

SEDA TECHNOLOGY INCUBATORS

1 Introduction

Small, medium and microenterprises (SMMEs) can play a crucial role in stimulating long-term economic growth and creating jobs. Government therefore offers a range of services to support entrepreneurship and innovation in SMMEs, under the auspices of departments such as Trade and Industry (DTI), Science and Technology, and Small Business Development. Incubation programmes are an important form of support to existing and aspiring SMME entrepreneurs, who get access to both basic services (e.g. physical space, infrastructure and shared services) and advanced services (e.g. networking opportunities, access to specialised knowledge, and access to finance). Incubation programmes aim to improve the early-stage survival and long-term growth prospects of SMMEs, to ensure that they remain sustainable for more than three years after graduating from the incubator support.

While there are other incubator initiatives, such as the DTI's Incubator Support Programme, that also assist SMMEs in graduating to the mainstream economy, the technology programme of the Small Enterprise Development Agency (SEDA) runs the only government incubation programme that focuses on commercially oriented, technology-based SMMEs. The objectives of this PER were to assess the performance of the Incubation Unit of the SEDA Technology Programme (STP) and the incubation centres it supports. The PER was conducted between January and July 2014 by Genesis Analytics. Some of its key outputs, insights and recommendations are summarised here. The full report and costing models are available at: www.gtac.gov.za/programmes-and-services/public-expenditure-and-policy-analysis.

2 Institutional space

In 2006, government consolidated its SMME support initiatives and in that process, merged the technology focused incubators from the department of Science and Technology, with various other national and DTI incubators. The operational responsibility for managing the technology focused incubators was transferred to the Small Enterprises Development Agency and the SEDA Technology Programme was established. The SEDA Technology Programme (STP) provides financial and non-financial support to small enterprises through business incubation, technology transfer, and quality and standards services. It has an Incubation Unit, a Quality and Standards Unit (to assist SMMEs with quality control and assessment processes, as well as internal management and operation systems) and a Technological Transfer Unit (to assist SMMEs with access to and use of technology or technological equipment).

In the period under review, the programme consisted of 28 incubation centres across the nine provinces. Each is registered as an independent section 21 or not-for-profit company. By 2014, the 28 centres were home to 42 technology business centres, operating in economic sectors such as biotechnology, mining, agro-processing, construction, jewellery, automotives, metals and renewable energy. Both start-up and established SMMEs were eligible for incubation, and the centres catered for different levels of development and technical competence. Support services were provided in three phases: pre-incubation, incubation and post-incubation. The centres use different models of incubation, including the following:

- *Technology demonstration centres* demonstrate, exhibit and provide training in the use of available technologies.



- *Technology incubators* support technology-based start-ups and those requiring rehabilitation or resuscitation.
- *Hybrid centres* combine elements of both models, and incorporate features of the local environment and services, including training, technology development, innovation support, virtual services, and approved services.

Since its incorporation into SEDA, the STP incubation programme has reported to the SEDA board, whose primary focus is job creation by incubated SMMEs rather than innovation and technological advancement. However, funding still flows from the DTI's Innovation and Technology Policy unit, which aims to catalyse innovation and technology.

3 Performance analysis

3.1 Programme design for technology-oriented SMME incubation

The STP incubation programme is well conceived from a programme design perspective, incorporating global best practice for SMME development, technology adoption, sustainability and growth. In addition to the services provided by traditional incubation models in South Africa, STP incubators also facilitate market linkages for SMMEs, with both suppliers and customers.

Most of the incubatees have been sourced from (and screened by) other programmes in which they had already received some technical or business support. This reduced the potential failure rate and the associated costs of such failures. Interestingly, the costing model (discussed below) suggests that taking on more start-up SMMEs would increase the costs of the programme significantly, without necessarily a commensurate rise in the number of successful SMMEs.

There has, however, been a gradual dilution of focus from the programme's original mandate to support technology-oriented SMMEs towards assisting the development and growth of a wider range of SMMEs. This reduces its differentiation from other SMME support programmes, and detracts from its focus on the specialised needs of technology-focused SMMEs.

