PROPERTY POINT

A GROWTHPOINT INITIATIVE

Development impact report 2018

Contents

Profile

StratEcon is a specialised economics consultancy with more than three decades of experience. StratEcon undertakes a wide range of economic analysis and economic modelling.

They have an excellent reputation of delivering thorough and comprehensive analysis of complex issues.

StratEcon prides itself on finding innovative and creative solutions to complex economic problems.

The company is based in Cape Town, South Africa but has undertaken projects throughout southern Africa and as far afield as the United Kingdom and Russia.

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Abbreviations

BCI	Business Confidence Index
BCR	Benefit Cost Ratio
CCI	Consumer Confidence Index
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
PMI	Purchasing Managers Index
SME	Small Medium Enterprise

Executive **summary**

In 2008 Property Point was launched with a suite of programmes aimed at growing productivity in small, typically black owned firms in the property sector. It follows international best practice and empowers by skills upliftment and productivity growth.

This report documents the economic contribution of this programme over the last decade. Two aspects are reported.

First, benefits to individual firms.

Second, the overall macroeconomic contribution – in other words, the contribution to the country.

The analysis started by assessing whether there is any statistical difference between the financial performance of firms generally and those on the programme. It was found that there is a statistical significance and firms that progress through the programme have far greater success.

This was followed by further analysis to determine the degree to which the programme accounted for this success rather than other external factors like GDP. No statistically significant external factors were found. The marginal GDP growth over the last decade probably explains this finding. The only internal differentiation was for firms awarded 'Best Performing Business' or 'Runner-up' status. These are Property Point awards based on a multi-criteria assessment at the conclusion of the programme. They also, critically, do not influence the later awarding of tenders or contracts by industry.

The analysis concluded with estimates of the ten-year macroeconomic contribution made by the Property Point programme.

Findings for Individual Firms

The following findings were made for individual firms:

Headline Findings

The overall findings for firms on the programme are that:

Average turnover
Increased by R2.89m by the end of second year (in 2017 prices) on the programme.

Increased by
R2.89m

This is a 78% increase from the R3.68m average before enrolment.

Increased by
78%

Turnover after the programme
(not statistically significant because of small sample size):

- Turnover was 46% higher a year after completion compared to the final year of the programme.
- Turnover was 61% higher four years after completion.

Increase of
46%
and
61%

Award - Best Performing Business

It was found that best performing business and runner up awards are reflected in firm performance. The average turnover of all firms was R3.68m before starting the programme. Turnover for 'Best Performing Businesses' increased by:

- **91%** compared to 38% for all firms in first year.
- **85%** compared to 40% for all firms in second year.
- **R6.48m to R10.16m** - a 176% increase compared to 78% for all firms during the programme.

Return on Investment

Return on investment is important because the programme is sponsored by external parties. This return is reported as a benefit cost ratio (BCR) and is the rand value of return (benefit) for each rand of sponsorship (cost).

This headline finding is based on the most defendable financial results, which are based on tenders and contracts that were awarded to firms on or up to two years after programme completion.

This measure of return on investment has a BCR of 14.2. This means that for every rand of sponsorship the firms on the programme benefited by R14.20. The BCR would be higher because the course benefits, arguably, extend beyond two years after course completion.

Macroeconomic Benefits

Macroeconomic benefits are those that accrue to the country, both through the participating firms and the multiplier effects (through backward and forward linkages).

Contribution to GDP

- Total direct contribution to GDP increased from R1.0m in 2008 to R156.9m in 2018. The 2018 contribution was R3.9m from Property Point expenditure and R152.9m from tenders and contract awards.
- The multiplied (indirect and induced) contribution to GDP was R363m in 2018.
- The contribution to total GDP was R520m in 2018.
- The cumulative contribution to total GDP is R1.58bn since 2008.

Employment

- Direct employment: a total of 1 401 jobs in 2018. The number of people:
  - Directly employed by Property Point increased from two in 2008 to ten in 2018.
  - Employed through tender and contract awards increased from 34 in 2009 to 1 391 by 2018.
- Total employment (direct and indirect) increased from 11 in 2008 to 2 244 in 2018.

Taxes and Household Income

- In 2018, the overall Property Point programme contributed R59m to all forms of taxes and R220m to household income.
- The cumulative contribution to taxes since 2008 has been R179m and to household income R662m.

Comparative Growth

Some limited comparative perspective can be made between turnover growth relative to GDP. The most defendable programme result is the known value of awarded tenders and contracts. National GDP grew in total by 14% between 2009 and 2018. Tender and contract value grew by more than 1 500% over the same time period.

The conclusion is that the programme has boosted productivity well in excess of national economic growth.

Introduction

The South African property sector has a low representation of small black suppliers within the broader private sector supply chain. Small black suppliers going into the market are perceived as being high risk and not having the competencies to deliver quality and value-adding services to large corporates in line with procurement requirements. There are a range of empowerment programmes in South Africa that have tried to resolve this issue across various sectors. These range from targeted procurement to dedicated financial allocation. Property Point has played a key role in contributing towards changing the landscape of the South African property supply chain.

Established in 2008, Property Point is a proud catalyst for successful enterprise and supplier development. Their carefully developed programme provides entrepreneurs with the skills, training and personal development support that they need to develop their enterprises into fully independent and sustainable companies.

Property Point receives hundreds of applications every year from entrepreneurs who have an interest in their programme. This is a clear indication that South Africans continue to report a strong positive societal attitude towards entrepreneurship. Business incubators play an increasingly important role in nurturing start-up firms, fostering entrepreneurship and facilitating economic development. By identifying and selecting high growth potential firms at a grassroots level, combined with aligning their business development support and market linkages intervention to the needs of the firms, ensures improved outputs, such as employment and revenue growth. Their approach is to ensure a bigger impact by emphasising quality over quantity.

Property Point aims to understand future supply chain opportunities that exist in property sector companies. They analyse the needs, requirements and processes needed to successfully deliver on the opportunities.

Small medium enterprises (SMEs) are then selected for those opportunities. When a firm is competitive and has market linkages, it then becomes more sustainable for future growth. With a graduation rate of 89%, firms that have been on the Property Point programme continue to show a sustainable growth rate without the dependency of the programme. They offer the interdependence between access to markets, business development and access to finance, which are essential in improving the competitiveness of SMEs and enhancing market participation. Personal mastery and industry mentorship are a critical component of their programme because the SMEs start at a very low base, often with more technical skills than entrepreneurial skills.

Mpho Sono, *Managing Director, TMT Cleaning*

Olga Ncube, *Managing Director, Kusile Hygiene*

Smart Kunene, *Managing Director, Easy Security*

Thuso Koboyatau, *Financial Director TSK construction, TSK interiors*

Thapelo Tlhapane, *Managing Director, TT Holdings*

Property Point ESD intake 2012

The Property Point programme equips SMEs with the skills and tools that enable them to attract customers by redefining value and retaining their customers by beating their competitors through enhancing value.

The programme has consequently integrated a result measurement approach into all aspects of the programme management. Achievement of results drives the programme. Personalised mentorship increases engagement, and this is what makes them stand out from other Enterprise and Supplier Development programmes in the marketplace. Through the bespoke business development and market linkage support of Property Point, SMEs can improve operational and management capabilities. They operate best in production and service quality, thus leading them to operate in a more inclusive manner. As a result of improved management capability, better operations and commitment to an inclusive business model, job opportunities for unemployed people will increase.

Property Point understands that SMEs are crucial to the success of South Africa's economy. They also understand that even the most determined small firms face steep challenges on the path to growth.

The team is committed to empowering entrepreneurs with the skills and training needed to succeed in the property industry – one success story at a time.

Partnership and collaborating for success are at the heart of Property Point.

While one objective is to link SMEs with procurement opportunities, their greatest aim is to make a more meaningful impact by nurturing a vibrant SME sector to enable economic growth, job creation, and transformation in South Africa.

Property Point believes that providing support to SMEs is an investment in communities and therefore an investment in the collective future of South Africa.

Property Point has seen the benefits of what their model has produced over the past 10 years and believe that if scaled appropriately, with the right partners on board, sustained exponential impact can be achieved in South Africa.

Thus there was a clear need to reflect and assess the real economic contribution from the programme.

StratEcon was appointed for this purpose.

The report has **nine** sections

Section 1
Gives descriptive statistics of the programme and sets the context for the study.

Section 2
Describes the analytical approach.

Section 3
Describes the main findings of the statistical analysis and the individual firm benefits.

Section 4
Reports the economic return for sponsors.

Section 5
Itemises the overall programme contribution to the South African economy.

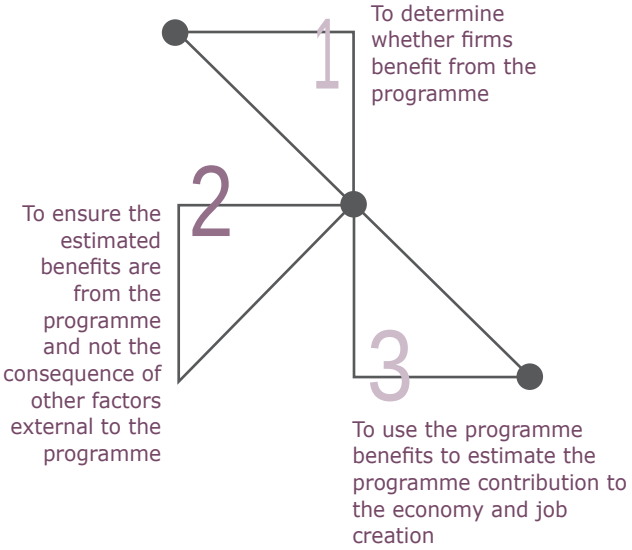
Section 6
Concludes the report and provides some recommendations.

Appendix A (section 7)
Describes the projects (supplied by Property Point).

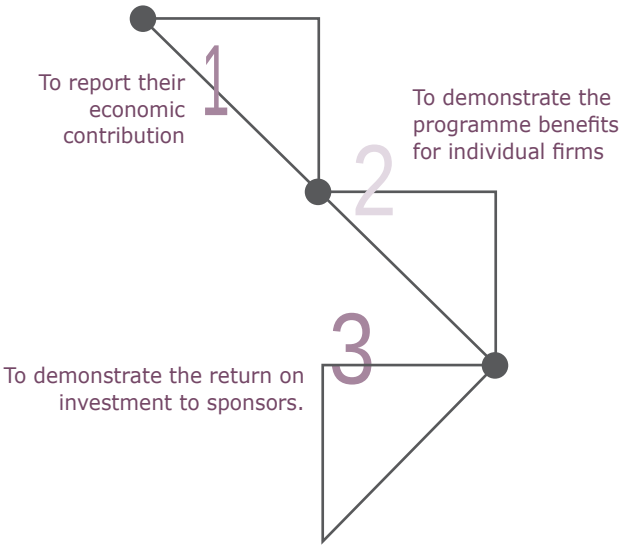
Appendix B (section 8)
Describes the reporting of the statistical and econometric analysis.

