

Business Operations Survey: 2013

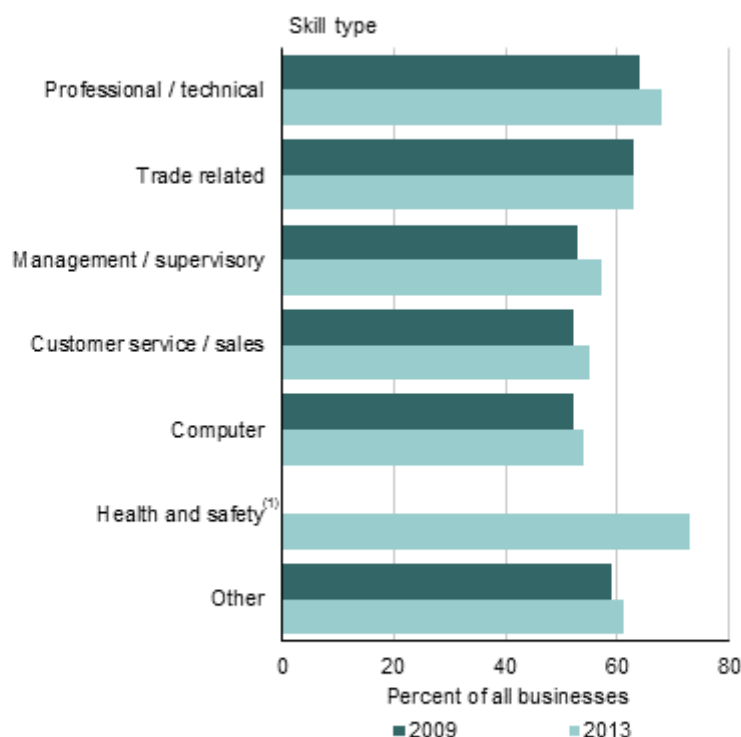
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Key facts

In 2013:

- 31 percent of businesses had hard-to-fill vacancies in 2013, compared with 47 percent in 2008.
- 89 percent of businesses trained staff, with most businesses training staff in health and safety skills.
- 46 percent of businesses innovated (implemented or developed new or significantly improved goods, services, or methods).
- Spending on research and development (R&D) rose 7 percent, and now makes up 56 percent of total product development and related activities expenditure.

Training by skill type
Last financial year at August 2009 and 2013



1. Data on health and safety not collected in 2009.

Source: Statistics New Zealand

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Commentary

- More focus on the future for businesses
- Innovation – new insights and trends
- A wealth of other information on business activities

The Business Operations Survey is a modular survey that contains a repeating business operations module, an alternating information and communications technology (ICT) or innovation module, and a contracted module. In 2013, the contracted module focused on business practices, and skill needs and recruitment.

More focus on the future for businesses

The Business Operations Survey shows trends that mirror other recent surveys, which indicate a more positive picture for businesses than in past years. The survey shows encouraging results for indicators such as recruitment, training, research and development (R&D), and innovation.

Businesses finding it easier to fill vacancies

In 2013, we collected data to better understand vacancies, recruitment, and the difficulties around these activities.

Fewer businesses had vacancies in 2013 than in 2008 (68 percent and 77 percent, respectively). These vacancies were also easier to fill in 2013. Thirty-one percent of businesses had hard-to-fill vacancies in 2013, compared with 47 percent in 2008.

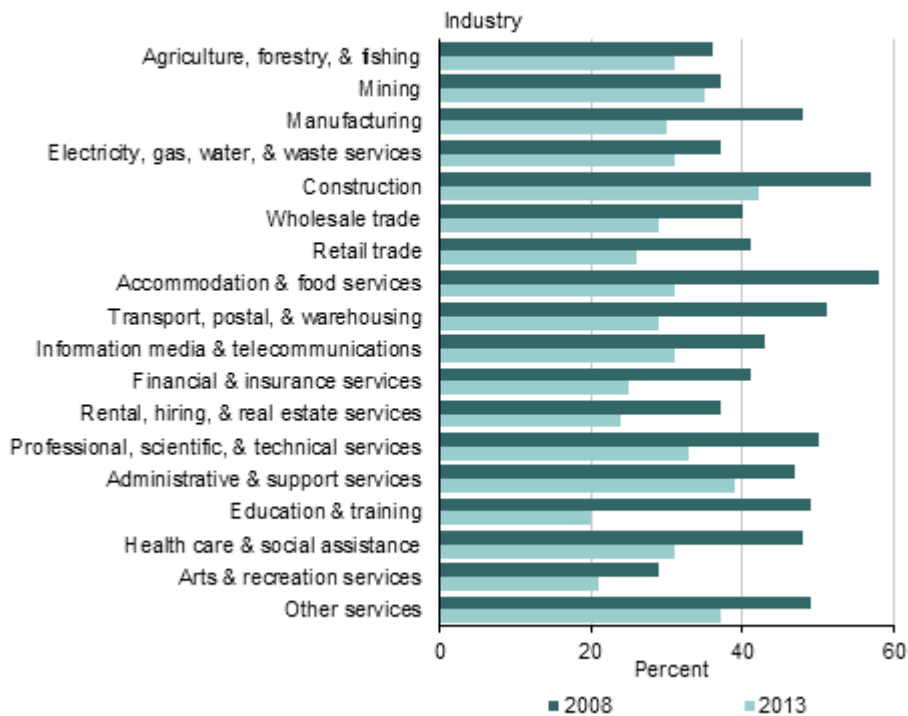
This trend could be seen across all industries and business sizes. The education and training industry showed the greatest decrease in the proportion of businesses with hard-to-fill vacancies.

