

# ENABLERS OF PRODUCTIVITY

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BenchmarkIndex

  
Business  
LINK

### *a note about the authors*

The report has been written by Adrian Davies using analysis prepared by Dr Yinshan Tang from Winning Moves. Winning Moves is a private company that has operated the Benchmark Index service on behalf of the DTI since 1998.

Dr Tang has been instrumental in developing the software that is the engine for the service. This familiarity - coupled with his statistical bent - has enabled him to uniquely observe patterns in the data that are useful not just for businesses but also for policy makers.

Adrian Davies is an adviser to the public sector on business improvement strategies for small businesses. He works with the DTI, the SBS, Regional Development Agencies and other organisations interested in supporting business. He directed this analytical exercise and wrote the final version of this document.

# executive summary

Benchmark Index data provides a valuable resource to analyse relationships between management policies and productivity levels. Analysis suggests that:

1. Strategies that aim at building market share and continued market protection are likely to result in lower levels of productivity. Periods of market growth should be followed by periods of consolidation, where existing customer relationships are maximised.
2. Graduate employment has greater impact in manufacturing than service sectors, but is vitally important to both.
3. In all sectors staff retention is critical. Staff turnover in manufacturing can damage productivity by as much as 19% and in the service sectors by a massive 25%.
4. The number of days spent on training increases productivity in manufacturing by up to a massive 24%, but actually reduces it in the service sectors by up to 18%.
5. Expenditure on training can improve productivity by as much as 47% in manufacturing and 12% in the service sectors. In both sectors, paid for training has the greatest impact.
6. Care should be taken not to take too many days out on training in the service sectors. Well-targeted, added-value external courses are likely to be much more productive than free and/or internal courses.
7. Old models of 'customer/supplier' relationships are no longer relevant. Partnerships should be formed with each player in the supply chain benefiting from the relationship. Companies with better supply chain relationships are likely to be much more productive.
8. An innovative approach to products and markets appears to yield earlier benefits for manufacturers than companies in the service sectors.
9. Productivity is greatly reduced by having a higher proportion of direct employees to indirect employees, demonstrating that automation may be a key to productivity success.
10. Companies with a higher proportion of managers achieve higher productivity, suggesting employee empowerment is not a key to productivity.

Appendices 1 & 2 provide a graphical summary of the enablers of service sector and manufacturing sector productivity.



Terry Pilcher

# FOREWORD

by Terry Pilcher,

Assistant Director - Small Business Service

The Benchmark Index was launched in 1996. It now involves over 8,000 companies, making it one of the largest benchmarking services in the world.

Benchmarking obliges businesses to be humble enough to admit that other, directly comparable companies may be better at some things than they are. At the same time, it provides the insight for them to learn what to do about it and thereby enables them to become more competitive.

This fundamental philosophy has had a major impact and proved to be a very valuable learning experience. Companies that participate in Benchmark Index increase their profitability by an average of £75,000\*. Some of the other benefits seen are increased sales, greater staff retention and a significant number of jobs created. These benefits prompt 73% of participating companies to re-benchmark using Benchmark Index.

The service has sought to increase the benefit to companies. This has led to the development of 12 sector-specific modules ranging from Farming to Public Sector. It has also prompted the development of 8 process-based (or thematic) modules ranging from Business Excellence to Design.

This endeavour to continually develop the service has led to this analysis and report. There is an opportunity to make Benchmark Index more predictive by demonstrating the potential impact of specific management and investment choices. In this way it will

provide the basis for more intelligent decision making. Enablers of Productivity follows an earlier study into the Enablers of Profitability. The results of this earlier work have been used to make changes to Benchmark Index to provide these 'predictive' capabilities, however, the results have not been written up and published. Maybe, this could be the topic of a future report?

It is interesting to consider the link between productivity and profitability. Clearly, profit is critical to business, whereas productivity is key to economic success and is, therefore, often the focus of economists and strategists. Can productivity and profitability exist as easy bedfellows or are the two mutually exclusive? Whilst this report is intended to focus on productivity, it is interesting to share some observations in this regard. In many cases, the enablers of productivity have a similar effect on profitability (ie. both positive or negative), however, there are exceptions and some examples are shown below.