Appendix C (section 9)
Gives output examples from the statistical analyses.

The assignment had three objectives:



There are three important issues from the Property Point perspective.



The development modules cover[2]:

Business Development Support: in the form of sales and marketing techniques, compliance (including health and safety, tax and Broad-Based Black Economic Empowerment – B-BBEE - requirements), human resources and industrial relations, project management, presentation skills, brand creation and skills development.

Access to Finance: Encourage financial sustainability through building up skills in practical management of cash flow, cost, pricing and finances as well as assisting with access to credit facilities.

1.1 Graduate Firms

This section is a brief description of the firms that have completed the programme. The programme started in 2008 and 83 firms have completed the programme. The annual change is illustrated in Figure 1. At the end of the 2010 there were seven graduates[3]. By 2018 this had increased to 21. There were no graduates in 2011 and 2017 because of the two-year programme design.

Figure 1: **Number of Graduate Firms**

Two trends are evident from the figure. First there have been fluctuations in the numbers. Second, there is an overall growth in programme graduates. The latter is evidenced, but not shown in the diagram, by the fact that there are currently 77 enrolments.

[1] *The information in this section is given in nominal values. This means it is not adjusted for inflation and it matches the way it is reported by Property Point. This information is changed to real, inflation adjusted values in Section 3. Caution must therefore be exercised in comparing information between Sections 1 and 3.*

[2] *Paraphrased from http://www.propertypoint.org.za/our-how*

[3] *The economic analysis is based on financial year information. For ease of reading financial years are referred to as the last year of the financial year. For example, the financial year 2009/10 is referred to as 2010 in the rest of this report.*

1.2 Turnover increases

One of the key metrics of the success of the programme is the increased financial turnover during and after programme completion.

Two sets of information were available about the turnover increases. The first was from the tenders and contracts known, by Property Point, to have been awarded to firms during the programme and up to two years after completion of the programme. The second is database information that Property Point have about firms that are on or have completed the programme. This includes information on turnover.

The two sets of information are used in different ways. The known tender and contract awards are used, after econometric analysis, as part of the information to estimate macroeconomic benefits (section 5), comparative growth (section 5.5) and return on investment (section 4). The database information was used in the econometric analysis to isolate the benefits of doing the programme (section 3), the contribution of the 'Best Performing Business' award (section 3.2.2) and return on investment (section 4).

- ▲ In 2009 tenders and contracts worth **R11.7m** were awarded.
- ▲ This had increased to **R382.7m in 2018 alone** – an average annual growth of 47%.
- ▲ The cumulative total was R1.14bn by 2018.

This section describes the value of the tenders and contracts known to have been awarded to firms which were on the programme or up to two years after completion.

Figure 2: **Turnover Increases (Nominal Values)**

The distribution of awarded contracts and tenders is illustrated in Figure 2. Contracts with Growthpoint dominated up till 2015 with a rapid increase from other firms after that. It is also worth noting that none of these contracts or tenders were awarded purely because a firm was on the programme. They were awarded on merit, as a result of the skills and techniques learnt on the programme

1.3 Award - Best Performing Business

Property Point presents annual **'Best Performing Business'** and **'Runner-up'** awards. The process of identifying 'Best Performing Businesses' and runners-up starts with end of programme reviews through interviews where the objective is to evaluate achievements in personal mastery, business achievements and key learning areas.

There is also on-going evaluation of Service Level Agreement (SLA) activities; engagement, brand ambassadorship and programme participation.

These awards can be made to multiple firms in any year. For example, between 2014 and 2018 there were eight Best Performing Business and seven Runner-Up awards.

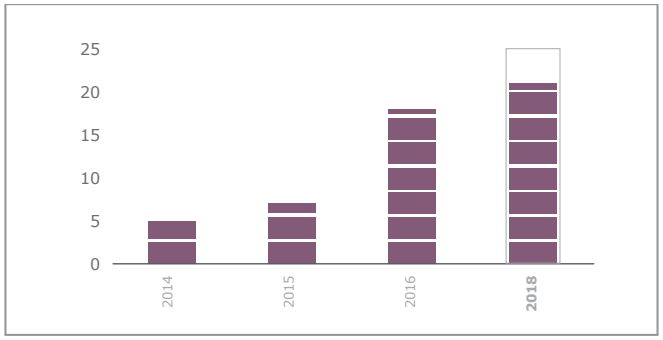
These awards do not influence how tenders and contracts are evaluated or awarded.

1.4 **Detailed Sample Description**

Property Point was able to assemble a detailed sample from firms on the programme, which was used in the economic analysis. Some information was gathered on firms that applied for but were not accepted on the programme. There is merit in illustrating aspects of these samples because it gives a clearer insight into the programme and analysis.

There was a sample of 94 firms, distributed between firms that were and were not accepted on the programme. Between 2014 and 2018 53 firms were accepted on the programme and graduated, of which 48 were used in the statistical analysis. The distribution of these 48 graduates across these years is illustrated in Figure 3, where it can be seen how the graduate numbers build up over time. The owner gender distribution was 25 males and 28 females.

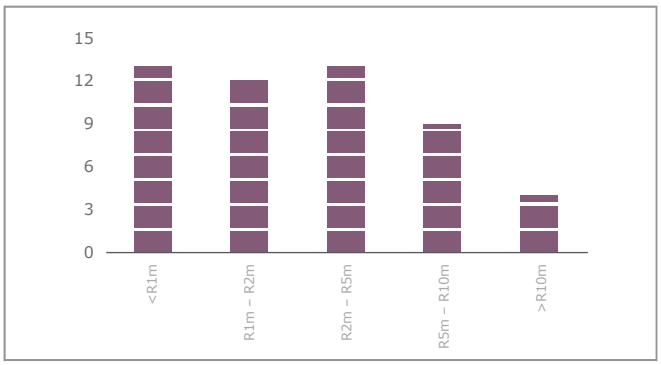
Figure 3: **Sample Number – Year of Graduation for 48 Firms**



The average turnover of programme entrants was R4.1m, with the turnover distribution illustrated in Figure 4. The distribution of this average was that the turnover of:

- 25.5% of the sample was less than R1m;
- 49.0% was between R1m and R5m; and
- 25.5% was higher than R5m.

Figure 4: **Turnover Before Enrolment – Number of Firms**



Eddy Mokobodi, *Founder Hiseko*

Samukelo Nkosi, *Founder Quickprop Systems*

The type and distribution services supplied by programme entrants is illustrated in Figure 5. Provision of services was distributed 51% general building maintenance, 19% mechanical services, with the remainder divided between cleaning services, professional services, landscaping and security.

The same figure also gives more detail on the distribution of turnover, distinguishing between firms with turnover less than or more than R5m. In the sample most firms in general building maintenance, mechanical services, professional services and landscaping had turnover under R5m. On the other extreme most firms providing cleaning and hygiene services had turnover over R5m. Security firms were equally distributed with turnover less and more than R5m.

Figure 5: **Entrant Firms by Sector and Turnover**

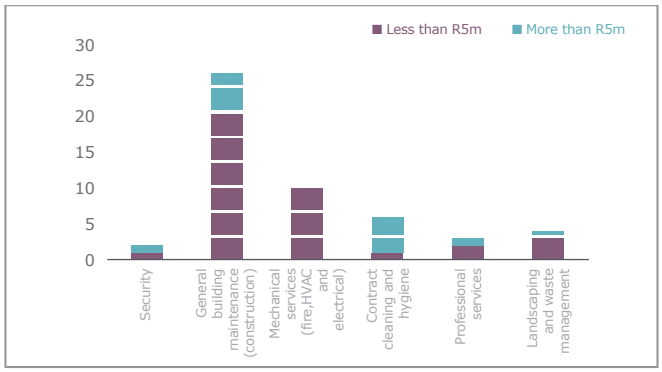
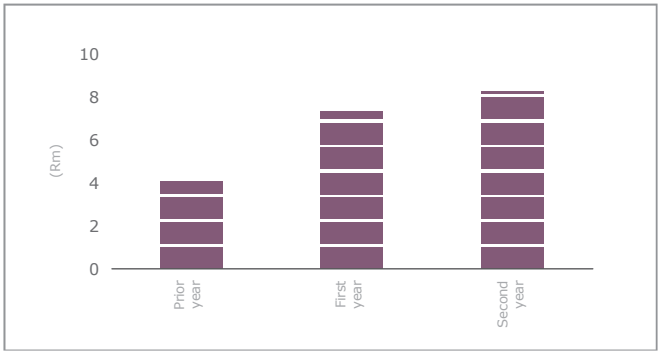


Figure 6: **Average Turnover in Year Prior, 1st and 2nd Year**



The programme contribution to increasing firm turnover is arguably one of the most important outcomes. This is illustrated in Figure 6.

- Average (nominal – i.e. without any inflation adjustments) turnover was R4.08m in the year prior to entering the programme. This, on average grew to R7.30m by the end of the first year, which was a 79% increase.
- Average turnover grew by a further R0.93m to R8.23m during the second year. This was a 23% increase over first year turnover.

Nominal turnover had more than doubled while firms were on the programme. Many firms are unsuccessful programme applicants. These were used as a control group to identify the programme impact. In total there were 42 firms in this sample.

- The owner gender was 22 male and 20 female;
- The average turnover in the year of application was R2.8m;
- Provision of services was distributed 43% general building maintenance, 17% mechanical services and the remainder divided between cleaning services, professional services, landscaping and security.

2.1 Programme Analysis

An important consideration for Property Point is to distil the contribution of their programme from other contributing factors. For example, a firm graduating from the programme may be successful, however, the key issue is to understand the degree to which the programme contributed to this success rather than, for example, general economic growth, changes in interest rates or business sentiment.

An econometric analysis is the appropriate approach to answer such questions.This approach would also give more insight into programme dynamics and be of important strategic use to Property Point. It could be used to refine the programme and show prospective clients the value of programme enrolment.