When asked why businesses were not able to fill vacancies, the most-quoted reasons relate to applicants' lack of appropriate character, experience, or qualifications. These factors were less of a problem for businesses in 2013 than in 2008. Businesses also stated that a lack of applicants was less of a problem in 2013, indicating a larger pool of people to choose from.

Employment and unemployment has more information on the labour market. Results showed that during the recession (2008–10), the unemployment rate rose, employers hired fewer new employees, and tried to keep existing staff.

Businesses with hard-to-fill vacancies

Last financial year at August 2008 and 2013



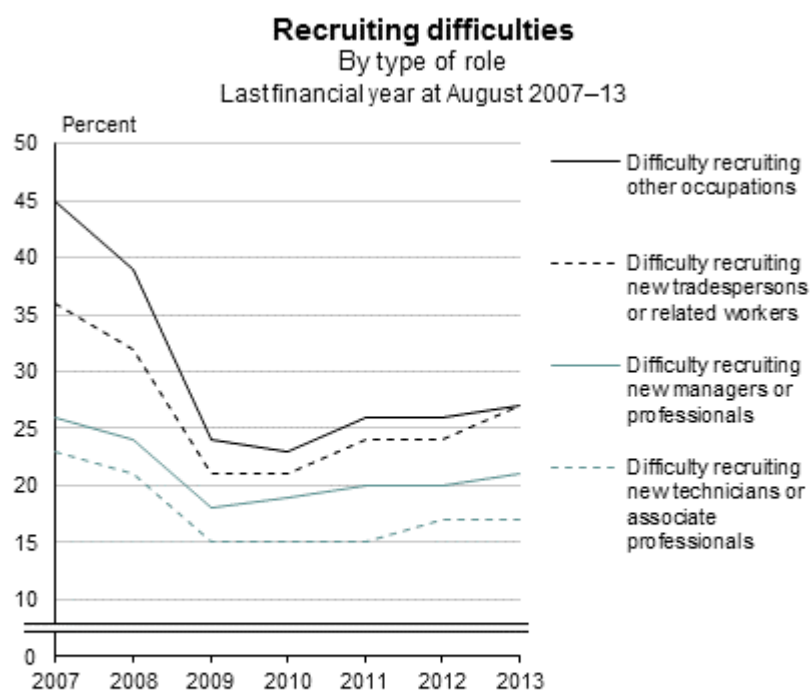
Source: Statistics New Zealand

Our data shows what businesses did when they couldn't fill all vacancies easily. The most common actions were salary increases, training less-well-qualified recruits, and more advertising or recruitment spend.

We ask businesses each year about the difficulty they had recruiting staff for broad occupational groups. These occupational groups are:

- managers and professionals
- technicians or associate professionals
- tradespersons or related workers
- other occupations.

Recruiting new staff for all broad occupational groups was easier in 2013 than in 2008.



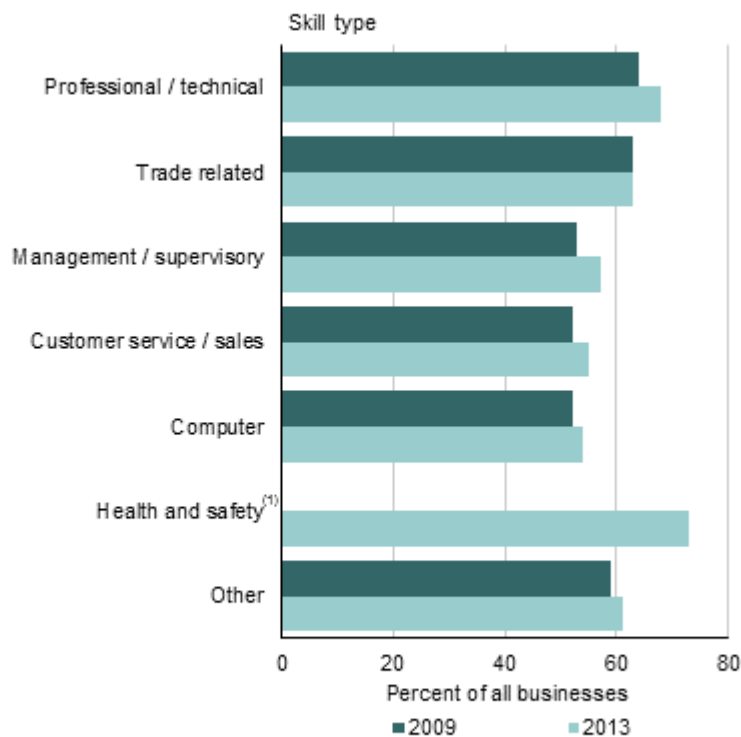
Source: Statistics New Zealand

Most businesses are still training staff

Most businesses are improving or maintaining the skills in their workforce, with 89 percent training staff in 2013.