1. Graduate employment in manufacturing is linked to higher productivity but to lower profitability.
2. A higher proportion of employees to managers is associated with higher profitability but lower productivity in the manufacturing sectors.
3. A higher number of direct employees to indirect leads to lower productivity in manufacturing, but higher profitability.

\* independent impact assessment work undertaken during 2002

“ Companies that participate in Benchmark Index increase their profitability by an average of £75,000

”



## so why is productivity important?

A number of recent studies have identified major weaknesses in UK productivity when compared to companies in the US and elsewhere in Europe. Productivity is a measure of how efficient we are at creating wealth, how prosperous we are as a nation, and how likely it is that jobs we create today will increase the future prosperity of our country.

It is important that - as we tackle the decline in many of the traditional UK industries - we understand the impact of creating jobs in other sectors and industries. Replacing high value added jobs in manufacturing with low value added service-related jobs, for example, is an unattractive long-term prospect. Similarly, we need to understand why many sectors of business in the UK are less productive than similar sectors elsewhere.

There has been much discussion about how this low productivity may be linked to problems with management and leadership or the slow adoption of ICT. Many of these expert views may well be correct, but are often based on incomplete information.

In this report we have used Benchmark Index data and sought to link cause and effect. By studying 'enablers' and productivity, we have been able to determine what really adds value to UK business.

# *what really adds value to UK business?*

# background - about this report

Enablers of Productivity is based upon the analysis of over 4,000 companies from the Benchmark Index database (see Appendix 3). The Benchmark Index core questionnaire collects 59 pieces of data. This analysis considers the correlation between these data elements and productivity performance to establish what can be learned and applied to improve business productivity.

This work follows a similar exercise that considered Enablers of Profitability. This earlier work has since been embraced by Benchmark Index. It is certain to become a valuable tool to help advisers and their customers determine improvement strategies based on new predictive capabilities. It shows the potential bottom line impact of different business decisions.

Questions such as "should we invest in a new Customer Relationship Management (CRM) system to improve our relationship with our customers, or should we invest more in marketing to recruit new customers?" for example, can be tested using the Enablers of Profitability system. The new Enablers of Productivity analysis has the potential to be used in a similar manner.

A hand holding a blue pen over a document with a magnifying glass. The background is a light blue gradient with a blurred image of a hand holding a pen over a document, with a magnifying glass over it.

// should we invest? //



# what is productivity?

Within Benchmark Index there are 3 measures of productivity – though the data exists to calculate productivity in a number of other ways. The 3 existing measures are:

1. **Pre-tax profit per employee**
2. **Turnover per employee**
3. **Value Added per Employee**

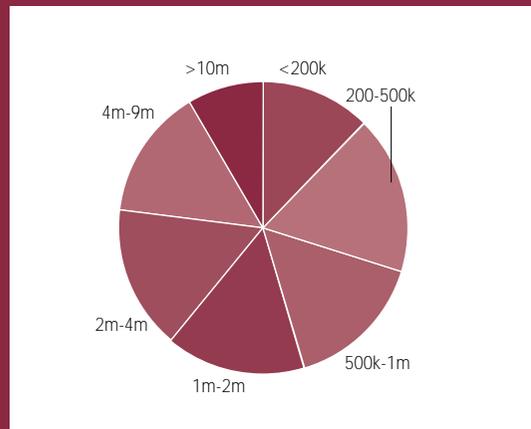
Value Added is a measure of wealth creation. It is simply defined as sales less the cost of bought in materials, components and services.

The use of Value Added is particularly appropriate as it is consistent with other measures used by the DTI in considering productivity, namely:

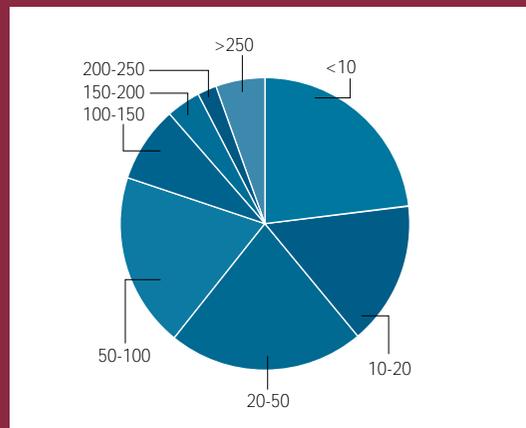
- P1. Labour Productivity – the value added per employee
- P2. Value Adding Efficiency – which relates value added (the output) to the main inputs of labour and capital equipment. It is calculated by dividing Value Added by the sum of Employee Costs and Depreciation

In this report, we have predominately used P1 (Labour Productivity) though we have used P2 (Value Adding Efficiency) in the sectoral analysis.