The scientific approach to achieve this is through an econometric model-based analysis.
In summary, the model would use regression betas from a stepwise multiple regression analysis to determine the relative contribution of relevant input factors.

Gobosamang Mosielele, *Co-founder KGBW*

Dwaine Moth, *Founder and Director, Arebone Projects*

Sonia and Manu Moremoholo, *Director of Bokaru*

Richard Ramplin, *Founder of RRC Engineering Consulting*

Nniki Makgetla, *Director of Nokani Enterprise*

To outline in more detail, the model and analysis were developed in the following steps:

1. Desegregate graduating firms into appropriate sectors.

2. Identify and measure those factors that might affect each of the sectors.

3. Develop an econometric model to determine the contribution of each of these factors

The results of the analysis are then used to estimate the contribution of the programme, possibly individual aspects of the programme and external factors to the success of identified firms.

[4] *A detailed and straightforward explanation to understanding can be found at this link: https://en.wikipedia.org/wiki/Regression_analysis. This is further described in section 2.1.3.*

2.1.1 Step 1: **Disaggregate Firms by Sectors**

This first step categorised firms into the appropriate sectors according to the services they provided. They were also categorised according to firms that enrolled on (and graduated from) the programme and those that were not accepted, as well as by year of graduation.

2.1.2 Step 2: **Identify Internal and External Factors**

Those unique conditions that affect businesses operating in the property sector were identified. Some factors could change slowly and have long term effects while others can change rapidly. These may include aspects of the programme, general economic growth, business confidence, consumer confidence, exchange rates or interest rates, to mention a few. These factors were identified by StratEcon, from their knowledge base.

Data was collected on firms that have both been on the programme and others that have not had this privilege. The latter was used as an analytical control and was derived from the group of businesses that applied for participation on the programme but were not selected.

2.1.3 Step 3: **Develop an Econometric Model**

In econometric jargon the factors identified as potentially influencing the growth of firms are the so-called 'independent' variables. They were used in a stepwise regression analysis to determine the impact of each independent variable on the dependent variable.

The dependent variable is the growth in turnover of the relevant firms.

The measure of success used throughout the analysis is change in turnover.

The regression equation is expressed as:

$$\text{Growth in Turnover} = f(\beta 1\_\text{Programme}, \beta 2\_\text{Award}, \beta 3\_\text{GDP}, \beta 4\_\text{Interest Rates}, \beta 5 \ldots\ldots, \beta n)$$

The β1 to βn (betas) are the correlation coefficients of each independent variable to the dependent variable. In other words, β1 explains the degree to which the programme affects turnover.

This estimation process was subjected to all standard econometric tests like significance, multi-collinearity and autocorrelation.

2.2 Understanding Macroeconomic Benefits

The size of a national economy is measured in terms of the total of all economic activities taking place within the area concerned, both in the public and private sectors. While there are several macroeconomic effects, the two most important are contribution to Gross Domestic Product (GDP) and the creation of jobs. Although not an all-encompassing measure of standard of living, GDP is an important measure of weather the economy is going in the right direction (Increased GDP – i.e. increased production – is experienced in the form of more jobs, higher wages and reduced economic hardship). In a country like South Africa with high unemployment which has become the root cause of many other socioeconomic problems, job creation is a key priority for the country. GDP is the total value of all final goods and services produced in the country.

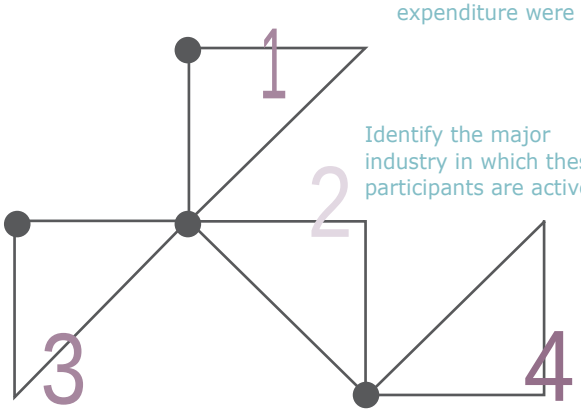
The actual task of calculating the macroeconomic impact of the Property Point programme demands a detailed and multifaceted approach not least because of the so-called multiplier effects. It is well recognised that the simple act of spending – maintaining a building, for example - leads to other economic effects. Demand for paint can lead to increased production in that industry. Increased demand for paint products, in turn, leads to increased demand for raw materials and other items such as water, electricity and so on. Demand for electricity then leads to an increased demand in mining. These are the so-called multiplier effects. While this process unfolds, each industry employs people and pays wages. Employees, in turn, spend their wages and cause further multiplier effects through the economy. Measuring this is further complicated by the fact that different industries demand different types of skills. This leads to different wage structures across the various industries. People earning different wages have different spending patterns. Thus, the change in overall spending patterns is dependent on which industries are affected.

The multiplier effects are measured through input output analysis. Input output analysis demands that all expenditure in and around the various Property Point programme be identified and estimated. This expenditure, in turn, needs to be linked to the Standard Industrial Classification of all Economic Activity (SIC codes) of the main sectors and sub-sectors present in the Social Accounting Matrices (SAMs) for South Africa.

The estimates take account of these interrelated economic forces. The multiplied effects for South Africa are based on a national social accounting matrix (SAM). Relevant macroeconomic multipliers were extracted from this SAM and used in the analysis.

Four steps were taken to measure the overall macroeconomic contribution of the participants of the Property Point programme:

1. Establish increased turnover of programme participants. The increased turnover was based on the known value of tenders & contracts awarded to firms on and up to two years after the programme. Property Point programme and overall expenditure were included
2. Identify the major industry in which these participants are active
3. Each of these industries were allocated to the appropriate SAM code
4. Finally, all the SAM coded items for each of the individual programme are brought together. The total multiplier effect was calculated as the aggregate product SAM coded spending on plant and material, as well as SAM coded spending by workers multiplied through the industry multipliers



Therefore, the macroeconomic estimates that are made relate directly to the increased turnover because of the programme. Included in the macroeconomic calculations are all the backward economic linkages from this expenditure and the forward economic linkages that occur when people spend their salaries.

The results of the macroeconomic analysis are reported separately for Property Point expenditure and tender & contract awards.

2.3 Return on Investment Calculation

The return on investment is reported as a benefit cost ratio (BCR). This ratio is interpreted as the rand value of return (benefit) for each rand of sponsorship (cost). The BCR in turn is calculated as the ratio of the present value (PV) of all benefits of the programme to the PV of all the costs:

All costs and benefits are expressed in real (2017) prices. The costs are the programme costs from 2008 to 2018.

The benefits are the increased turnover of firms enrolling on the programme.

Three different scenarios are presented:

1. **Increase in turnover only during first and second year.** This excludes post-programme increases.
   This is the lowest possible programme benefit.

2. **The value of tenders and contracts awarded during and for two years after the programme – four years in total.**

3. **Turnover remains constant after second year.** The calculation is based on eight years after completion
   – ten years in total.

All costs and benefits are discounted to a present-day value (in this case to 2008, the first year of the programme) **by using a real social discount rate of 8%.** This is the rate prescribed by National Treasury in the evaluation of all its investment programmes and projects.

The BCR is the PV of benefits divided by the PV of costs.

This section reports on the first two objectives of the analysis.
To estimate the extent to which firms benefit from the programme,

To ensure the estimated benefits are from the programme and not the consequence of other factors external to the programme.

As mentioned above, one of the key metrics for assessing programme success is change in turnover. Further to this, and as discussed in Section 2, is to distil the programme contribution to turnover from other contributing factors. For example, a firm graduating from the programme has increased turnover.
The issue is to determine the degree to which the programme contributed to this success rather than, for example, general economic growth, changes in interest rates or business sentiment.

The detailed analysis to distil the programme benefits from other, potential, contributing factors is reported in Section 8.1. This section is based on the results of that analysis without the detailed econometric discussion. This section reports turnover changes while firms were on the programme and the contribution of other, external, factors. This is followed by the extent to which a programme award contributed to turnover changes after programme completion.

A note of caution about comparing information in this section with Section 1. Information in the latter is reported in nominal terms and without any other smoothing. The reporting changes in this section because of the need to convert information so that it is comparable over time for the econometric analysis. The three most important changes are first, information was converted to real 2017 values; second, it has been adjusted for economic growth so that turnover in the earlier years can be compared to later years; and third, some outlier data was removed.

3.1 Contributing Factors

A descriptive examination of programme information, presented in Section 1.2, showed that there was a remarkable increase in turnover for firms that entered and graduated from the programme. It was therefore important to identify those factors that contribute to this increase. Ignoring this would leave the conclusions open to the criticism that external factors may be more responsible for these changes in turnover than the programme itself.

This section only presents the main findings of the econometric analysis. The detailed statistical analysis and findings is given in Section 8.

In summary only two factors were found to be statistically significant in contributing to turnover increases.

These are first, whether a firm was on the programme and second, whether a firm received a 'Best Performing Business' award.

The analysis included a variety of possible external factors. These included change in gross domestic product (GDP), national retail sales, value of commercial buildings completed, non-residential gross fixed capital formation (GFCF) for each year on the programme, forward looking macroeconomic indicators such as the business confidence index (BCI), consumer confidence index (CCI) and purchasing managers index (PMI) as well as a South African ratings index from three ratings agencies. None of these factors proved to be statistically significant.

This was a notable finding because it was expected, a priori, that, at the very least, general economic growth would have contributed. One potential explanation for this lack of statistical significance between increased turnover and GDP is the very low GDP growth that took place since 2008 – the year the programme started.

In a nutshell, total growth in real GDP was 14% between 2008 and 2018[5]. During the same period turnover of most enrolled firms had double digit growth in their first year on the programme alone.

The conclusion is that, contrary to expectations, economic growth made little difference to the performance of firms on the programme. Yet, the findings are in line with these expectations because economic growth was so low that it did not make a difference to increase in turnover.

[5] *Source: SA Reserve Bank On-line Data Download facility.*

3.2 **Turnover increases**

The Property Point programme makes a remarkable contribution to increasing the turnover of participating firms both during and after the programme. The headline findings are that:

Average turnover had increased by R2.89m by the end of second year (in 2017 prices) **on the programme. This is a 78% increase on the R3.68m average before starting the programme.**

After the programme (caution is needed with result because of the small sample – see Section 3.2.3):
- ▲ Turnover was 46% higher a year after completion compared to turnover in final year on programme.
- ▲ Turnover was 61% higher four years after completion.

The rest of this section gives more detail about these headline findings.