3.2 STP incubator graduation rates

In 2010, a SEDA review estimated the percentage of 'successful' incubatees of an STP incubator at 60–70%. However, the impact of the STP incubation programme has to date been assessed against a single indicator – 'SMME graduation'. This is not adequate for measuring SMME sustainability or the programme's contribution to economic growth. It is widely recognised that SMME sustainability is reasonably assured after the 'breaking point' of three years of unsupported operation. It is recommended that 'success' be defined as an SMME still being in existence three years after graduation, and a monitoring system be implemented to track graduate SMMEs for three years.

As illustrated in Table 1 overleaf, the number of SMMEs graduating from the programme was significantly lower than the number of incubatees entering the programme, and the number of successful SMMEs three years later was much lower still. Low survival rates in the early years are a common feature of SMMEs in many economies. More focus is needed on reducing dropout rates in each phase of the incubation programme, while also preparing the SMMEs for long-term sustainability, independent of incubation services.

In recent years, performance targets have focused on establishing incubators, supporting SMMEs in incubation, and creating jobs. While these are important outcomes, the technology-focused

aspects of the incubation programme have been diluted. It is therefore proposed that performance indicators be revised in line with the recommendations in Table 2.

Table 1: Performance measures per industry and business technology centre, 2014

Industry	No. of business technical centres	No. of SMMEs in incubation	No. of SMMEs per branch per quarter	Graduation rates	SMME success rates	No. of graduates per centre	Successful graduates per centre ¹
Agriculture	4	320	80	61%	91%	195	177
Automotive	1	30	30	40%	44%	12	5
Biotechnology	3	41	14	23%	37%	9	4
Chemicals	3	26	9	20%	70%	5	4
Construction	5	149	30	92%	80%	137	110
High-tech	1	25	25	30%	41%	7	3
ICT	2	70	35	30%	41%	21	9
Jewellery	2	43	22	64%	80%	28	22
Manufacturing	8	125	15	13%	13%	16	2
Metal jewellery	1	21	21	15%	35%	3	1
Metals	4	134	34	16%	40%	21	9

1. Data on successful SMMEs is limited and inconsistent. Some of these success rates are based on stakeholder perceptions, not on independently verifiable data. At the time of the study, no other data was available.

Table 2: Proposed STP programme performance indicators

Impact	Graduate incubatees contribute to economic growth and employment growth
Indicator or measure	Number of SMMEs still in existence three years after graduation through application and development of technologies Number of jobs created by graduated incubatees Growth in turnover Growth in unit sales Change in net profit Working capital ratio
Outcomes	Technology adoption and commercialisation by SMMEs supported by SEDA technology incubation programme
Indicator or measure	Number of new products available on the market produced by SMMEs supported by STP-funded incubators Increased productivity as a result of technology-based processes (e.g. reduced time to finish production, improved processing abilities) Number of companies with diversified product offerings (e.g. new and/or additional products available to customers)

3.3 Revenue and expenditure analysis

3.3.1 Analysis of incubator revenues

Detailed financial analysis for the period 2010/11–2012/13 was performed on a sample of 34 of the 42 technical business centres (located in 20 of the 28 incubation centres). Most of those excluded from analysis had not been operating for the full three years under review.

All incubators depended on STP funding for ongoing operations, which comprised 57% of their total revenues over the three-year period. Other significant revenue sources included grants from other national departments (11% of revenue), local government (4%), provincial government (2%) and the private sector (3%). Their remaining revenue was largely drawn down from surpluses accumulated in previous years, much of which had been set aside to provide for the replacement of plant and machinery. Some incubators also raised revenue through rental income, commission derived from aggregating and selling goods produced by incubatees, and the sale of raw materials to incubatees. This amounted to 3% of their total revenue over the three-year period.

At sectoral level, the degree of dependence on public sector funding (from the STP, municipalities, and national and provincial departments) differs substantially across industries, from a total reliance on government funding in the high-tech industry to around 67% in the information and communications technology (ICT) and chemical industries. Dependence on government funding is also high in the construction (93%), auto (91%) and jewellery (89%) sectors, but less so in the biotechnology (79%), metal jewellery (78%), agriculture (77%), manufacturing (76%) and metals (73%) sectors.