Training by skill type

Last financial year at August 2009 and 2013



Most businesses trained their staff in health and safety skills (73 percent of all businesses). This was followed by professional and technical skills (68 percent) and trade-related skills (63 percent). For many businesses or types of role, these skills may be required to meet legal or industry standards.

We did not collect data on health and safety skill training in 2009, but added it in 2013 to provide a more detailed picture of training in New Zealand.

The survey also collected information on skill gaps and factors resulting in staff not having all the skills to do their job, which may influence a business's decision to train.

Innovation – new insights and trends

Innovation is the introduction or development of any new or significantly improved goods, services (products), processes, or methods.

Almost half (46 percent) of all businesses had some sort of innovation activity over the last two years. Businesses can undertake four different types of innovation:

- goods or services (products)
- operational processes
- organisational or managerial processes
- marketing methods.

These types of innovation can be at different stages, including:

- implemented – the innovation has been introduced to the market
- ongoing – an innovation has been started, but not yet completed
- abandoned – an innovation was started, but then stopped.

In 2013, almost one in five implemented products were new to the world, and almost half were new to New Zealand.

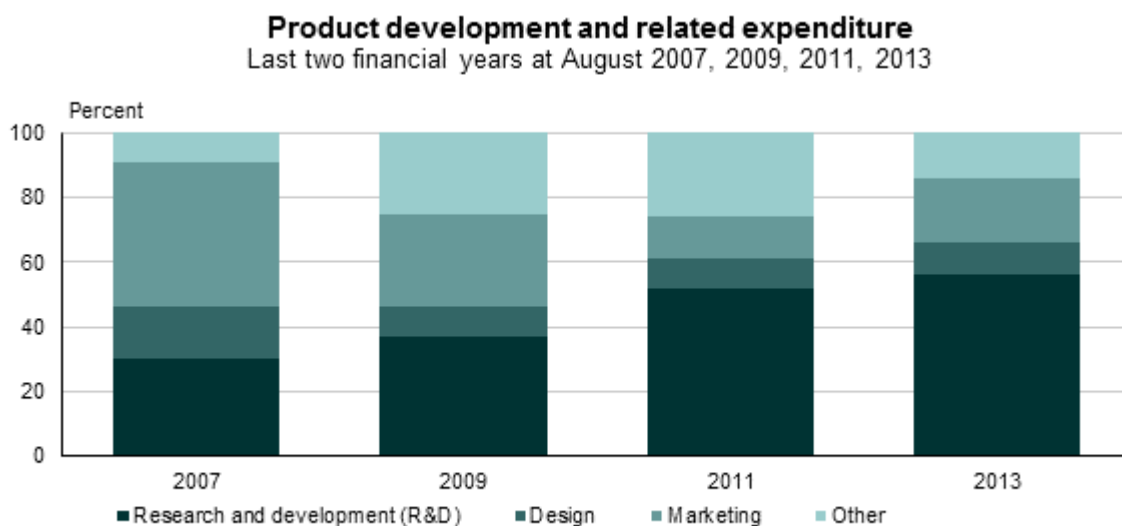
Innovation is complex, as it encompasses many different processes and activities. One component of innovation is research and development (R&D), which deals with the preliminary investigation stages of new products or services.

Research and development spending continues to increase

Research and development is the investigation of new ideas, products, or processes that the business can develop. However, innovation is the wider picture of both the investigation and the implementation of these new products.

Because innovation includes a large range of activities, it is not easy for businesses to provide a figure for innovation spending. Therefore, the survey concentrates on a sub-set of innovation (product development and related activities) expenditure. This includes spending on R&D, design, marketing, and other spending related to product development.

More than half of all product development and related activities spending is on R&D. Fifty-six percent was on R&D in 2013, compared with 52 percent in 2011. This shows that R&D is becoming an increasingly significant part of innovation.