3.2.1 **On-Programme Turnover Increases**

The average firm turnover was R3.68m (in 2017 prices) **before starting the programme. In aggregate, turnover increased by R1.42m in first year** (38% increase) **and by a further R1.47m in second year** (a further 40% increase)**. There is an aggregate R2.89m - a 78% increase.**

It was possible to disaggregate these findings between maintenance and services firms. The sample was too small to disaggregate between construction and property development. The comparison is between average turnover before starting the programme and by the end of second year.

Total revenue of firms in:

- ▲ **Maintenance** (contract cleaning & hygiene; general building maintenance; and landscaping and waste management) **increased on average by R2.37m from R3.98m to R6.34m – a 59% increase.**
- ▲ **Services** (mechanical services (fire, HVAC and electrical); professional services; and security) **increased on average by R4.18m from R3.03m to R7.22m – a 138% increase.**

3.2.2 **Award - Best Performing Business**

It was found that best performing and runner up awards are reflected in firm performance. The average turnover of all firms was R3.68m before starting the programme.

Turnover for 'Best Performing Businesses' increased by:

- ▲ **91% compared to 38% for all firms in first year.**
- ▲ **85% compared to 40% for all firms in second year.**
- ▲ **A total of R6.48m to R10.16m - a 176% increase compared to 78% for all firms over the two years.**

3.2.3 **Post-Programme Turnover Increases**

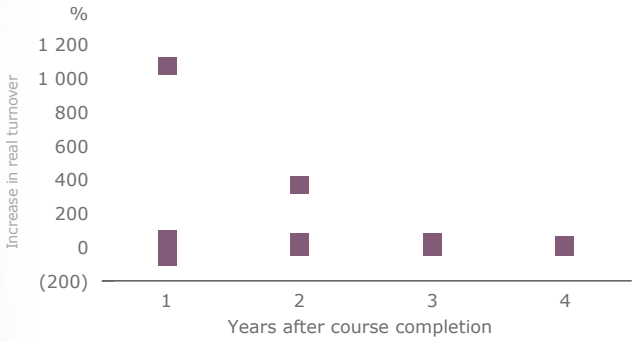
The intention was to provide rigorous reporting of the contribution of the programme after second year. This could not be done because of the paucity of information supplied by firms that had completed the programme.

Information was provided by nine firms.

Of these, six provided for two years and the remainder for only one year.

The information was for different calendar years and for different years after programme completion.

Figure 7: **Turnover Post – Graduation**



This information is presented in Figure 7. This data could not be used reliably given the limited number and wide spread nature of these observations.

4. Return on Investment

It is important to understand return on investment. This can be because own funds are being invested. It can also be, as is the case with Property Point, that the programme is sponsored by external parties. It is clearly important to demonstrate, not only, that the programme makes a difference but that the benefits exceed the costs. The return on investment is reported as a benefit cost ratio (BCR). This ratio is interpreted as the rand value of return (benefit) for each rand of sponsorship (cost).

It will be clear from the previous section that the analytical information is robust for firms on the programme but becomes less so after completion. As a result, the return on investment is reported with varying degrees of confidence. The BCRs for these varying degrees of confidence are reported in Table 1. The costs remain the same in all cases. It is only the potential benefits that change.

There are two definitive results which are based on the econometric estimate of economic returns while firms are on the programme and the known value of tenders and contracts that were awarded to firms.

- The first and narrowest benefit is increased turnover while firms are on the programme only. This has a BCR of 4.3. This means that for every rand of sponsorship the firms have benefited by R4.30 while on the programme.
- The second is based on tenders and contracts that were awarded to firms that are either on or up to two years after programme completion. (These are tenders and contracts known to Property Point). This has a BCR of 14.2. This means that for every rand of sponsorship the firms have benefited by R14.20.

It is unlikely that programme benefits stop after the programme or are limited to the tenders and contracts known to Property Point. Meaningful projections were hampered by the paucity of information about post programme performance. As a result, only one hypothetical projection is made which assumes that the increased on-programme turnover was sustained for eight years for each individual firm after course completion.

- This projection, that post course turnover remained the same after second year, has a BCR of 20.2.

Table 1: **Return on Investment**

Benefit type	BCR
On-programme	4.3
Tenders and Contracts	14.2
Static after programme	20.2

The conclusion is that the course has a handsome return on investment. This ranges between 4.3 and 20.2 with the most defendable estimate of 14.2. This means that society (through the firms that completed the programme) benefitted by R14.20 for each rand of sponsors' funding. This is likely to be higher but such estimates cannot be defended because of the lack of robust information.

Pumza Sixisha, *Managing Director, Ebony Equity*

Renzel Louw, *Lazar Robotic Welding*

5. Macroeconomic Benefits

The analysis had three objectives. First, to estimate the extent to which firms benefit from the programme. Second, to ensure the estimated benefits are from the programme and not the consequence of other factors external to the programme. Third, to use the programme benefits to estimate the programme contribution to the economy and job creation. This section reports on the third of the objectives.

The reported macroeconomic estimates are for:

- ▲ Gross Domestic Product
- ▲ Jobs, both direct and multiplied; (GDP)
- ▲ Taxes and household income

The macroeconomic contribution is based on the Property Point programme expenditure and tenders and contracts that were awarded to firms on the programme or two years after completion.

5.1 Expenditure and Contracts

The starting point of the macroeconomic analysis was to quantify the direct expenditure and/or turnover increases from a project. In this analysis it is Property Point expenditure and awarded tenders and contracts. These are given in Table 2.

Table 2: **Expenditure and Contract Value**

Expenditure and Contracts Rand million, nominal values Financial year	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
Property Point Operating Expenditure	2.2	1.9	2.3	3.4	3.4	3.9	4.9	5.3	9.2	9.5	10.0
Graduating Firms Turnover	0.0	11.7	16.7	34.4	29.5	43.7	52.1	121.4	238.0	212.3	382.7
Growthpoint Properties Contracts		4.8	8.9	18.7	17.7	18.0	24.3	93.7	44.3	79.7	78.1
Other Contracts		7.0	7.8	15.6	11.8	25.7	27.8	27.8	193.7	132.6	304.6
Total Expenditure	**2.2**	**13.6**	**19.0**	**37.8**	**32.9**	**47.6**	**57.0**	**126.7**	**247.2**	**221.7**	**392.7**
Cumulative Expenditure	2.2	15.8	34.9	72.7	105.6	153.2	210.1	336.8	584.0	805.7	1 198.4

The Property Point operating budget was R2.2m in 2008. It was largely unchanged until 2011 when it increased to R3.4m. There were consistent increases thereafter and it reached R10m in 2018.

The second part of the table gives the value of awarded tenders and contracts that are known to have been awarded to firms. These were discussed in Section 1.2 and presented in Figure 2. These were worth R11.7m in 2009. There was a rapid and remarkable increase in the years that followed. This had increased to R238m by 2016 and R383m by 2018.

Total cumulative expenditure was R1.2bn by 2018.

5.1.1 Inclusion of Tenders and Contracts

The macroeconomic analysis includes the value of tenders and contracts awarded. The issue of debate is whether these tenders and contracts have been won at the expense of other firms and whether this inclusion amounts to a zero-sum game.

The purpose of the econometric analysis was to determine whether the programme makes a difference. It has been shown conclusively that this is the case. The programme made firms more productive. This means the programme has made the economy more productive. Tenders and contracts are therefore included in the macroeconomic analysis.

5.2 Contribution to Gross Domestic Product

As mentioned above, Gross Domestic Product (GDP) is the total value of all final goods and services produced in the country. It is a fundamental measure of the economic quality of life of all people in the country. It is also the most important and all-encompassing measure of the macroeconomic effect of the Property Point programme.

It is helpful to understand that there are three separate components in contribution to GDP – direct, indirect and induced. A simple example illustrates the difference. A new building needs maintenance. A direct contribution to GDP takes place with payment for contractor services. There is an indirect contribution when the contractor purchases materials such as paint, plaster and so on. There is an induced contribution when employees use their salaries in retail outlets.

So, a direct contribution to GDP is the first-round direct contribution of an industry. It is needed to compare a sector/industry to other sectors. Indirect and induced are the second and further rounds of expenditure from the multiplier effect. Total contribution to GDP is the sum of direct, indirect and induced effects (the latter two effects are termed the multiplied effect).

Mandla Ndlovu *(left), Director of G and Sons, with a member of his team*

Teko Motlhabi, *Founder and Director, Techmo Air*

5.2.1 Direct GDP

The direct contribution to GDP is given in Table 3 and Figure 8.

Table 3: **Contribution to Direct Gross Domestic Product**

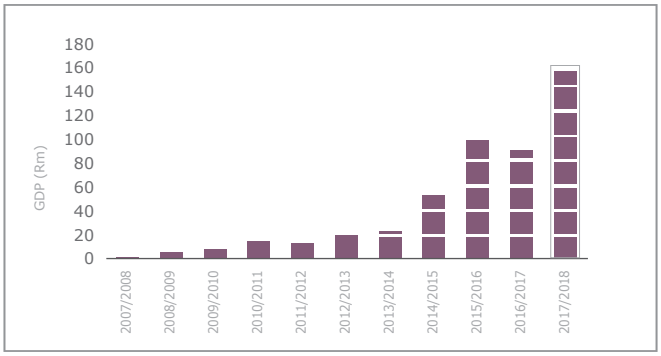
Expenditure and Contracts Rand million, nominal values Financial year	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
Property Point Operating Expenditure	2.2	1.9	2.3	3.4	3.4	3.9	4.9	5.3	9.2	9.5	10.0
Graduating Firms Turnover	0.0	11.7	16.7	34.4	29.5	43.7	52.1	121.4	238.0	212.3	382.7
Growthpoint Properties Contracts		4.8	8.9	18.7	17.7	18.0	24.3	93.7	44.3	79.7	78.1
Other Contracts		7.0	7.8	15.6	11.8	25.7	27.8	27.8	193.7	132.6	304.6
Total Expenditure	**2.2**	**13.6**	**19.0**	**37.8**	**32.9**	**47.6**	**57.0**	**126.7**	**247.2**	**221.7**	**392.7**
Cumulative Expenditure	2.2	15.8	34.9	72.7	105.6	153.2	210.1	336.8	584.0	805.7	1 198.4

The total direct contribution to GDP increased from R1.0m in 2008 to R156.9m in 2018. In 2018 the contribution consisted of:

- **R3.9m from Property Point expenditure**
- **R152.9m from tender and contract awards**

The exponential increase in contribution to direct GDP, due to both Property Point expenditure and contracts/tenders awarded, is evident in Figure 8. The nominal contribution to direct GDP grew at an impressive compounded rate of 66% (58% in real terms). The cumulative contribution over the eleven years is R485m.