# a few words about the analysis



BI data distribution by turnover



BI data distribution by number of employees

## *analysis was undertaken in 2 stages*

1. Determining Potential Enablers – an initial analysis was undertaken of the potential correlations between Value Added per Employee and the data collected from the Benchmark Index core questionnaire. This identified positive and negative relationships, in other words, highlighting factors that had a positive or negative effect on productivity. During this first stage analysis, we also looked closely at those expected enablers where, in fact, there was no obvious correlation.

2. Determining the relevance and importance of these enablers – having identified potential enablers, their relevance was tested by comparing companies with low (bottom third), medium (middle third) and high (top third) performance in those areas to determine their impact on productivity. For example, this report considers the impact on productivity of training. One measure of this is the amount of training expenditure per employee. The differences in productivity between those with a low, medium and high-level of training expenditure are compared. The basis of this analysis will become clear later.

## *possible limitations of the analysis*

- 1) This analysis has considered the manufacturing and service sectors in a broader context (see Appendix 4 for a list of manufacturing and service industries). In reality each sector will have its own unique characteristics, which might show different responses to the various enablers.
- 2) This analysis looked at the dataset at a specific point in time, with no consideration to the time effects of strategy. Additional analysis of the productivity growth of companies investing in R&D, capital equipment or people development, for example, might well demonstrate the longer-term benefits of such strategies.

## *the data sample*

This analysis has been conducted using the data from 4,000 UK companies. The sectors and their value added are shown overleaf. The charts on the left show the profile of the data in terms of company size: turnover and number of employees.

# how the sectors compare

table 1 – how significant are the sectors at creating wealth?

Sectors	Value Added	% of Total	VAPE - P1	VA % of Emp + Dpn - P2
Construction	1,202,956,321	15.01	40,235	223%
Manufacture of Basic Metals and Fabricated Metal Products	1,157,307,228	14.44	27,864	177%
Manufacture of Chemicals, Plastics and Ceramics	861,872,095	10.76	40,436	314%
Manufacture of Food Products, Beverages and Tobacco	665,849,594	8.31	35,965	401%
Manufacture of Transport Equipment	600,262,445	7.49	26,680	240%
Financial Intermediation, Real Estate, Renting and Business Activities	521,156,708	6.50	33,640	338%
Manufacture of Electrical and Optical Equipment	457,346,297	5.71	33,797	265%
Manufacture of Machinery and Equipment Not Elsewhere Classified	371,021,059	4.63	36,450	155%
Manufacture of Wood, Paper and Printing	361,825,985	4.52	40,391	290%
Other Manufacturing	342,203,887	4.27	38,394	277%
Wholesale and Retail Trade; Repair of Motor Vehicles and House Goods	335,890,731	4.19	25,684	103%
Public Administration and Defence; Compulsory Social Security	328,822,680	4.10	50,674	297%
Transport, Storage and Communication	173,420,310	2.16	27,874	306%
Other Services	133,818,377	1.67	24,788	25%
Education	122,158,992	1.52	15,217	287%
Agriculture, Hunting, Forestry and Fishing	120,943,617	1.51	26,594	16%
Manufacture of Textiles, Leather and Related Products	116,544,025	1.45	22,110	57%
Hotels and Restaurants	94,137,892	1.17	20,145	302%
Mining and Quarrying	40,635,460	0.51	53,893	295%
Electricity, Gas and Water Supply	4,917,203	0.06	19,436	292%

The table above has been sorted in terms of the Value Added for that sector. Too much should not be read into this as we do not know whether the data is generally representative of UK business as a whole – though the quantity and quality of the data suggest that it will be broadly accurate. It does however show that Construction, Manufacture of Basic Metal Products, Other Manufacturing and Food and Drink are very important elements within Benchmark Index.