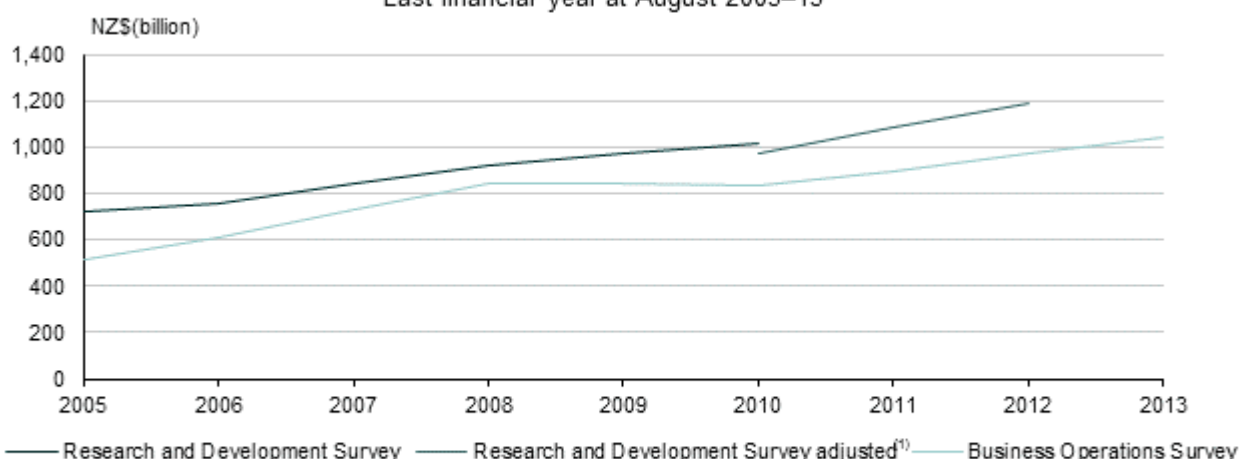


Source: Statistics New Zealand

The Business Operations Survey collects information on the number of businesses that perform R&D and also the amount they spent on it. Eight percent of businesses performed R&D in 2013, the same proportion as in 2012. While the number of businesses has remained similar over time, the amount they have spent on R&D has increased. In 2013, it reached over \$1 billion – a 7 percent increase from 2012.

Business research and development (R&D) expenditure

Last financial year at August 2005–13



1. Our method for selecting the population changed in 2012. This means data from before 2010 cannot be compared with data from 2010 on.

Source: Statistics New Zealand

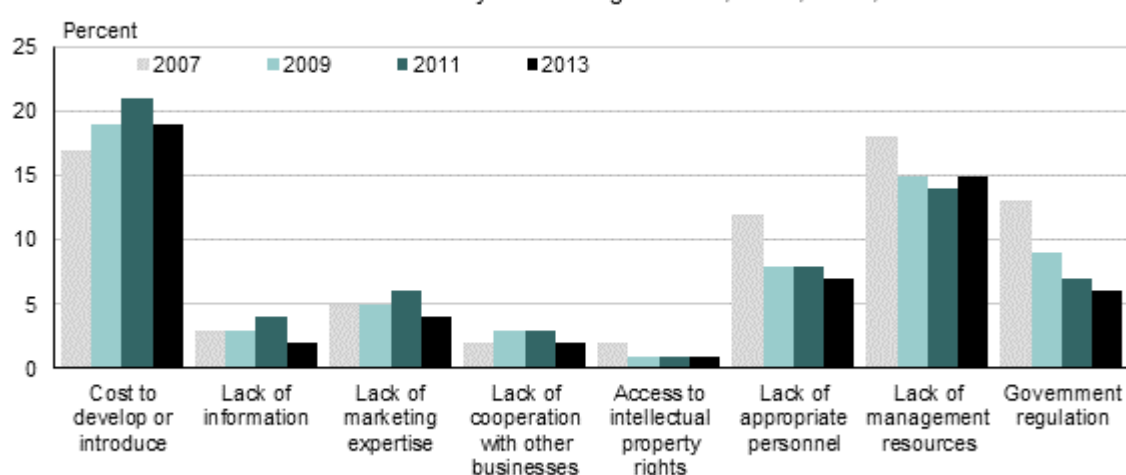
R&D expenditure collected in the Business Operations Survey mirrors the trend found in the Statistics NZ Research and Development Survey. While there are differences in coverage, time periods, and scope, which produce different figures, the two surveys show a constant increase since 2005. The R&D survey provides aggregate R&D expenditure figures for businesses, government, and higher education, while the Business Operations Survey provides a broader picture of businesses' R&D and other associated activities. Therefore, these two surveys are complementary to each other.

Barriers to innovation reducing

In 2013, businesses had fewer barriers to innovation than in previous years.

Barriers that hampered innovation to a high degree

Last two financial years at August 2007, 2009, 2011, 2013



Source: Statistics New Zealand

The cost to develop or introduce new products or services has always been the biggest barrier to business innovation, followed by a lack of management resources. Government regulation as a

barrier to innovation has decreased consistently over time. Other barriers, such as lack of intellectual property rights, are less of a barrier, and have fluctuated over time.

A wealth of other information on business activities

The Business Operations Survey collects information each year on the types of operations businesses can perform. This information gives a wider picture of how businesses change their activities over time and how the activities are connected.

Businesses continue to invest in expansion, are now planning longer term, and are developing their goals more formally. Results show businesses are thinking of their future, and modifying their practices and operations to suit the current business environment.

Other data we collected in 2013 includes:

- international presence
- employment
- business performance
- other business factors such as comparison to competitors, requests for finance
- activities supporting innovation
- reasons for innovating and sources of innovation ideas
- cooperative arrangements for innovation
- strategy, goals, and planning
- customer and supplier interaction
- information and benchmarking
- employee practices
- quality and process
- skill gaps.

Statistics NZ will release summary tables for all data ever collected in the survey in [NZ.Stat](#) tables, in mid-2014. We will publish this data at the full two-digit ANZSIC breakdown, which you can see in the detailed tables. The data for 2005 and 2006 will be recalculated to make it comparable with data from 2007 onwards. This will allow you to create your own customised tables, which can include the entire time series of BOS data.

For more detailed data from this survey, see the Excel tables in the 'Downloads' box.

Definitions

About the Business Operations Survey

The Business Operations Survey collects information on the operations of New Zealand businesses. This information is used to quantify business behaviour, capacity, and performance. The survey gives insights into business activities, barriers, and motivations, and effects behind New Zealand business operations.