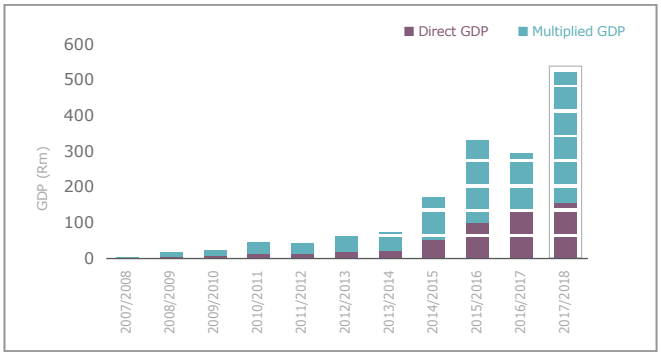
Figure 8: **Total Contribution to Direct Gross Domestic Product**



5.2.2 Indirect, Induced and Total GDP

The indirect and induced contribution to GDP is the result of the multiplier process. Figure 9 shows the direct and multiplied contribution to GDP. The multiplied (indirect and induced) contribution to GDP was R363m in 2018. This is more than double the direct contribution of R157m in the same year.

Figure 9: **Contribution to GDP - Direct, Multiplied and Total**



Total (direct and multiplied) contribution to GDP was R520m in 2018. There was a cumulative total contribution of R1.58bn by 2018.

5.3 **Employment**

Property Point makes a significant contribution to direct and multiplied (indirect and induced) jobs. Direct jobs are those from activities in property. Indirect jobs are those in the supply chains. Induced jobs are the consequence of people spending their salaries and wages.

The job numbers that are reported here are full-time annual equivalent jobs. For example, if two jobs of six-month duration are created then they are considered as one full-time annual job.

5.3.1 **Direct Jobs**

Direct jobs are those in the on-going operations of Property Point or with the firms enrolled on or that have graduated from the programme. These are people directly employed in the property sector and/or involved in the management of buildings. They are reported in Table 4.

Table 4: **Direct Jobs**

Direct Jobs Financial year	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
Property Point Operating Expenditure	2	1	2	4	5	5	9	8	8	9	10
Tenders and Contracts	0	34	45	89	73	106	119	335	702	702	1 391
Growthpoint Properties Contracts		14	24	49	44	43	55	258	131	264	284
Other Contracts		20	21	41	29	62	64	77	571	438	1 107
Total Direct Jobs	**2**	**35**	**47**	**93**	**78**	**111**	**128**	**343**	**710**	**711**	**1 401**

In total, 1 401 people owed their employment directly to Property Point and its programme in 2018.
The number of people:

Directly employed by Property Point **increased from 2 in 2008 to 10 in 2018.**

Employed through tender and contract awards **increased from 34 in 2009 to 1 391 by 2018.**

5.3.2 Indirect and Induced Jobs

Indirect and induced jobs are reported in Table 5 as aggregated multiplied jobs.

Table 5: **Multiplied Jobs (Indirect and Induced)**

Multiplied Jobs Financial year	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
Property Point Operating Expenditure	9	7	8	11	10	11	13	13	22	21	21
Tenders and Contracts	0	37	50	99	81	120	137	309	575	482	822
Growthpoint Properties Contracts		15	27	54	48	50	64	238	107	181	168
Other Contracts		22	23	45	32	71	73	71	468	301	654
Total Multiplied Jobs	**9**	**44**	**58**	**110**	**91**	**132**	**150**	**322**	**597**	**503**	**843**

There were nine indirect and induced jobs in 2008 with all being from Property Point expenditure. **These increased to 21 in 2017 and 2018.**

The number of indirect and induced jobs from increased turnover of graduating firms **increased from 37 to 822.**

The total number of multiplied jobs in 2018 was 843.

5.3.3 Total Jobs

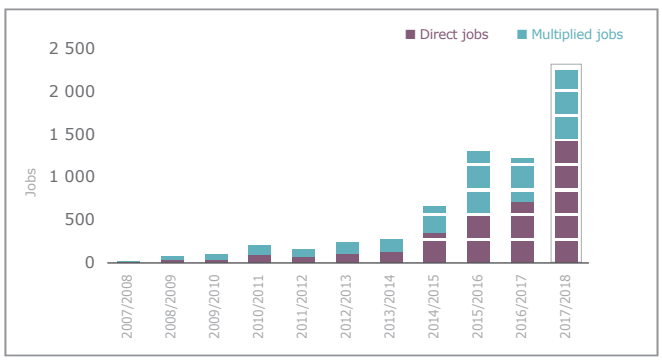
Total jobs – the sum of direct and multiplied jobs is reported in Table 6.

Table 6: **Sum of direct and multiplied jobs**

Total Jobs Financial year	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
Property Point Operating Expenditure	11	8	10	15	15	16	22	21	30	30	31
Tenders and Contracts	0	71	95	188	154	226	256	644	1 277	1 184	2 213
Growthpoint Properties Contracts		29	51	103	92	93	120	496	238	444	452
Other Contracts		42	44	85	62	133	137	147	1 039	739	1 761
Total Jobs	**11**	**79**	**105**	**203**	**169**	**242**	**278**	**665**	**1 307**	**1 214**	**2 244**

There were 2 244 total jobs in 2018, up from eleven in 2008. The bulk are from increased turnover.

Figure 10: **Total Jobs**



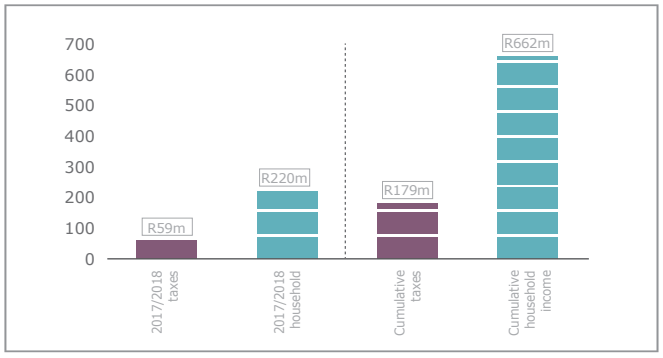
A comparison between direct and multiplied jobs is illustrated in Figure 10. Almost two-thirds (62%) of the estimated 2 244 total jobs in 2018 are direct.

5.4 **Taxes and Household Income**

There are many other macroeconomic impacts from the Property Point programme. The two reported here are contribution to taxes and household income (both direct and multiplied). Both measures are important. Taxes help fund important government programme. Household incomes are the share of GDP that accrues to households. Both are estimated following the same process as used for GDP that was explained in Section 2.2. This includes the direct, indirect and induced contributions to taxes and household income.

The contribution in 2018 and cumulatively since the start of the programme is shown in Figure 11.

Figure 11: **Contribution to Taxes and Household Income**

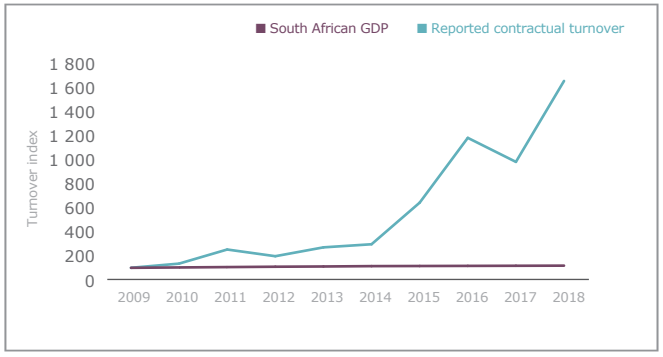


- In 2018, the programme contributed **R59m** to all forms of taxes and **R220m** to household income
- To date the cumulative contribution to taxes is **R179m** and to household income is **R662m**

5.5 **Comparative Growth**

This section gives a limited comparative perspective on turnover growth relative to GDP. The most defendable programme result is the known value of awarded tenders and contracts. This value is made comparable by converting both to an index of 100 in 2009 and illustrating the relative growth since that time. This is illustrated in Figure 12.

Figure 12: **Comparative Growth for Individual Firm**



GDP grew in total by 14% between 2009 and 2018. Tender and contract value grew by more than 1 500%. The conclusion is that the programme has boosted productivity well in excess of economic growth.

Section 6 Conclusions and Recommendations

In 2008 Property Point was launched with a suite of programme aimed at growing small, typically black owned and run firms, by making them more productive. It was found that Property Point has made a remarkable difference to the firms it has nurtured and the country as a whole. The programme has assisted in putting firms on a path towards sustainability

Impact on individual firms:

Average turnover

Increased by R2.89m by the end of second year (in 2017 prices) on the programme.

This is a 78% increase on the R3.68m average before enrolment.

Increased by **R2.89m**

Increased by **78%**

Turnover after the programme

(not statistically significant because of small sample size):

- Turnover was 46% higher a year after completion compared to turnover in second year.

- Turnover was 61% higher four years after completion

Increase of **46%** and **61%**

Macroeconomic Benefits

Macroeconomic benefits are those that accrue to the country, both through the participating firms and the multiplier effects (through backward and forward linkages).

Contribution to GDP

- Total direct contribution to GDP increased from R1.0m in 2008 to R156.9m in 2018. The 2018 contribution was R3.9m from Property Point expenditure and R152.9m from tenders and contract awards.
- The multiplied (indirect and induced) contribution to GDP was R363m in 2018.
- The contribution to total GDP was R520m in 2018.
- The aggregated contribution to total GDP since 2008 is R1.58bn.

Employment

- Direct employment: a total of 1 401 jobs in 2018. The number of people:
  - Directly employed by Property Point increased from two in 2008 to ten in 2018.
  - Employed through tender and contract awards increased from 34 in 2009 to 1 391 by 2018.
- Total employment (direct and indirect) increased from 11 in 2008 to 2 244 in 2018.

Return on Investment

There was a return on sponsor investment of 14.2. This means that for every rand of sponsorship the firms on the programme benefited by R14.20.

This estimate is based on information for only two years after course completion. The BCR would be higher because the course benefits, arguably, extend beyond two years after course completion.

Comparative Growth

Some limited comparative perspective can be made between turnover growth relative to GDP. The most defendable programme result is the known value of awarded tenders and contracts. GDP grew in total by 14% between 2009 and 2018. Tender and contract value grew by more than 1 500%. The conclusion is that the programme has boosted productivity well in excess of economic growth.