The incubators best able to secure private funding have been industry-oriented (i.e. in established markets or linked to industrial value chains). However, a greater emphasis on private sector co-funding could incentivise incubators to adopt a general industrial focus rather than a specialised focus on technology. Prioritising technology incubators would mean higher costs for the STP Incubation Unit, given that less co-funding is available in those sectors. Incubation programmes require a constant stream of funding because very few, and only specific business models, can develop a self-financing revenue stream. This is particularly important for incubation programmes in industries that cannot leverage funding from industry-based investors with a direct interest in promoting SMMEs in their supply chains. While it is important to maximise own contributions and contributions from partners, technology-specific initiatives of this kind are often inherently dependent on some form of subsidy.

An analysis of STP grants to incubators reveals that they receive a similar amount per centre across all industries, generally between R1 million and R3 million. It is proposed that the STP incubation programme allocate funding according to the cost structures of the various industries and their ability to deliver on the performance indicators (and over time, their proven success).

3.3.2 Analysis of incubator expenditures

Over the three years under review, the total expenditure of the sampled STP incubators amounted to R315.9 million, consisting of project costs (28%), operational spending (21%), capital spending (9%) and direct personnel expenditure (42%). Costs directly associated with incubation – including training and mentoring, as well as access to services for the SMMEs – accounted for most of the spending, which suggests that the bulk of funds at incubator level were spent on achieving results.

Estimates of the average total expenditure per centre, per SMME (in incubation and pre-incubation), and per successful SMME (three years later) are reflected in Table 3. The highest costs per successful SMME were incurred in the manufacturing, metal jewellery, chemicals and biotechnology sectors, which are technology- and capital-intensive. By contrast, the agriculture, construction and jewellery sectors produce successful SMMEs at a fraction of this cost.

The extremely high total cost per SMME in manufacturing is driven by high capital expenditure, as well as the associated high depreciation figures. Together these account for 31% of total expenditure over the three years under review. Manufacturing project and operational costs are also high, with ‘technical and training mentoring’ and ‘municipal services’ as significant cost drivers. Investment in the manufacturing industry by the STP should be considered carefully, as it is costly and the success rate was only 13%.



Table 3: Incubation expenditure by industry, 2010/11 to 2012/13

Industry	No. of centres	No. of SMMEs	No. of successful SMMEs	Average per centre (R)	Average per graduated SMME (R)	Average per successful SMME (R)
Agriculture	4	320	44	10 631 750	133 105	240 213
Automotive	1	30	5	6 676 694	219 809	1 228 302
Biotechnology	3	41	1	7 276 089	530 779	6 237 116
Chemicals	3	26	1	8 458 687	980 717	11 675 206
Construction	5	149	22	6 750 468	226 526	307 780
High-tech	1	25	3	3 625 872	145 764	1 188 714
ICT	2	70	4	15 374 597	440 060	3 588 722
Jewellery	2	43	11	4 159 661	192 912	376 781
Manufacturing	8	125	2	11 759 576	758 411	29 688 870
Metal jewellery	1	21	2	14 728 330	714 100	13 359 030
Metals	4	134	2	8 571 376	255 148	6 940 559

Notes:

1 Data on successful SMMEs is limited and inconsistent. Some of these success rates are based on stakeholder perceptions, not on independently verifiable data. At the time of the study, no other data was available.

2. Some incubators have non-incubation clients that pay for their services. It is impossible to disaggregate the costs specific to SMMEs in incubation from external client-specific costs from the existing financial statements. The costs per SMME in these centres may therefore be overstated.

SMME intake and participation rates are another critical factor influencing the cost structure of incubation across industries. Agriculture and construction, for instance, have the highest intake per centre, at 80 and 30 SMMEs respectively. Reasons for the high intake of these SMMEs include:

- The barriers to entry for potential agricultural incubatees are easier to overcome.
- As agricultural incubatees can be mentored on their own land, they need not be physically present at the centre. Similarly, in the construction industry, incubation is also done 'off-site', which permits a greater intake of SMMEs.
- Some incubators target specific markets, such as land reform beneficiaries who require technical assistance for farming. Others are geared towards meeting primary demand through industry collaborations, essentially securing a market for clients and making incubation more financially feasible.

