communication, textiles, chemical, design, agriculture, rural technology, composite materials development and welding.

6. RESEARCH FINDINGS

Business incubators are also a feature of the South African business environment. Presently there are 29 business incubators initiated by SEDA and they support entrepreneurs in sectors as diverse as small scale mining, furniture, jewelry, construction, bio-fuel processing, information and communication technology, base metal processing, stainless steel processing and floriculture.

The government through the Small Enterprise Development Agency (SEDA) provides the infrastructure and financial support required by the incubators. Table 2 gives details of the SEDA sponsored incubators.

South African universities that participate in supporting Business incubators are:

1. Tshwane University of Technology works with Softstart and SEDA Automotive Development Centre (SATEC). In SATEC Tshwane University of Technology works jointly with CSIR enterprise development centre, and the Automotive Industry Development Centre in supporting small businesses in the automotive sector.
2. Nelson Mandela Metropolitan University works with CHEMIN, a SEDA incubator in the chemical industry.
3. Nelson Mandela Metropolitan University, University of Stellenbosch and the University of British Columbia jointly support Furntech develop skills in the furniture industry.
4. Central University of Technology collaborates with SEDA Agricultural and Mining Tooling Incubator (SAMTI) in Free State. The incubator helps tenants with design of tools; licensing, management of intellectual property, general management training; and entrepreneurial skills development.

Table 2: The 29 SEDA Business Incubators [13]

Business Incubator	Sector	Location
Chemin	Chemistry Industry	Port Elizabeth
Downstream Aluminium Centre of Tech	Aluminium fabrication and casting	Richards Bay
SEDA Nelson Mandela Bay Incubator	Information and communication Tech	Port Elizabeth
Egoli Biotechnology Incubator	Bio and Life Sciences	Modderfontein
Furntech- Cape Town (Head Office)	Furniture Industry	Cape Town
Furntech-George Cape	Furniture Industry	George- Eastern
Furntech-White River	Furniture Industry	White River
Furntech-Umzimkhulu	Furniture Industry	Umzimkhulu (KZN)
Furntech-Durban	Furniture Industry	Durban

Furntech Mthatha	Furniture Industry	Mthatha
Furntech- Johannesburg	Furniture Industry	Johannesburg
Agri-Skills Development and Training	Agricultural Capacity Building	Mpumalanga
Makhura Maphura Incubator	Bio-fuels-plant production	Marbell Hall, Limpopo
Mpumalanga Stainless initiative	stainless Steel Processing	Middelburg
SEDA automotive Technology Centre	Automotive Industry	Rosslyn, Pretoria
SEDA Ekurhuleni Base Metals Incubator Johannesburg	Copper, Zinc and Base Metals	Springs,
SEDA Construction Incubator	Construction	Durban
Mthatha Construction Incubator	Construction	Mthatha
Dundee Construction Incubator	Construction	KwaZulu-Natal
Port Elizabeth Construction Incubator	Construction	Eastern Cape
SEDA Essential Oils Business Incubator	Plant cultivation and oil distillation	Pretoria, Gauteng
Soshanguve Manufacturing Technology Demonstration Centre	Low-cost/small scale manufacturing	Soshanguve, Pretoria
SEDA Platinum Incubator	Platinum Jewellery	Rustenburg
Timbali Incubator	Floriculture	Nelspruit
Zenzele Technology Demonstration Centre	Small Scale Mining	Randburg, Gauteng
Limpopo Jewellery Incubator	Jewellery Manufacturing	Polokwane
Agricultural and Mining Tooling Incubator	Mining/Agriculture	Bloemfontein

Benefits derived from the incubator industry in South Africa are summarised Table 3 summaries the impact of SEDA initiated incubators in the period 2004 to 2010.

Table 3: Combined Impact of SEDA Initiated Incubators. [14]

Initiative	Total	2009	2008	2007	2006	2005	2004
SMMEs Established	1010	224	126	98	52	82	428
SMMEs Supported	1900	456	128	42	103	159	1012
Clients Supported	3931	789	608	42	197	280	2015
PDI Supported	81%	87%	82%	94%	60%		
Women Supported	36%	37%	41%	33%	325		
Direct Jobs Created	4462	1318	1026	40	266		1812
Direct plus Indirect Jobs Created	21322	10628	6115	124	824	711	2920
Turnover of SMMEs (R million)	R416	R129	R105	R21	R51		R110

In Brazil incubators are a product of the Triple Helix Model, i.e. the universities, industry and government work closely together in building and supporting incubators. Universities and research institutions act as sources of knowledge for the incubated companies, whilst the government and private companies provide funding. This joint effort has seen a rapid growth of incubators. Currently Brazil has the fourth highest number of incubators in the world, after USA, Germany and China.