The South African Property sector has low representation of small suppliers' black suppliers within broader private sector supply chain. Small suppliers going into the market are perceived as being high risk and not having the competencies to deliver quality and value-adding services to large corporates in line with procurement requirements. They are a range of empowerment programme in South Africa that have tried to resolve this issue across various sectors. These range from targeted procurement to dedicated financial allocation. Property Point has played a key role in contributing towards changing the landscape of the South African property supply chain.

Established in 2008, Property Point is a proud catalyst for successful enterprise and supplier development. Their carefully developed programme provides entrepreneurs with the skills, training and personal development support they need to develop their enterprises into fully independent, sustainable companies

Property Point receives hundreds of applications every year from entrepreneurs who have an interest in their program. This is a clear indication that South Africans continue to report a strong positive societal attitude towards entrepreneurship. Business incubators play an increasingly important role in nurturing start-up firms, fostering entrepreneurship and facilitating economic development. By identifying and selecting high growth potential firms at a grassroots level, combined with aligning their business development support and market linkages intervention to the needs of the firms ensures improved outputs, such as employment and revenue growth. Their approach is to ensure a bigger impact by emphasising quality over quantity.

Property Point aims to understand future supply chain opportunities that exist in property sector companies. They analyse the needs, requirements and processes needed to successfully deliver on the opportunities.

Small medium enterprises (SMEs) are then selected for those opportunities. When a firm is competitive and has market linkages it then becomes more sustainable for future growth. With a graduation rate of 89%, firms that have been on the Property Point programme continue to show a sustainable growth rate without the dependency of the programme. They offer the interdependence between access to markets, business development and access to finance, which are essential in improving the competitiveness of SMEs and enhancing market participation. Personal mastery and industry mentorship are a critical component of their programme because the SMEs start at a very low base, often with more technical skills than entrepreneurial skills.

The Property Point programme equips SMEs with the skills and tools that enable them to attract customers by redefining value and retaining their customers by beating their competitors through enhancing value.

The programme has consequently integrated result measurement approach into all aspects of the programme management. Achievement of results drives the programme. Personalised mentorship increases engagement, and this is what makes them stand out from other Enterprise and Supplier Development programmes in the marketplace. Through the bespoke business development and market linkage support of Property Point, SMEs can improve operational and management capabilities. They operate best in production and service quality, thus leading them to operate in a more inclusive manner. As a result of improved management capability, better operations and commitment to inclusive business model, job opportunities for unemployed people will increase.

Property Point understands that SMEs are crucial to the success of South Africa's economy. They also understand that even the most determined small firms face steep challenges on the path to growth.

The team is committed to empowering entrepreneurs with the skills and training needed to succeed in the property industry – one success story at a time.

Partnership and collaborating for success are at the heart of Property Point.

While one objective is to link SMEs with procurement opportunities, their greatest aim is to make a more meaningful impact by nurturing a vibrant SME sector to enable economic growth, job creation, and transformation in South Africa.

Property Point believes that providing support to SMEs is an investment in communities and therefore an investment in the collective future of South Africa.

Property Point has seen the benefits of what their model has produced over the past 10 years and believe that if scaled appropriately, with the right partners on board, sustained exponential impact can be achieved in South Africa.

Thus there was a clear need to reflect and assess the real economic contribution from of the programme.

StratEcon was appointed for this purpose.

Section 8 Appendix B: Statistical Analysis and Modelling

This section explains the detailed methodological approach and results of the econometric analysis.
The approach to the macroeconomic analysis is described in Section 2.2.
There was a need to convert some of the raw data described in Section 1 for the econometric analysis.
These changes were needed to convert information so that it is comparable over time.

The three most important changes are:

First	Second	Third
Information was converted to real 2017 values;	It was adjusted for economic growth so that turnover in the earlier years can be compared to later years;	Some outlier data has been removed.

The dependent variables were the change in turnover:

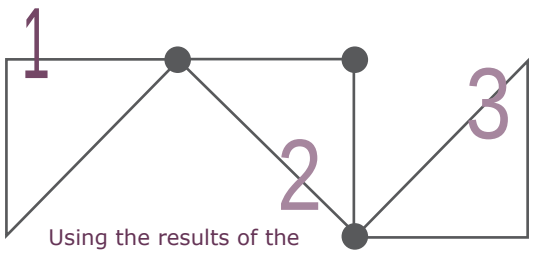
From before the programme and the first year;	**From before the programme and the second year;**	**From the first to the second year.**

The important motivation for the econometric analysis was to disaggregate the financial success of graduate firms between the existing economic environment and the programme itself. This approach also allowed strategic insight into programme dynamics.

The approach was to develop an econometric model-based analysis. The intention was that the model would use regression betas from a stepwise multiple regression analysis to determine the relative contribution of input factors[6].

This was done by:

1. Collecting data on firms that have and have not been through the programme. This is important to identify the programme contribution
2. Using the results of the analysis to estimate the contribution of the programme, individual aspects of the programme and external factors to the success of identified firms
3. Developing an econometric model to determine which input factors contribute to the success of firms. This was explained as step 3 in section 2.1.3 and is repeated here



In econometric jargon the factors identified as potentially influencing the growth of firms are the so-called 'independent' variables. They were used in a stepwise regression analysis to determine the impact of each independent variable on the dependent variable. The dependent variable is the growth in turnover of the relevant firms. The measure of success used throughout the analysis is change in turnover.

The regression equation is expressed as:

Growth in Turnover=f(β1_Programme,β2_Award,β3_GDP,β4_Interest Rates,β5 ……,βn)

The β1 to βn (betas) are the correlation coefficients of each independent variable to the dependent variable. In other words, β1 explains the degree to which the programme affects turnover.

This estimation process was subjected to all standard econometric tests like significance, multi-collinearity and autocorrelation.

[6] *A detailed and straightforward explanation to understanding can be found at this link: https://en.wikipedia.org/wiki/Regression_analysis.*

8.1 Understanding the Econometric Results

There is some merit in explaining how to interpret the results to the statistical outputs.

8.1.1 Null Hypothesis

The starting point of this analysis was the testing of the Null-Hypothesis. In this case the null hypothesis is that there is no statistical difference in the financial performance of firms that have and have not completed the Property Point programme. This is a key first step because all other analysis would be spurious if the null hypothesis is correct. The null hypothesis would need to be incorrect to conclude that the programme makes a difference to financial performance.

The key issue in testing for the null hypothesis is the probability that the hypothesis is incorrect. An incorrect null hypothesis means that the programme does make a difference. The measure of probability is called the p-value. A low p-value means that the sample result would be unlikely if the null hypothesis were true and leads to the rejection of the null hypothesis. For statistical significance the p value needs to be less than 5%. This means that if there is less than a 5% chance of the null hypothesis being true, then the null hypothesis is rejected. When this happens, the result is said to be statistically significant. If there is greater than a 5% chance of the null hypothesis being true, then the null hypothesis is retained.

8.1.2 Testing Independent Variables

The introduction to regression analysis was described in Section 2.1.2. The key output of a step-wise regression is the coefficient of the independent variable. This explains the contribution of the independent variable to turnover. The measure of this contribution is the adjusted R^2. This indicates how much of the variation in the dependent variable is explained by the variables in the regression model. It should, ideally, be greater than 0.5 (50%)

The standard statistical tests are:

A measure of percentage of significance. This is reported as the p-value of the t-statistic. It shows whether a variable has statistical significance – meaning, in simple language, whether the variable can be taken seriously. The p-value should be less than 5% but can be relaxed to less than 10% if there are no other significant factors.

ANOVA (F-statistic) indicates the combined significance of the chosen variables. The p-value of the F statistic should be less than 5% but can be relaxed to less than 10% if there are no other significant factors.

An estimate of the degree of autocorrelation between the independent variables. Any major autocorrelation can result in a high adjusted R^2, which is the result of the autocorrelation rather than explaining the extent to which the independent variable is related to the dependent variable. The Durbin-Watson is used as an indicator of autocorrelation. It is particularly important for time-series data and this sample size should lie between 1.6 and 2.4 for no autocorrelation. Values outside these bounds could indicate the existence of autocorrelation.

8.2 Analytical Results

The three sets of analytical results are for the null hypothesis; the effect of external independent factors and programme specific factors.

8.2.1 Null Hypothesis

The results of the null hypothesis test are given in Table 7. The adjusted R^2 is 13.4% which means that the results explain only a limited amount of the data variation. The Durbin-Watson shows there is no autocorrelation in the data (the value of 2.05 lies between the limits which indicates that there is no autocorrelation).

Table 7: **Null Hypothesis Results**

Regression Statistics	
Multiple R	38.0%
R Square	14.4%
Adjusted R Square	13.4%
Standard Error	3 541 103
Observations	88

ANOVA	df	SS	MS	F	p-value
Regression	1	1.82E+14	1.82E+14	14.50	0.03%
Residual	86	1.08E+15	1.25E+13		
Total	87	1.26E+15			

Durbin-Watson	
d=	2.05
dl:	1.62
du:	1.67
4-du:	2.38
4-dl:	2.33

No evidence of autocorrelation

The most important result is the p-value of the F-statistic (ANOVA test) which is 0.03%. This is well below the 5% needed to reject the null hypothesis. In conclusion this result means that there is a statistically significant difference between firms accepted and rejected for the programme.

This is an important result. It also means that the analysis can continue. Accepting the null hypothesis would have made any further analysis spurious.

8.2.2 **External Factors**

A variety of external variables were tested to determine whether the increased turnover of firms on the programme could be explained by external factors.

These are:

Macro-economic variables:
- Change in real GDP;
- National retail sales;
- Value of commercial buildings completed;
- Non-residential gross fixed capital formation.

Forward looking macroeconomic indicators:
- Business confidence index;
- Consumer confidence index;
- Purchasing managers index.

A South African ratings index based on ratings by Standard & Poor, Moody's and Fitch.

None of these factors were found to be statistically significant. The logic behind this surprising finding was discussed in Section 3.1.

8.2.3 **Programme Contribution**

Clearly one of the most important results is the contribution of the programme to increased turnover. The analytical outputs are given in Table 8. The starting point is that average firm turnover before enrolment was R3.68m (in 2017 prices) – see Section 3.2.

Turnover for firms on the programme increased by:

R1.42m in first year.
This is a 38% increase.

R1.47m in second year.
This is a further 40% increase[7].