More definitions

ANZSIC06: Australian and New Zealand Standard Industrial Classification System 2006.

Business Frame: a register of all businesses operating in New Zealand.

Employees: the number of employees is defined by an enterprise's rolling mean employment (RME) count. RME is a 12-month moving average of the monthly employment count (EC) figure. The EC is obtained from tax data.

Enterprise: a business or service entity operating in New Zealand. It can be a company, partnership, trust, estate, incorporated society, producer board, local or central government organisation, voluntary organisation, or self-employed individual.

Goods and services tax (GST): Respondents are asked to exclude GST if possible in the financial figures they provide in the questionnaire. If they do not exclude GST, we take out GST to make all enterprises comparable.

Last financial year: for this survey, refers to the last financial year for which the business had results available at August.

Definitions of terms used in the innovation module

The innovation module of the survey is designed to collect innovation data according to the definitions in the OECD Oslo Manual (2005), which is available from the OECD website.

The following definitions relate specifically to the innovation module.

Innovation: the development or introduction of any new or significantly improved activity for this business. This includes activity to improve products, processes, and methods that this business was the first to develop and those that have been adopted from other organisations.

For the Business Operations Survey 2013, innovation is the development or introduction of new or significantly improved:

- goods or services – sometimes referred to as product innovation. Does not include selling new goods or services wholly produced and developed by other businesses
- operational processes – the method of producing or distributing goods or services. This is sometimes referred to as process innovation
- organisational/managerial processes – significant change in the business strategy, structure, or routine. Sometimes referred to as organisational innovation

- marketing methods – intended to increase the appeal of goods or services for specific market segments, or to gain entry to new markets. Sometimes referred to as marketing innovation.

Cooperative arrangement: active participation with another organisation or individual in activities for the purpose of innovation.

- Includes collaborative arrangements for the purpose of innovation.
- Each party should bring exclusive knowledge or expertise to the cooperative arrangement.
- Partners do not necessarily gain immediate commercial benefit from the cooperative arrangement.

Related links

Upcoming releases

Business Operations Survey: 2014 will be released in April 2015.

Subscribe to information releases, including this one, by completing the online subscriptions form.

The release calendar lists all our upcoming information releases by date of release.

Past releases

Business Operations Survey has links to past releases.

Related information

Read the survey questionnaire posted to respondents in 2013:

Business Operations Survey: 2013

Data quality

Period-specific information

This section contains information that has changed since the last release.

- [Reference period](#)
- [Response rate](#)
- [Interpreting the data](#)
- [Consistency with other periods](#)

General information

This section contains information that does not change between releases.

- [Data source](#)
- [Population and sample selection](#)
- [Interpreting the data](#)
- [Accuracy of the data](#)
- [Consistency with other periods or datasets](#)

Period-specific information

Reference period

The survey was posted out in August 2013. We collected information for the last financial year for which the business had data available at that point.

Response rate

We aimed for an 80 percent response rate. We achieved an actual response rate of 80.7 percent, which represented 5,667 businesses. The final estimated population size was 36,360 enterprises.

Interpreting the data

Sampling errors

Most of the tables in this release contain percentages of the total number of New Zealand businesses within each size and industry. The absolute sampling errors for the overall New Zealand business population are presented in table 1.01. These errors should be used as a guide for judging the reliability of figures in the Excel tables that accompany this release. Table 1.01 should only be used on the overall estimates that are percentages of the different types of businesses mentioned below.

Table 1.01

Sample errors for Business Operations Survey: 2013															
	Size of estimate (percentage)														
	1	2	3	5	10	20	30	50	70	80	90	95	97	98	99
	Sampling error														
All businesses	0.4	0.6	0.8	1.0	1.3	1.8	2.0	2.2	2.0	1.8	1.3	1.0	0.8	0.6	0.4
Innovators	0.6	0.9	1.0	1.3	1.8	2.4	2.8	3.1	2.8	2.4	1.8	1.3	1	0.9	0.6

Table 1.02 presents the sample errors for the different size and industry groups in the survey. This table should only be used on the overall estimates that are percentages of all New Zealand businesses.

Table 1.02

Business Operations Survey: 2013 sample errors by size and industry				
Business size or industry category	Estimate size (percent)			
	1	5	20	50
	Sampling error			
Business size				
6–19 employees	0.6	1.3	2.3	1.3
20–49 employees	0.7	1.5	2.7	1.5
50–99 employees	0.3	0.7	1.3	0.7
100+ employees	0.4	0.8	1.5	0.8
Industry				
Agriculture, forestry, & fishing	1.3	2.8	5.1	6.4
Agriculture	1.8	3.8	7.1	8.8
Commercial fishing	1.6	3.5	6.3	7.9
Forestry and logging	2.1	4.6	8.4	10.5
Agriculture, forestry, and fishing support services	1.7	3.6	6.7	8.3
Mining	1.1	2.5	4.6	5.7
Manufacturing	0.6	1.4	2.6	3.3
Food, beverage, & tobacco	1.7	3.8	6.9	8.6
Textile, clothing, footwear, & leather	1.5	3.3	6.1	7.6
Wood & paper product	2.1	4.7	8.5	10.7
Printing, publishing, & recorded media	1.8	4	7.4	9.2
Petroleum, coal, chemical, & associated product	1.8	4.0	7.3	9.1
Non-metallic mineral product	1.8	3.9	7.2	9.1
Metal product	1.8	4	7.4	9.2
Transport & industrial machinery & equipment	1.8	4	7.4	9.2
Other machinery & equipment	1.6	3.5	6.4	8.0
Other manufacturing	1.9	4.2	7.8	9.7
Electricity, gas, water, & waste services	1.0	2.1	3.9	4.9
Construction	1.8	3.9	7.1	8.9
Wholesale trade	1.4	3.1	5.7	7.2
Machinery & equipment wholesaling	1.8	3.9	7.1	8.9
Other wholesale trade	1.9	4.2	7.8	9.7
Retail trade	1.7	3.7	6.8	8.5