6.1 PARTICIPATION OF SOUTH AFRICAN UNIVERSITIES

This study identified three universities that assist SEDA initiated incubators, and these are:

- University of Stellenbosch – in partnership with Furntech and the University of British Columbia it developed a furniture design training programme. The first programme was run in August 2010.
- University of Pretoria Business Incubator is a satellite incubator of softstart business technology incubator. It supports and promotes pre-startup phase entrepreneurs who wish to start information and communication technologies related ventures.
- Nelson Mandela Metropolitan University in George – enhances technical skills development programme in Furntech.

The majority of the universities have Technology Stations on campus. These stations were established through collaborations with the Technology Innovation agency.

In addition to the Technology Stations, Technology Innovation Agency jointly set up institutes for advanced tooling with three local universities. The mandate of these institutes is given in Table 5.

7. CONCLUSIONS

From the study done on the incubator industries in China, India, Brazil and South Africa the following conclusions were arrived at:

1. The business incubator industry gives meaningful benefits to the country when the following players are involved:
 - Government support that facilitates venture creation and business infrastructure;
 - Universities that provide innovation support;
 - Private sector partnership for mentoring and marketing
 - Professional networking , national and global;

The triple helix model explains why Brazil attained the world number three position in the incubator industry.
2. There is no one standard incubator model that countries can adopt. What dictates a model that a country adopts are the economic, developmental and social needs of a country. Brazil adopted the triple helix model where the government, industry and universities work closely in giving support to the incubators. In China and South Africa the government encompasses the incubator. In India, the incubator model is a product of the close partnership between the government, universities and research institutions. The models adopted by the four countries explain why these countries have different achievements in the incubator industry. Brazil seems to have succeeded more than South Africa and India because of its all encompassing model.
3. Business incubators are indeed a means of creating employment. China in a 20 year period managed to generate 600 000 jobs from 500 incubators. South Africa created 4 462 jobs between 2004 and 2010. Similarly, incubators in Brazil supported 1 200 enterprises between 1986 to 2003. People employed then were 5 000. These figures justifies why business incubators are seen as a potential avenue for employment creation.
4. Literature on countries researched on, did not exhaust all the performance measures associated with business incubators. There is a lot of room to explore measures associated with enterprises and employment created, growth in the company assets, sales turnover and exports, corporate and personal taxes generated, survival rates of ventures incubated, the technologies commercialized and revenues earned by patents and licensing, and the number of graduating firms and their outputs. This analysis could start with an individual incubator, then develop to cover provincial and national level.
5. Though challenging, other outcomes that could be studied are social benefits such as raised level of public consciousness for small enterprise development, enhanced image of the community as pro-entrepreneurship, skills enhancement, attitudinal changes and increased self-esteem.

8. RECOMMENDATIONS – THE WAY FORWARD

With the increasing challenge of unemployment, South Africa needs to embark on programmes that create and sustain jobs. A strategy to improve employment creation in South Africa is summed up by the following recommendations:

1. According to Akcomak most incubators in Brazil were located in universities and research institutes and more than 80% of the tenants were spin-offs from academia [9]. South African universities need to be equally active in promoting entrepreneurship among local SMMEs.
2. In Brazil, the thrust of incubators is shaped by local needs. Depending on need, the incubators focus on poverty alleviation, job creation, or technology transfer. Other incubators have a thrust on entrepreneurship in cultural activities such as music, art, sculpture, photography and cinema industry [7]. In South Africa, SEDA tends to over invest in one sector, for example, it set up seven incubators in furniture industry and four in construction industry. Not much has been done in the clothing and textile industry. This is one sector that desperately needs an intervention. Many jobs have been lost due to competition from China and India.
3. In Brazil, incubators are a product of the Triple Helix Model, i.e. a joint effort of the central government, academic institutions and industry. This has given rise to more than 400 incubators in a period of 25 years. Comparable results could be achieved in South Africa if the three parties were to jointly work on building business incubators.
4. In Brazil incubators have forums where they share experiences and expertise. Such networking forums are very handy to SMMEs. They give SMMEs a platform to learn from each other.
5. From the late 1980s to 2007, China managed to set up more than 500 incubators. Chinese technocrats returning from diaspora played a significant role in building up of these incubators. South African technocrats living and working abroad could also be enticed to make similar contributions.

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