Personnel expenditure per SMME is relatively low in the high-tech, agriculture, construction and jewellery incubation sectors. These industries have low incubation staff to SMME ratios and require staff with relatively lower levels of technical skill. In contrast, the incubation staff required to provide direct support in the chemicals and biotechnology industries tend to have higher technical skills and qualifications, and thus tend to be more expensive.

Finally, it is difficult to evaluate the capital expenditure costs associated with incubation, as many of the incubators obtain access to capital in kind or at reduced rates, without incurring the full cost. In addition, capital expenditure is costed inconsistently across the incubators. Guidelines for the treatment of these costs should be developed to ensure that the full costs of capital expenditure in the establishment and operation of incubators and in-kind contributions received are captured comprehensively in future.

4 Costing scenarios

The PER developed a costing model that factors in the duration of the incubation, incubation requirements (e.g. workspace and capital equipment), graduation rates, success rates three years later, and cost structures in each of the 11 industries. Aggregating the projections of the operating, capital, salary and project costs for each industry, the model projects the total costs of the STP incubation programme over a three-year incubation cycle and the number of successful SMMEs.

Based on interactions with the STP team, four of the most probable scenarios are presented, but the model can accommodate different assumptions. The *base scenario* models the total costs of supporting 984 SMMEs, spread across the 11 industries, over three years. *Scenario 1* models the scaling-up of the incubation programme to support 1 968 SMMEs over the incubation cycle. *Scenario 2* reflects an option in which 984 SMMEs are supported, but from only five sectors. *Scenario 3* estimates the cost implications of a policy change towards supporting start-up enterprises, by increasing the average percentage of start-up SMMEs participating in the incubation programme from 9% to 25%.

The average cost of incubating a successful SMME gives a rough indication of its value for money. The base scenario estimates that in aggregate, it would cost nearly R1.1 million for each successful SMME, with 74% of this cost borne by government. There are, however, large differences across the different industries. Manufacturing is by far the most expensive sector, with an average cost of a successful SMME of R32 million. The least expensive sector is agriculture, where creating a successful SMME costs only R250 000. Excluding the three most expensive sectors – manufacturing, chemicals and metal jewellery – the cost per successful SMME in the base scenario drops to about R640 000 (of which R510 000 comes from government).

Based on these cost scenarios, the most desirable sectors to support appear to be construction, agriculture and jewellery, while manufacturing, metals and biotechnology do not appear to provide as much value for money. There does not seem to be any obvious advantage to taking on a greater proportion of start-ups – because of the increased risk, this is associated with a near doubling of the cost, with little or no improvement in the percentage of successful SMMEs three years later.

5 Findings

The STP incubation programme is well designed, drawing on global best practices. There are, however, a few areas in which its effectiveness can be enhanced:

- The programme, its strategy, objectives and performance measures should be realigned with its original technology-focused mandate.
- Focusing on fewer sectors could enhance the programme's impact. Substantial cost-efficiencies could be realised through better identifying and prioritising industries that are demonstrably more successful in creating successful SMMEs.
- The cost of successful incubation must be considered. Manufacturing and metal jewellery incubation incurs higher costs, while agriculture, construction and other jewellery industry incubators produce higher numbers of successful SMMEs at a lower cost.
- Rather than trying to meet a high target of new incubators established (the current priority indicator), the STP Incubation Unit should focus on the success of its existing incubation models and enhance the capacity of established incubators to deliver results in line with the proposed performance measures. These measures relate to the success of technology-oriented SMMEs still in existence three years after graduation, and to economic growth-oriented indicators.

- The value of the STP incubation programme should be more accurately quantified. Tracking and recording the programme in relation to key performance indicators that reinforce a renewed technology focus would facilitate such a clarity of purpose.

6 Postscript

Since this PER was completed in August 2014, oversight responsibility for SEDA has shifted from the DTI to the new Department of Small Business Development.