R2.89m in total.
This is a 78% increase.

Table 8: **Programme Contribution to Turnover[8]**

Change in turnover	Sample size	Variable	Coefficient	Significance	Adj R^2	ANOVA (F)	Durbin-Watson
Year 0 to 1	88	Intercept	103 089	79%	7%	1%	1.93
		Programme	1 415 523	1%			
Year 1 to 2	88	Intercept	103 089	79%	6%	1%	1.86
		Programme	1 368 064	1%			
Year 0 to 1	88	Intercept	103 089	85%	13%	0%	2.05
		Programme	2 886 675	0%			

Statistically:
- Programme dependent turnover increases are statistically significant. This is the case between first, second and all years. The significance (p-value) is less than 1%.
- The intercept is not statistically significant (red text in the table).
- The adjusted R^2 varies between 6% and 13%, for the three different intervals. This means that the programme explains up to 13% of the variation in change in turnover.

The remaining variation is probably the result of company size, operating conditions, etc. Here there was either no data or the data tested was not statistically significant.
- The ANOVA results (p-value of the F statistic) are all less than 5%, indicating that the single variable results are significant.
- The Durbin-Watson results are around 2.0 and are within the 1.6 and 2.4 limits. There is no auto-correlation between variables.

[7] Statistically the intercept needs to be included for this intermediate increase. The step wise regression process included this between 1st and 2nd year. So the turnover increase is R0.103m plus R1.368m.
[8] In this statistical section year 0 means year before programme enrolment, year 1 is first year and year 2 is second year

8.2.4 Programme Specific Factors

Sufficient information was available to test three factors that were firm or programme specific.

These are:

Gender of firm CEO;	Recipients or runners-up of **'Best Performing Business' award;**	Firms providing maintenance or services respectively.

No statistically significant differences could be found between CEO gender and firm performance. There were statistically significant findings for 'Best Performing Business' awards and sector differences.

8.2.4.1 Best Performing Business Awards

The statistical results of making a distinction between firms that received the 'Best Performing Business' award and others are given in Table 9.

Table 9: **Best Performing Business Award**

Change in turnover	Sample size	Variable	Coefficient	Significance	Adj R^2	ANOVA (F)	Durbin-Watson
		Intercept	103 089	85%			
Year 0 to 2	88	Programme	2 373 125	0%	20%	0%	1.95
		Best award	4 108 405	1%			

From Section 8.2.3 it was found that turnover increased, on average, by R2.89m for all programme participants. The inclusion of the award changed these results

- The turnover of firms that received the award increased by R4.11m from the award plus an additional R2.37m for being on the programme. This is a total increase of 176%.
- Turnover of the remaining firms was R2.37m higher. This is under the R2.89m average reported in Table 8 because part of this goes to the best performing business(es).

Statistically:

- Programme and best performing business award turnover increases are statistically significant with p-values of less than 1%.
- The intercept is not statistically significant.
- The adjusted R^2 for the analysis is 20%. This is higher than the 13% for programme enrolment analysis. The award explains an additional 7% of turnover changes.
- The ANOVA results have p-values of the F-statistic that are all less than 5%, indicating that the model with the two variables is significant.
- The Durbin-Watson results are around 1.95 and within the 1.6 and 2.4 limit. There is no auto-correlation between variables.

The analysis was extended to include award runners-up and the two groups analysed in aggregate compared to 'no award' firms. The results are shown in Table 10. The programme variable is no longer significant between first and second years with significance levels greater than 5%. It remained significant between before and programme completion with significance levels of 2%.

Table 10: **Best Performing Business and Runners-Up**

Change in turnover	Sample size	Variable	Coefficient	Significance	Adj R^2	ANOVA (F)	Durbin-Watson
Year 0 to 1	88	Intercept	103 089	79%	11%	0%	1.88
		Programme	926 571	10%			
		Best and runners up award	1 804 360	2%			
Year 1 to 2	88	Intercept	103 089	79%	13%	0%	1.86
		Programme	782 103	16%			
		Best and runners up award	2 163 547	1%			
Year 0 to 1	88	Intercept	103 089	84%	25%	0%	2.02
		Programme	1 811 763	2%			
		Best and runners up award	3 968 906	0%			

- The turnover of firms that received the award or were runners-up increased by R3.97m from the award plus an additional R1.81m for being on the programme. This is a total increase of 157%.
- Turnover of the remaining firms was R1.81m higher. This is less than the R2.89m average reported in Table 8 because part of this goes to the best performing business(es) and runners-up.

8.2.4.2 Sector Differences

The programme analysis reported in Section 8.2.3 was rerun for maintenance and service firms. The results are reported in Table 11

Table 11: **Maintenance & Service Firms**

Change in turnover	Sample size	Variable	Coefficient	Significance	Adj R^2	ANOVA (F)	Durbin-Watson
Maintenance	58	Intercept	(99 093)	88%	10%	1%	2.03
		Programme	2 365 042	1%			
Service	29	Intercept	398 353	70%	21%	1%	1.40
		Programme	4 183 805	0%			

Maintenance Firms:

- Average turnover before programme enrolment was R3.98m.
- Turnover increased by R2.37m by second year. This is an average increase of 59%.

Statistically:

- The increase in turnover is significant, with a p-value of 1%.
- The adjusted R^2 is 10%, meaning that the programme explains 10% of the variation in turnover for these companies.
- The ANOVA (p-value of the F-statistic) is less than 5%, meaning that the selected variables are statistically significant.
- The Durbin-Watson is 2.03, which lies within the limits for this data set. There is thus no auto-correlation.

Service Firms:

- Average turnover before programme enrolment was R3.03m.
- Turnover increased by R4.18m by the second year. This is an average increase of 138%.

Statistically:

- The increase in turnover from the programme is significant, with a p-value of 0%.
- The adjusted R^2 is 21%, meaning that the programme explains 21% of the variation in turnover for these companies.
- The ANOVA is less than 5%, meaning that the selected variables are statistically significant.
- The Durbin-Watson is 1.40, which means that auto-correlation between the variables is present. This reinforces the conclusion that the results for this data set are tentative.

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Gilbert Ovana and Frans Mutola, *Invelaphi Engineering*

In total in excess of 50 different econometric models were tested as part of this assignment. Only those which informed the analysis are presented in the body of the report. This appendix gives a sample of eleven of the most important results, but which did not necessarily have statistical significance.

The statistics output is arranged in three sets of analysis. These are:

To test the significance of programme variables only. The dataset includes firms that have both enrolled on the programme and that did not.

To test the significance of external variables, such as GDP growth, confidence indices, etc. The results of two different data sets are presented. These are for all firms (that enrolled and did not enrol on the programme) and for only those firms that enrolled on the programme.

To test the significance of all variables, both internal and external. Once again distinction is made between the dataset including firms that both did and did not enrol on the programme and the dataset considering only those firms that did enrol on the programme

9.1 Significance of Programme Variables

A panel regression analysis was undertaken to determine whether programme specific variables were significant in affecting turnover. The results of seven sets of analysis are presented.

The distinction between the seven sets of analysis are as follows:

1. Considering firms that both did and did not enrol on the programme and investigating whether only the programme had a significant effect on the change in turnover from *before the programme to first year*.
2. Considering firms that both did and did not enrol on the programme and investigating whether only the programme had a significant effect on the change in turnover from *first year to second year* of the programme.
3. Considering firms that both did and did not enrol on the programme and investigating whether only the programme had a significant effect on the change in turnover from *before the programme to second year*.
4. Considering firms that both did and did not enrol on the programme and investigating whether *both programme and receiving an award* for 'Best Performing Business' had a significant effect on change in turnover from *before the programme to second year*. This is the same as 3 above but adds receiving an award into the independent variable mix.
5. Considering firms that both did and did not enrol on the programme and investigating *whether programme, receiving an award* for 'Best Performing Business' *and gender of owner* had a significant effect on change in turnover from *before the programme to second year*. This is the same as 4 above but adds gender of firm owner into the independent variable mix.
6. Considering only *maintenance* type firms that both did and did not enrol on the programme and investigating whether only the programme had a significant effect on the change in turnover from *before the programme to second year*. This is the same as 3 above but confined to only maintenance type firms.
7. Considering only *service* type firms that both did and did not enrol on the programme and investigating whether only the programme had a significant effect on the change in turnover from *before the programme to second year*. This is the same as 3 above but confined to only service type firms.

9.1 Significance of Programme Variables continued

Panel Analysis 1:

Firms On and Off Programme (Outliers Removed), **Before to First Year Increase in Turnover**, Contribution of Programme Only

Summary output

Significance Level 5%

Regression Statistics	
Multiple R	27.8%
R Square	7.8%
Adjusted R Square	6.7%
Standard Error	2 458 907
Observations	88

Durbin-Watson		
d=	1.93	
dl:	1.62	2.38
du:	1.67	2.33
No evidence of autocorrelation		

ANOVA	df	SS	MS	F	p-value
Regression	1	4.37E+13	4.37E+13	7.2305	0.86%
Residual	86	5.20E+14	6.05E+12		
Total	87	5.64E+14			

	Coefficients	Std Error	t Stat	p-value
Intercept	103 089	388 787	0.3	79.17%
Programme	1 415 523	526 420	2.7	0.89%

Panel Analysis 2:

Firms On and Off Programme (Outliers Removed), **First Year to Second Year Increase in Turnover**, Contribution of Programme Only

Summary output

Significance Level 5%

Regression Statistics	
Multiple R	26.7%
R Square	7.1%
Adjusted R Square	6.1%
Standard Error	2 484 497
Observations	88

Durbin-Watson		
d=	1.86	
dl:	1.62	2.38
du:	1.67	2.33
No evidence of autocorrelation		

ANOVA	df	SS	MS	F	p-value
Regression	1	4.08E+13	4.08E+13	6.6154	1.18%
Residual	86	5.31E+14	6.17E+12		
Total	87	5.72E+14			

	Coefficients	Std Error	t Stat	p-value
Intercept	103 089	392 833	0.3	79.38%
Programme	1 368 064	531 899	2.6	1.22%

Panel Analysis 3:

Firms On and Off Programme (Outliers Removed), **Before to Second Year Increase in Turnover**, Contribution of Programme Only

Summary output

Regression Statistics	
Multiple R	38.0%
R Square	14.4%
Adjusted R Square	13.4%
Standard Error	3 541 103
Observations	88

Significance Level	5%	
Durbin-Watson		
d=	2.05	
dl:	1.62	2.38
du:	1.67	2.33
No evidence of autocorrelation		