Value Added is an output, showing the wealth created by a business. This wealth can be shared in a number of ways:

1. employee remuneration
2. return on capital to investors or business owners
3. invested back into the business for future growth
4. taxes

It is important for businesses that they generate sufficient capital to recruit and retain appropriate skill and experience and also to continue to invest in their business and equipment. In fact, a business generates its Value Added using its people, its processes and its equipment to change raw materials into something its customers want. The higher the Value Added, the better or more efficient it is at doing this.



## Labour productivity – P1

In terms of labour productivity the most successful sectors are Mining and Quarrying; Manufacturing of Wood, Paper and Printing; and Manufacture of Chemicals, Plastics and Ceramics.

On the other hand, Other Services, Hotels and Restaurants, and Manufacturers of Textiles, Leather and Related products perform comparatively badly.

## Value adding efficiency – P2

As described earlier, this relates Value Added (as an output) to the inputs of labour and capital equipment usages.

Using this measure of productivity, Food Processing; Financial Intermediation and Real Estate; and companies involved in the Manufacture of Chemicals, Plastics and Ceramics are very efficient.

Companies in Agriculture, Other Services, and Textiles and Leather Manufacture are comparatively inefficient.

# our findings

Our findings have been graphically represented, showing the broad differences between service and manufacturing industries. Please refer to the adjacent graphs.

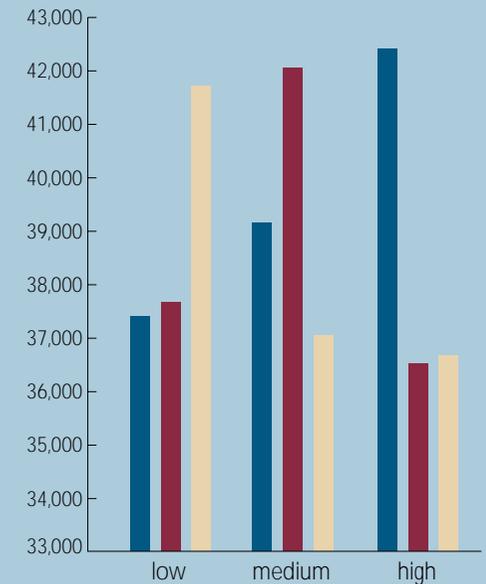
Clearly, each sector will have its own characteristics and caution needs to be observed before drawing any conclusions. However, the data does show some interesting and noteworthy trends.

Each graph shows the overall impact of the particular enabler, together with its impact on the manufacturing and service sectors separately. For each, the average Value Added per Employee is shown for those companies with low, medium and high performance against that particular enabler.

As an example, for level of complaints (complaints/orders), companies have been broadly grouped into those with a low number (relatively speaking), those with a medium number and those with a high number.

In this example, those with higher complaints have a higher productivity, however, it is not always easy to determine the cause and the effect and this too needs to be borne in mind.

## overall



Enabler Key:  
■ complaints/orders  
■ rejected orders/orders  
■ new customers/total customers

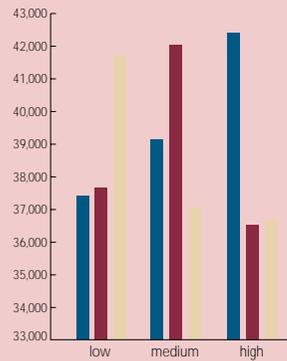
Enabler Key:

■ complaints/orders

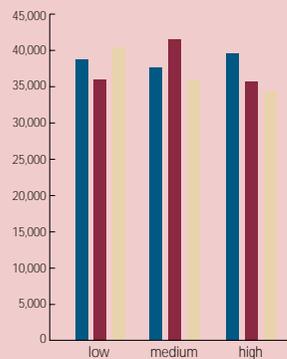
■ rejected orders/orders

■ new customers/total customers

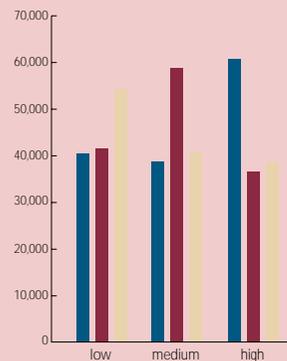
overall



manufacturing



service



// as the proportion of new customers grows, so productivity falls //

## customer focus



1. Level of complaints (complaints / orders) - in both the manufacturing and service sector, higher labour productivity is linked to higher complaints. There are a number of potential reasons:
  - a. higher added value companies are better and more thorough at recognising and recording complaints.
  - b. customers of higher value added companies may have higher expectations and more likely to complain.