Accommodation & food services	1.9	4.2	7.7	9.6
Transport, postal, & warehousing	1.8	3.9	7.2	9.0
Information media & telecommunications	1.2	2.5	4.7	5.8
Publishing	2.3	5.1	9.3	11.6
Motion picture	2.1	4.6	8.4	10.5
Telecommunications	1.3	2.9	5.4	6.7
Financial & insurance services	1.3	2.8	5.1	6.4
Finance	0.7	1.6	2.9	3.6
Insurance	0.8	1.7	3.2	4.0
Auxiliary	2.1	4.5	8.2	10.3
Rental, hiring, & real estate services	1.9	4.3	7.8	9.8
Professional, scientific, & technical services	1.3	2.8	5.2	6.5
Computer systems design	1.6	3.5	6.4	8.0
Other professional scientific	1.6	3.4	6.2	7.7
Administrative & support services	1.2	2.6	4.8	6.0
Education & training	1.4	3.3	6.0	7.5
Health care & social assistance	1.3	2.9	5.4	6.8
Arts & recreation services	1.8	3.9	7.1	8.9
Other services	2.0	4.3	7.9	9.9
Overall	0.4	1.0	1.8	2.2

The sampling errors provided in tables 1.01 and 1.02 are measured at the 95 percent confidence level.

How to use the sampling errors

For example, suppose the estimated proportion of businesses in New Zealand reporting an activity is 20 percent. This estimate is subject to a sampling error of approximately plus or minus 1.8. This means that 95 percent of the possible samples of the same size will produce an estimate between: $20 - 1.8$ and $20 + 1.8$, that is, between 18.2 and 21.8.

For example, suppose the estimated proportion of businesses in the agriculture, forestry, and fishing industry reporting an activity is 50 percent. This estimate is subject to a sampling error of approximately plus or minus 6.4. This means that 95 percent of the possible samples of the same size will produce an estimate between: $50 - 6.4$ and $50 + 6.4$, that is, between 43.6 and 56.4.

The sampling errors detailed in table 1.02 only show the sample errors for some estimates. This is because sample errors for estimates higher than 50 percent mirror those below 50 percent. For example, an estimate of 30 percent of businesses will have the same sample error as an estimate of 70 percent.

For more information refer to [sampling errors](#), under 'General information'.

Consistency with other periods

The modular structure of the Business Operations Survey means its content changes each year as results are released. Statistics NZ works with other organisations to develop the mix of content for this survey. Table 1.03 shows how these groups contributed to the development of the survey.

Table 1.03

Business Operations Survey module structure				
	Module content			
	Module A	Module B	Module C	Module D
2005	Business operations	Innovation	Business practices	N/A
2006	Business operations	ICT	Employment practices	N/A
2007	Business operations	Innovation	International engagement	N/A
2008	Business operations	ICT	Business strategy and skills	N/A
2009	Business operations	Innovation	Business practices	N/A
2010	Business operations	ICT	Price and wage setting	Financing
2011	Business operations	Innovation	International engagement	N/A
2012	Business operations	ICT	Impact of regulation	N/A
2013	Business operations	Innovation	Business practices	Skill needs and recruitment

Note: ICT – information and communication technology; N/A – not applicable.

Table 1.04

Contribution to content										
	Organisation									
	MBIE	MED	MSI	DOL	Treasury	NZTE	ComCom	RBNZ	Vic Uni	MFE
2005	N	Y	Y	Y	Y	N	N	N	N	N
2006	N	Y	N	Y	Y	N	N	N	N	N
2007	N	Y	Y	N	Y	Y	Y	N	N	N
2008	N	Y	Y	Y	Y	N	N	N	N	N
2009	N	Y	Y	N	N	N	N	N	N	N
2010	N	Y	N	N	N	N	N	Y	Y	N
2011	N	Y	Y	N	N	N	N	N	N	N
2012	Y	N	N	N	N	N	N	N	N	Y
2013	Y	N	N	N	N	N	N	N	N	N

Note: Y – Yes; N – No; N/A – Not applicable; MBIE – Ministry of Business, Innovation and Employment, previously separate agencies of MED, DOL and MSI; MED – Ministry of Economic Development; MSI – Ministry of Science and Innovation, previously the Ministry of Research, Science & Technology; DOL – Department of Labour; NZTE – New Zealand Trade & Enterprise; ComCom – Commerce Commission; RBNZ – Reserve Bank of New Zealand; Vic Uni – Victoria University; MFE – Ministry for the Environment.