ANOVA	df	SS	MS	F	p-value
Regression	1	1.82E+14	1.82E+14	14.4990	0.03%
Residual	86	1.08E+15	1.25E+13		
Total	87	1.26E+15			

	Coefficients	Std Error	t Stat	p-value
Intercept	103 089	559 898	0.2	85.44%
Programme	2 886 675	758 105	3.8	0.03%

Panel Analysis 4:

Firms On and Off Programme (Outliers Removed), **Before to Second Year Increase in Turnover, Contribution of Programme and Award** for 'Best Performing Business'

Summary output

Regression Statistics	
Multiple R	46.3%
R Square	21.5%
Adjusted R Square	19.6%
Standard Error	3 412 390
Observations	88

Significance Level	5%	
Durbin-Watson		
d=	1.95	
dl:	1.61	2.39
du:	1.7	2.3
No evidence of autocorrelation		

ANOVA	df	SS	MS	F	p-value
Regression	2	2.70E+14	1.35E+14	11.6117	0.00%
Residual	85	9.90E+14	1.16E+13		
Total	87	1.26E+15			

	Coefficients	Std Error	t Stat	p-value
Intercept	103 089	392 833	0.3	84.90%
Programme	2 373 125	753 895	3.1	0.24%
Award	4 108 405	1 489 289	2.8	0.74%

9.1 Significance of Programme Variables continued

Panel Analysis 5:

Firms On and Off Programme (Outliers Removed), **Before to Second Year Increase in Turnover, Contribution of Programme, Award** for 'Best Performing Business' **and Gender of Owner**

Summary output

Significance Level 5%

Regression Statistics	
Multiple R	48.0%
R Square	23.1%
Adjusted R Square	20.3%
Standard Error	3 397 081
Observations	88

Durbin-Watson		
d=	1.90	
dl:	1.59	2.41
du:	1.73	2.27
No evidence of autocorrelation		

ANOVA	df	SS	MS	F	p-value
Regression	3	2.91E+14	9.69E+13	8.4004	0.01%
Residual	84	9.69E+14	1.15E+13		
Total	87	1.26E+15			

	Coefficients	Std Error	t Stat	p-value
Intercept	586 678	648 681	0.9	36.88%
Programme	2 396 153	750 713	3.2	0.21%
Award	4 246 53	1 486 245	2.9	0.56%
Gender	(967 178)	727 416	(1.3)	18.79%

Panel Analysis 6:

Firms On and Off Programme (Outliers Removed), B**efore to Second Year Increase in Turnover**, Contribution of Programme Only, **Maintenance Type Firms**

Summary output

Significance Level 5%

Regression Statistics	
Multiple R	33.6%
R Square	11.3%
Adjusted R Square	9.7%
Standard Error	3 337 098
Observations	58

Durbin-Watson		
d=	2.03	
dl:	1.53	2.47
du:	1.6	2.4
No evidence of autocorrelation		

ANOVA	df	SS	MS	F	p-value
Regression	1	7.96E+13	7.96E+13	7.1444	0.98%
Residual	56	6.24E+14	1.11E+13		
Total	57	7.03E+14			

	Coefficients	Std Error	t Stat	p-value
Intercept	(99 093)	667 420	(0.1)	88.24%
Programme	2 365 042	884 822	2.7	0.93%

Panel Analysis 7:

Firms On and Off Programme (Outliers Removed), **Before to Second Year Increase in Turnover**, Contribution of Programme Only, **Service Type Firms**

Summary output

Significance Level 5%

Regression Statistics	
Multiple R	49.2%
R Square	24.2%
Adjusted R Square	21.4%
Standard Error	3 831 380
Observations	29

Durbin-Watson		
d=	1.40	
dl:	1.34	2.66
du:	1.48	2.52

No evidence of autocorrelation

ANOVA	df	SS	MS	F	p-value
Regression	1	1.27E+14	1.27E+13	8.6348	0.67%
Residual	27	3.96E+14	1.47E+12		
Total	28	5.23E+14			

	Coefficients	Std Error	t Stat	p-value
Intercept	398 353	1 023 979	0.4	69.84%
Programme	4 183 805	1 423 786	2.9	0.44%

9.2 Significance of External Factors

A linear stepwise regression analysis was undertaken to determine whether external factors were significant in affecting turnover.

The results of two sets of analysis are presented. The distinction between these two sets of analysis is as follows:

1. Considering firms that *both did and did not enrol* on the programme and investigating whether the external variables of change in GDP (GDP-Inc), change in retail sales (Retail-Inc), change in commercial buildings completed (Bldngs-Inc), business confidence index (BCI) and purchasing managers index (PMI) had a significant effect on the change in turnover from *before the programme to second year*.
2. Considering *only firms that enrolled* on the programme and investigating whether the external variables of purchasing managers index (PMI), a ratings index (Ratings), change in gross fixed capital formation (GFCF-Inc) and change in GDP (GCP-Inc) had a significant effect on the change in turnover from *before the programme to second year*.

Regression Analysis 1:
Firms On and Off Programme (Outliers Removed), **Before to Second Year Increase in Turnover**

Summary output

Regression Statistics	
Multiple R	26.8%
R Square	7.2%
Adjusted R Square	1.5%
Standard Error	3 776 471
Observations	88

Significance Level 5%

Durbin-Watson		
d=	1.99	
dl:	1.53	2.47
du:	1.77	2.23

No evidence of autocorrelation

ANOVA	df	SS	MS	F	p-value
Regression	5	9.12E+13	1.82E+13	1.3	28.12%
Residual	82	1.17E+15	1.43E+13		
Total	87	1.26E+15			

	Coefficients	Std Error	t Stat	p-value
Intercept	(41 418 752)	7 733 380 324 513	0.0	100.00%
GDP-Inc	9	31 038 590	0.0	100.00%
Retail-Inc	(38)	9 257 964	0.0	100.00%
Bldngs-Inc	0	108 970	0.0	100.00%
BCI	348 160	145 526 694 695	0.0	100.00%
PMI	622 592	259 719 481 533	0.0	100.00%

Regression Analysis 2:
Only Firms On Programme (Outliers Removed), **Before to Second Year Increase in Turnover**

Summary output

Regression Statistics	
Multiple R	24.7%
R Square	6.1%
Adjusted R Square	(4.8)%
Standard Error	5 467 492
Observations	49

Significance Level 5%

Durbin-Watson		
d=	2.08	
dl:	1.34	2.66
du:	1.77	2.23

No evidence of autocorrelation

ANOVA	df	SS	MS	F	p-value
Regression	5	8.36E+13	1.67E+13	0.6	73.04%
Residual	43	1.29E+15	2.99E+13		
Total	48	1.37E+15			

	Coefficients	Std Error	t Stat	p-value
Intercept	(9 617 408)	29 049 286 607 672	0.0	100.00%
Before turnover	0	0	1.5	13.16%
PMI	(57 856)	691 001 749 712	0.0	100.00%
Ratings	915 200	251 673 379 460	0.0	100.00%
GFCF-Inc	255	7 520 934	0.0	100.00%
GDP-Inc	(186)	21 795 383	0.0	100.00%

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Alice Madisha, *Director, Smith and Madisha*

9.3 Combined Analysis of Programme and External Variables

A number of regression analyses were run to investigate combining programme specific and external variables and whether the inclusion of firms that did not enrol on the programme affected the results.

The two sets of results that are presented here are:

1. Considering firms that *both did and did not enrol* on the programme and investigating whether the programme specific variables of being on the programme and receiving an award for 'Best Performing Business' and the external variables of change in GDP (GDP-Inc), change in retail sales (Retail-Inc), change in commercial buildings (Buildings-Inc) completed, purchasing managers index (PMI) and a ratings index (Ratings) were significant in predicting turnover from *before the programme to second year*.
2. Considering *only firms on the programme* and investigating whether the programme specific variables of being on the programme and their turnover before the programme (YOTO) and the external variables of change in GDP (GDP-Inc), change in commercial buildings (Bldngs-Inc) completed, purchasing managers index (PMI) and a ratings index (Ratings) were significant in predicting turnover from *before the programme to second year*.

Regression Analysis 3:

Firms On and Off Programme (Outliers Removed), **Programme Specific and External Factors, Before to Second Year Increase in Turnover**

Summary output

Significance Level 5%

Regression Statistics	
Multiple R	48.4%
R Square	23.5%
Adjusted R Square	16.8%
Standard Error	3 472 386
Observations	88

Durbin-Watson		
d=	1.79	
dl:	1.54	2.46
du:	1.78	2.22

No evidence of autocorrelation

ANOVA	df	SS	MS	F	p-value
Regression	7	3.12E+14	4.46E+13	3.7	0.16%
Residual	80	9.65E+14	1.21E+13		
Total	87	1.26E+15			

	Coefficients	Std Error	t Stat	p-value
Intercept	(24 379 392)	21 249 971 666 687	0.0	100.00%
Prog	3 173 209	1 146 931	2.8	0.72%
Award	4 170 911	1 521 087	2.7	0.77%
GDP-Inc	16	11 034 225	0.0	100.00%
Retail-Inc	(65)	2 901 675	0.0	100.00%
Bldngs-Inc	0	13 609	0.0	100.00%
PMI	483 328	501 682 573 757	0.0	100.00%
Ratings	110 592	170 285 677 687	0.0	100.00%

Regression Analysis 4:

Only Firms On Programme (Outliers Removed), **Programme Specific and External Factors, Before to Second Year Increase in Turnover**

Summary output

Regression Statistics	
Multiple R	45.9%
R Square	21.1%
Adjusted R Square	9.8%
Standard Error	5 072 459
Observations	49

Significance Level 5%

Durbin-Watson		
d=	1.98	
dl:	1.34	2.66
du:	1.77	2.23

No evidence of autocorrelation

ANOVA	df	SS	MS	F	p-value
Regression	6	2.69E+14	4.48E+13	1.7	13.48%
Residual	42	1.08E+15	2.57E+13		
Total	48	1.37E+15			

	Coefficients	Std Error	t Stat	p-value
Intercept	12 058 624	27 552 081 300 651	0.0	100.00%
Award	6 779 983	2 510 232	2.7	0.86%
Y0TO	0	0	(0.2)	85.97%
GDP-Inc	81	9 397 630	0.0	100.00%
Bldngs-Inc	1	55 423	0.0	100.00%
PMI	327 680	617 041 466 327	0.0	100.00%
Ratings	(1 218 048)	136 179 623 434	0.0	100.00%

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