It is a long-held belief that the customer is the final arbiter in product and service quality and that a high level of complaints is bad for business. What if higher value added companies encouraged complaints and used the feedback to shape product and service offerings? This could explain why higher added value companies seem to have more complaints than their weaker performing counterparts.

2. Orders rejected (rejected orders / orders) – companies with a 'medium' level of performance in terms of rejected orders seem to be most productive. Once again, this is perhaps counter-intuitive. We need to bear in mind that higher productivity companies are, perhaps, working in

bigger batch sizes, which could mean that they are working with fewer orders and customers overall. This could mean that order rejection rates appear higher. However, as order rejection rates increase even further, labour productivity sharply decreases, no doubt as a result of reworking required.

3. New customers (new customers / total customers) – as the proportion of new customers grows, so productivity falls.

This negative impact on productivity is almost twice as bad in service industries (27% reduction) as it is in manufacturing (14% reduction). There are two observations:

- a. it is more labour intensive to recruit new customers, with more sales people required and possibly more technical development staff as well.
- b. it could be argued that new customers are an investment in the future and this intuitively makes sense. However, the results seem to suggest at some point a business has to reap what it has sown and look to maximise the relationship it has with its existing customers. Constantly pursuing new customers may not always be beneficial.

// graduate employment is more important in the manufacturing sector than the service sector //

# people satisfaction

1. Graduate appointments (graduates/employees) the proportion of graduates seems more important in the manufacturing sectors than service sectors, where companies with the highest proportion of graduates see a decreasing amount of labour productivity.
2. Rate of early leavers (those leaving within 6 months of joining) – generally, there is a negative correlation with lower productivity associated with a high incidence of early leavers. This correlation is stronger in the service sector than it is for manufacturing.
3. Level of new employees (new employees /employees) – the higher the proportion of new employees to total employees, the lower the rate of labour productivity.

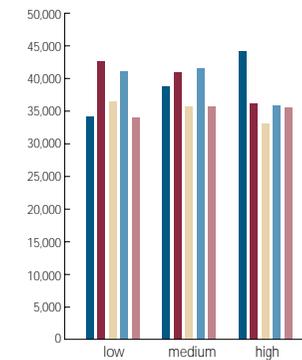
For manufacturing, productivity is similar for companies with a low and medium number of new employees, showing this is less sensitive in this area, possibly as a result of automation and clearly defined processes. However, as the rate of new starters continues to increase, manufacturing becomes more sensitive to it, perhaps, because even though they might be highly automated, process driven methods begin to suffer.

4. Staff retention (total leavers/employees) – as you might expect, the results are very similar to measure 3 above (new employees / employees).
5. Absenteeism (number of days lost per year per employee) – surprisingly, there is little impact on manufacturing productivity between companies with low and high levels of absenteeism. This could be as a result of automation, which minimises the impact of staff illness. Conversely, there is a positive correlation between absenteeism and productivity in the service sectors, with companies with high levels of absenteeism being much more productive than those with a low level. Again, we have to ask, what is 'cause' and what is 'effect'? Could it be that companies with higher levels of productivity suffer higher absenteeism rates? This could be as a result of extra pressure placed on people, for example.