In addition, each module in the survey has its own specific objectives. The modules included in the Business Operations Survey 2013 and their objectives are listed below.

Module A: Business operations

This module aims to provide a longitudinal series of information relating to business performance. This will help development of models aimed at investigating causal relationships. As well as traditional measures of performance such as turnover and profitability, there is also a need to collect information on such areas as export intensity. The purpose of collecting business

environmental information is to analyse any relationships between the environment in which a business operates and the results it achieves.

Module B: Innovation

Module B alternates between innovation (in odd years) and information and communication technology (ICT) (in even years). The objective of the innovation module is to provide information on the characteristics of innovation in New Zealand's private-sector businesses. This information will allow policies to be developed to facilitate innovation, and understand the dynamics of innovative businesses.

The innovation module runs every two years, and replaced Statistics NZ's former Innovation Survey, last run in 2003. The module was designed in accordance with OECD guidelines to develop an understanding of the contribution of all aspects of innovation to the New Zealand economy by measuring:

- levels of business innovation
- how and why businesses collaborate with other businesses and institutions to innovate
- factors affecting the ability of businesses to innovate
- outcomes of innovation for businesses, including its effect on exports.

Module C: Business practices

This module collects data on a range of practices (including management practices and behaviours), which were collected in the Business Operations Survey 2005, and 2009. The module collected information on:

- strategy, goals, and planning
- customers
- suppliers
- information and benchmarking
- employee practices
- quality and process.

Module D: Skill needs and recruitment

This module collected information on businesses' experiences with skill gaps and their recruitment. Some questions were previously collected in different modules in 2008 and 2006. It also included some new questions, previously not collected. Topics of the module included:

- vacancies
- internal skill gaps
- employment practices.

General information

Data source

For New Zealand's economic performance to be measured against initiatives aimed at increasing economic growth, data of a variety of measures needs to be collected.

Because of the large range of data needed, Statistics NZ developed an integrated, modular survey – the Business Operations Survey – to collect the required information and minimise the reporting load for New Zealand businesses. The survey was designed to include a range of ‘modules’ and has been run annually by Statistics NZ since 2005.

The Business Operations Survey was a postal survey. Initial contact was made to key and/or complex businesses in the survey by telephone, before the mail-out, to determine who to direct the survey to. For all other businesses, we addressed the survey form to the managing director. The survey was posted out in August and collected information for the last financial year for which the business had data available at that point.

Population and sample selection

The target population for the Business Operations Survey was live enterprise units on Statistics NZ’s Business Frame that at the population selection date:

- were economically significant enterprises (those that have an annual GST turnover figure of greater than \$30,000)
- had six or more employees
- had been operating for one year or more
- were classified to ANZSIC06 codes as ‘in scope’ in list 1 below
- were private enterprises as defined by New Zealand Institutional Sector 1996 Classification (NZISC96) as in list 2 below.

An enterprise is defined as a business or service entity operating in New Zealand, such as a company, partnership, trust, government department or agency, state-owned enterprise, university, or self-employed individual.

List 1 – ANZSIC06 codes

ANZSIC06 code – description

A – Agriculture, forestry, and fishing
B – Mining
C – Manufacturing
D – Electricity, gas, water, and waste services
E – Construction
F – Wholesale trade
G – Retail trade
H – Accommodation and food services
I – Transport, postal, and warehousing
J – Information media and telecommunications
K – Financial and insurance services
L – Rental, hiring, and real estate services
M – Professional, scientific, and technical services
N – Administrative and support services
P – Education and training
Q – Health care and social assistance
R91 – Sport and recreation activities
R92 – Gambling activities
S94 – Repair and maintenance

Out of scope

O – Public administration and safety
R89 – Heritage activities

R90 – Creative and performing arts activities
S95 – Personal and other services
S96 – Private household employing staff and undifferentiated goods and service producing activities of households for own use

List 2 – NZISC96 codes

NZISC96 code – description

1111 – Private corporate producer enterprises
1121 – Private non-corporate producer enterprises
1211 – Producer boards
1311 – Central government enterprises
2211 – Private registered banks
2221 – Private other broad money (M3) depository organisations
2291 – Private other depository organisations nec
2311 – Private other financial organisations excluding insurance and pension funds
2411 – Private insurance and pension funds

Out of scope

1321 – Local government enterprises
21 – Central bank
2212, 2213, 2222, 2223, 2292, 2293, 2312, 2313, 2412, 2413 – Central and local government financial intermediaries
3 – General government
4 – Private non-profit organisations serving households
5 – Households
6 – Rest of world

Sample design

The sample design was a two-level stratification according to ANZSIC industry and employment size groups. This information was obtained using enterprise ANZSIC industry and employment information from Statistics NZ's Business Frame.

The first level of stratification was 36 ANZSIC groupings. Within each of the ANZSIC groups there is a further stratification by employment size group. The four employment size groups used in the sample design are:

- 6–19 employees (small)
- 20–29 employees (medium 1)
- 30–49 employees (medium 2)
- 50 or more employees (large).