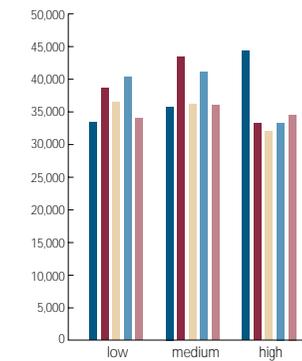
// companies with higher levels of productivity suffer higher absenteeism rates //

Enabler Key:  
 ■ graduates/employees  
 ■ early leavers/employees  
 ■ new employees/employees  
 ■ total leavers/employees  
 ■ absenteeism/employees

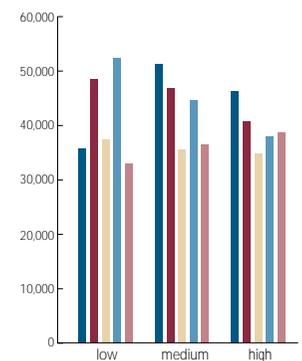
overall



manufacturing



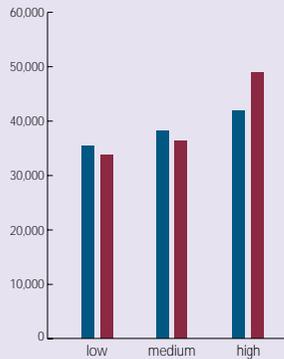
service



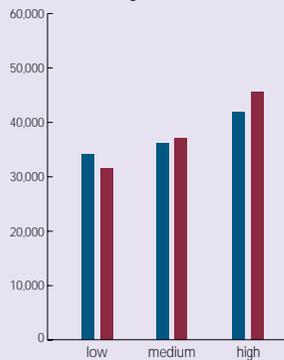
Enabler Key:

- training days per employee
- training expenditure/employees

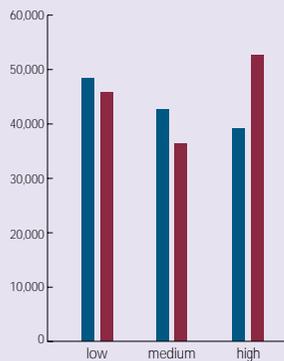
overall



manufacturing



service



// manufacturers that spend heavily on staff training enjoy 47% better productivity than those that spend little //

## continuous learning and improvement

It is a widely held belief that organisational performance is maximised when it is based on the management and sharing of knowledge, within a culture of learning and improvement. While this is evident in manufacturing, it is not the same in service industries.

Manufacturers that provide a high number of days for staff training enjoy productivity that is 24% better than manufacturers that provide very little time for staff training. The opposite is true in the service sector, where companies that provide lots of time for staff training have 18% worse productivity than those who provide little time for this activity.

There is a similar curious pattern in terms of training expenditure. Manufacturers that spend heavily on staff training enjoy 47% better productivity than those that spend little. The same is true in service sectors. While those that spend heavily on staff training enjoy better productivity, the difference is only 13%. It is worth noting that in the service sectors, productivity falls with training expenditure between those spending the least and those spending at the medium.

What this potentially tells us is that in the service sectors, the matter of training and development is far from clear-cut. Days out of the office on training courses have a negative impact on productivity. But companies spending the most money on training see a worthwhile gain in productivity.

The key seems to be invest prudently in only those courses that will add the most value (even though they are likely to be the most expensive) but do not necessarily let people attend courses just because they are free.

// service companies that spend heavily on training enjoy only 13% better productivity //

# partnership with suppliers

Substandard supplies have a big impact in both manufacturing (8% reduction in productivity) and service (28% reduction in productivity) and demonstrates the importance of supplier relationships.

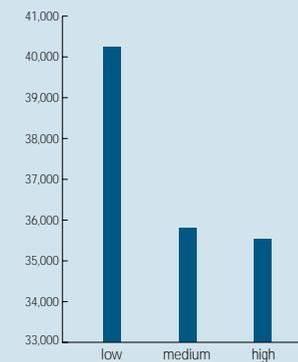
Old models of 'customer' and 'supplier' relationships need to be re-thought, with a partnership approach adopted. Companies involved in a supply chain should have mutually beneficial relationships that are built on trust and add value to both parties.