The two medium groups have been amalgamated, and the large size group further broken down for this publication, as these businesses were of particular interest for some of the results.

The survey has been designed to produce aggregate statistics at a national level. This design does not facilitate statistics to be produced at a regional level.

Interpreting the data

Unit non-response

Unit (or complete) non-response occurs when units in the sample do not return the questionnaire. The initial selection weight of the remaining units in the stratum was adjusted to account for the unit non-response (no item non-response imputation would occur for the units that did not return the questionnaire).

Item non-response

Item (or partial) non-response is when units return the questionnaire but some questions are not answered. No item non-response imputation was carried out for units that did not answer 60 percent or more of the questions they were required to answer (based on questionnaire routing rules). The respondents who did not meet this criterion were classified as unit non-responses and the weights were adjusted accordingly.

Imputation of numeric questions

The imputation methods used were weighted mean imputation and donor imputation. Using the weighted mean method, a weighted mean was calculated from linked responding units for each numeric linecode within each imputation cell. Non-responding units were then imputed with the weighted mean for their imputation cell. Weighted mean imputation was used to impute totals.

Donor imputation randomly selected a donor from within each imputation cell. The non-respondent was then imputed with the value(s) from the donor. Donor imputation was used to impute components and percentages so that the distribution was maintained.

Imputation of categoric variables

For categoric imputation the method used was nearest neighbour imputation, which involved finding a donor with the most similar responses. The donor supplied responses for all categoric variables requiring imputation. If the donor unit did not respond to any of the variables requiring a response, then we chose the next best donor to supply this information. This was continued until all the variables had a response.

Accuracy of the data

Treatment of sub-industries

The sub-industries presented in this release (indented industries in the tables) should be treated with caution since they have higher sample errors than those mentioned in Table 1.02. Further disaggregation below design level results in further loss of data quality.

The Business Operations Survey results are subject to measurement errors, including both non-sample and sample errors. These errors should be considered when analysing the results from the survey.

Non-sample errors

Non-sample errors include mistakes by respondents when completing questionnaires, variation in the respondents' interpretation of the questions asked, and errors made during the processing

of the data. In addition, the survey applied imputation methodologies to cope with non-respondents. Statistics NZ adopts procedures to minimise these types of error, but they may still occur and are not quantifiable.

Given the nature of the data collected, there are limitations on the level of accuracy that can be expected from the survey. Businesses' records may not be kept in the form required for the survey and some estimation by the respondent may be required.

Sampling errors

The estimates in this report are based on a sample of businesses. Somewhat different figures might have been obtained if a complete census of the entire business population had been taken using the same questionnaire and processing methods etc. Because the estimates are based on a sample of businesses, all estimates have a sampling error associated with them. The variability of a survey estimate, due to the random nature of the sample selection process, is measured by its sampling error.

Sampling errors vary from estimate to estimate, and with population breakdown and population size. Exact sampling errors can be produced for each variable within the Business Operations Survey upon request if required.

Consistency with other periods or datasets

Industry classification change

From 2008, the design of the survey was updated to the Australian and New Zealand Standard Industrial Classification 2006 (ANZSIC06). See the technical notes of [Business Operations Survey: 2008](#) for more information.

Information collected

Due to the modular nature of the survey, different data is released each year from the Businesses Operations Survey. Where possible, the current information has been compared with the most recent data from previous iterations of the surveys.

Research and Development Survey

Results on research and development from the Business Operations Survey differ slightly from those from the Research and Development Survey because of differences in sample selection, target population, and reporting periods.

The Research and Development Survey collects information from businesses, government, and higher education (universities) to gain an accurate picture of R&D activity in New Zealand. It is targeted to businesses we know perform R&D, and collects detailed information on their R&D expenditure, as well as staff, funding, type, benefits and purpose of research. Due to the expanded definition in the R&D survey of what R&D includes, and the targeted population, the expenditure in the R&D survey is higher than in the Business Operations Survey. The results from the R&D survey are considered the official measure of R&D expenditure.

The Business Operations Survey is a sample of businesses in New Zealand, regardless of if they perform R&D or not. Therefore, some R&D activity is not collected by BOS. However, the BOS survey does go to a wider selection of businesses, in industries not known to perform R&D. Therefore, BOS provides a more detailed picture of the spread of business R&D across the

economy. It also provides information on related activities such as innovation, to help understand what may influence a business and their R&D activity. It is the supporting information from BOS on other activities that helps complement the R&D survey.

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Revisions

Research and Development

Expenditure on research and development (R&D) can be difficult to collect. Businesses may have difficulty interpreting the definitions of R&D, causing differences in their reported figures each year.

When checking the 2013 figures, we contacted some businesses to identify any reporting errors in previous years' data. Therefore, some figures from 2012 have been revised to make them comparable with 2013 data.

Product development and related activities

Expenditure on product development and related activities can be difficult to collect. Businesses may have difficulty interpreting the definitions, causing differences in their reported figures each year.

When checking the 2013 figures, we contacted some businesses to identify any reporting errors in previous years' data. Therefore, some figures from 2011 have been revised to make them comparable with 2013 data.

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Tables

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