**// old models of 'customer' and 'supplier' relationships need to be re-thought //**

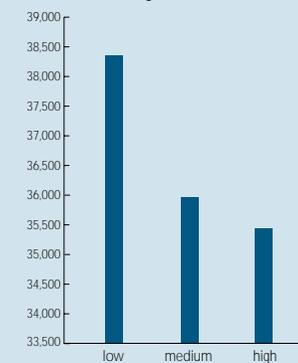
Enabler Key:

■ substandard materials/bought in materials

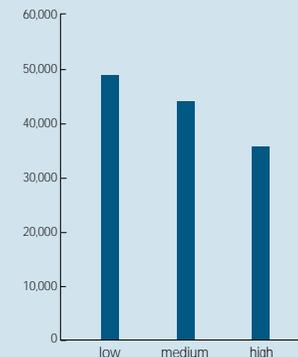
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manufacturing



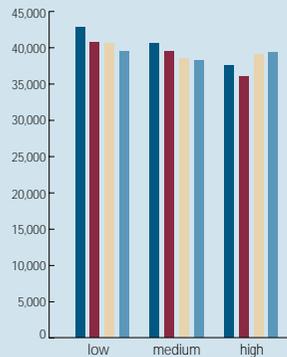
service



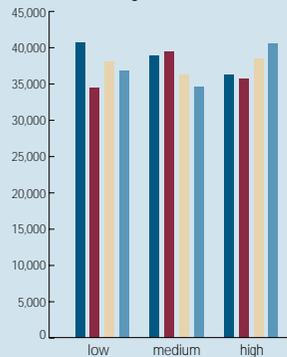
Enabler Key:

- capital investment/turnover
- income from new products/turnover
- marketing expenditure/turnover
- R and D expenditure/turnover

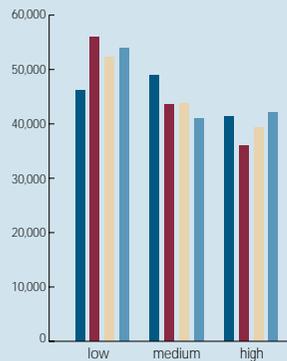
overall



manufacturing



service



## investment for innovation and growth

In this section, we are looking at the impact of investment: in equipment, in products, in market development, in R&D and in marketing. As with any investment, the results may not be immediately seen and, therefore, it is not always easy to determine the effects of the investment. However, there are several noteworthy points:

1. Innovative companies in the manufacturing sectors (those generating income from new products or markets) see an earlier benefit from investment than those in the service sectors, where innovation usually results in a drop in productivity
2. Marketing expenditure destroys value in the service sectors, at least in the short term
3. R&D expenditure in the manufacturing sectors has greater immediate benefit than it does in the service sectors where productivity falls - at least initially



// **marketing expenditure destroys value, at least in the short term** //

# company structure

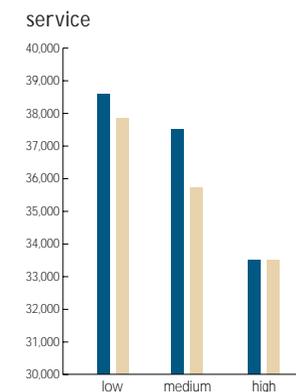
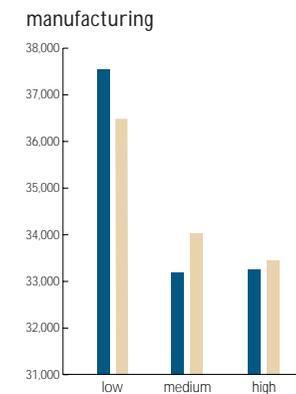
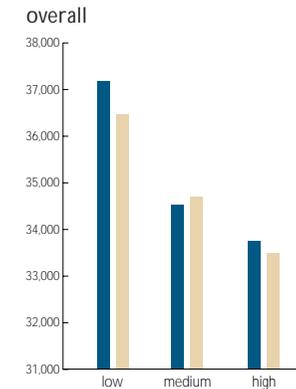
1. Directs/indirects – this looks at the number of people directly involved with the production or provision of a product or service. It is not always easy to compare this between companies, as there is uncertainty as to whether things such as transport, or sales and marketing are direct or indirect. However, it is interesting to note that the fewer directs there are, the better the level of productivity.

This may be as a result of investment in automation, suggesting that those with a higher proportion of directs are less automated and, consequently, less productive.

2. Employees/managers – this looks at the ratio of employees to managers. Conventional wisdom suggests management structures should be flatter, with fewer managers and a greater number of people reporting directly to them. The evidence here suggests this is not necessarily the case: the most productive companies in both the manufacturing and service sectors actually have a lower ratio of employees to managers.

“ the fewer the directs  
there are the better the level  
of productivity ”

Enabler Key:  
■ directs/indirects  
■ no employees/managers



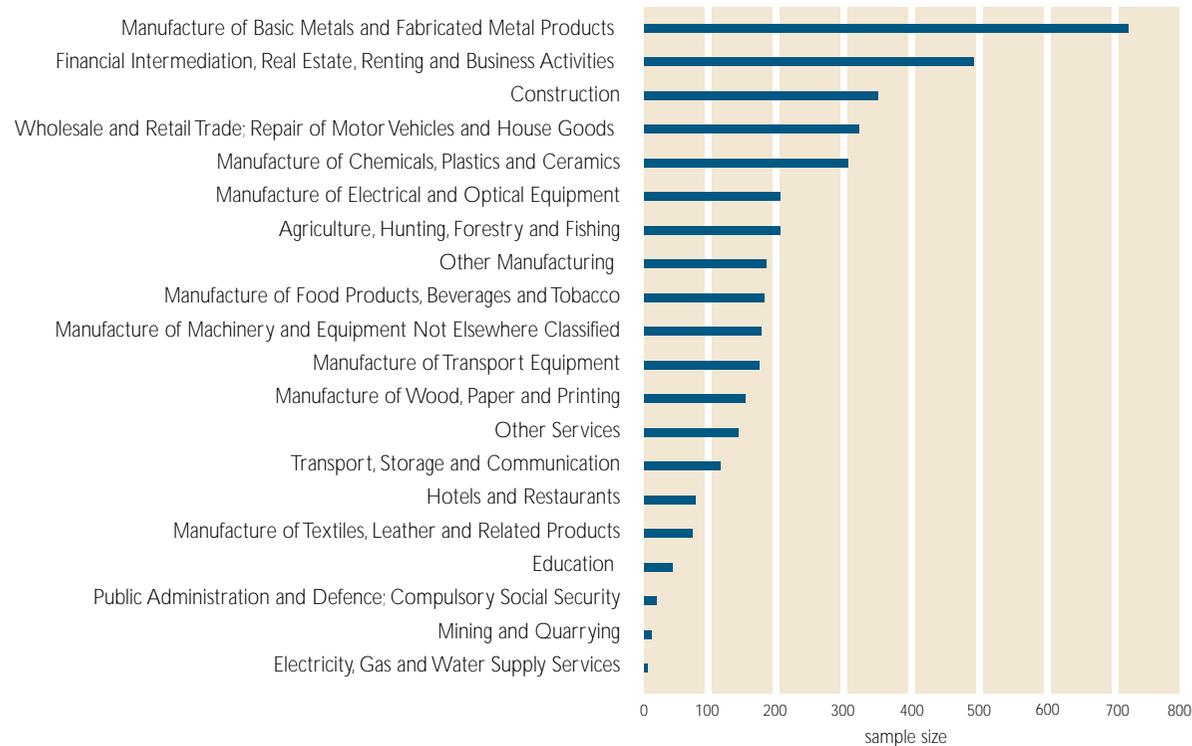


## Appendix 1 A summary of service enablers



## Appendix 2 A summary of manufacturing enablers

## Appendix 3 - Breakdown of sectors



## Appendix 4

### List of manufacture industries

- Agriculture, Hunting, Forestry and Fishing
- Mining and Quarrying
- Manufacture of Food Products, Beverages and Tobacco
- Manufacture of Textiles, Leather and Related Products
- Manufacture of Wood, Paper and Printing
- Manufacture of Chemicals, Plastics and Ceramics
- Manufacture of Basic Metals and Fabricated Metal Products
- Manufacture of Machinery and Equipment Not Elsewhere Classified
- Manufacture of Electrical and Optical Equipment
- Manufacture of Transport Equipment

### List of service industries

- Electricity, Gas and Water Supply Services
- Wholesale and Retail Trade, Repair of Motor Vehicles and House Goods
- Hotels and Restaurants
- Transport, Storage and Communication
- Financial Intermediation, Real Estate, Renting and Business Activities
- Public Administration and Defence, Compulsory Social Security
- Other Services
- Construction
- Other Manufacturing
- Education



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