# MANUFACTURERS' OUTLOOK 2016

## Opportunities and growth

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# Executive Summary

The short-term economic forecasts for growth in the global, US and Canadian economies may be uninspiring but 32% of respondents to the 2016 edition of the Manufacturers' Outlook survey describe themselves as optimistic about the year ahead. Most (57%) temper their optimism with caution, which is an attitude that's consistent with different samples from past surveys.

The survey, conducted by Northstar for **PLANT** in partnership with sponsors Grant Thornton LLP and SYSPRO Canada, is based on 365 replies from senior manufacturing executives, and has a margin of error of +/- 5%, 19 times out of 20.

Most companies (69%) fall into the small business category (under 100 employees), 24% are medium-sized (100 to under 500) and 7% are large firms (500 employees or more).

Just over half (56%) of the senior executives are expecting orders and sales to increase next year, while 53% expect pricing to remain the same (29% anticipate an increase), and 40% are predicting higher profits.

As in past surveys, manufacturers have been sticking close to home with 89% deriving their revenues from trade in North America, 64% in Canada. The conclusion of free trade deals with Europe, South Korea and now the countries involved in the Trans-Pacific Partnership, will open doors to opportunities beyond North America. Forty-five per cent of respondents see value in these agreements, but of those seeking new markets, 36% intend to look within Canada, 37% in the US, 13% in Mexico, 17% in Central and South American countries, and 10% in Brazil. Currently 2% are doing business in China but 10% plan to enter that market.

New this year are more detailed questions related to innovation. Most companies (40%) devote less than 1% of their staff to R&D, 28% intend to invest 1% to 3% in innovation, 41% will invest from 4% to more than 10% and 53% say they will increase investment over the next five years. Most took advantage of the SR&ED tax credit in the past (40%), but far fewer did so this year (30%), while 37% plan to next year. But 46% have not taken advantage of the tax credit or intend to do so.

Ninety-four per cent of respondents say productivity is key to business growth, but just 38% are pursuing a formal strategy although 28% plan to create one. Most firms (71%) are focusing efforts on employee training and 55% are investing in technologies.

Managing productivity is most challenging on the shop floor for 44%, followed by marketing and sales (40%) and purchasing (19%). Most companies (49%) collect and analyze the information manually, but 22% don't collect it at all. A third of the companies (33%) say they aren't likely to connect shop floor information systems to the top floor, 28% have done so while 39% are likely to or are tentative.

Companies cite their biggest challenges as pricing (53%), a change from past surveys, which have consistently identified controlling and reducing costs (this year 47% and fourth on the list). Increasing sales (50%) and the value of the loonie (49%) are in the second and third spots.

The most significant constraints to growth continue to be general economic concerns for 58% of companies, difficulty hiring skilled workers (43%) and production capacity (27%). The preferred mode of financing for growth is internal (48%).

Most companies (60%) anticipate hiring over the next three years and 40% will add new lines of business. New product development tops the list of growth strategies for 56% and over the next three years 69% of companies intend to invest in machinery and equipment. Thirty per cent say they'll invest from $100,000 to almost $500,000 next year.

Finding skilled people continues to be a concern. Sales, marketing and customer support leads the list of problem areas for 39%, followed by production (35%). Half the respondents are addressing shortages through internal training.

This year's survey responses show Canadian companies continue to bet on markets that are close to home. But times are changing, as is the business environment. Whether or not manufacturers consider the opportunities offered by recent trade agreements, they'll have to become more competitive to meet the challenges posed by the improved access offered to Canada's newest trade agreement partners.

**Joe Terrett**
Editor
**PLANT**

# Sponsor's Message

For many years, the annual Manufacturer's Outlook study has provided Canadian manufacturers with the opportunity to share their recent experiences and offer their views of the future. The 2016 study is no exception, and Grant Thornton LLP is once again very proud to partner with **PLANT** magazine in this important – and impactful – endeavour.

This year's study provides some very interesting and thoughtful insights into the world manufacturers live in today. Overall, manufacturers express a sense of optimism as they embark on new initiatives for growth, pursue innovation and experience productivity gains. They are not without their challenges, however, as they look to adapt to a world that is continuously changing.

On average, Canadian manufacturers are fairly optimistic regarding their prospects for the coming years. The re-emergence of the US economy provides a number of opportunities due to the proximity of the US market, the similarity in consumer preferences between Canada and the United States and the favourable exchange rate for those manufacturers who export into the United States. In addition, the quality of the goods we produce continues to be viewed very highly – not just in North America, but throughout the world.

While the opportunities are very encouraging, the industry continues to face its fair share of challenges. The ability to gain access to skilled labour, the uncertainties surrounding global expansions and general economic concerns felt by many in the industry temper the level of overall optimism. There are also a number of indicators that suggest the industry is still operating with a short-term mindset, shying away from a longer-term approach to business management. While it made sense during the economic downturn for manufacturers to take on a shorter-term focus, now it is time for the industry to shift back into a more sophisticated and strategic gear.

As a firm that serves Canadian manufacturers across the country, we have no doubt they will be able to seize the opportunities in front of them here in North America and around the globe. We also believe that these businesses can address their various challenges and we look forward to helping them in that regard.

We are very proud to be associated with an industry that is so critical to the Canadian and international economies and relish our opportunity to contribute in whatever way we can to their continued success.

**Jim Menzies**
National Leader – Manufacturing Industry
Grant Thornton LLP

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# Sponsor's Message

SYSPRO Canada is proud to co-sponsor alongside Grant Thornton, **PLANT** magazine's Manufacturers' Outlook 2016 report, which surveys leading Canadian manufacturing executives about their business practices for the year, including outcomes and impacts. The report also expresses their opinions and insights into the future of the Canadian manufacturing industry.

We are pleased to see the top line results support a positive and hopeful view of Canadian manufacturing, with more than half of the respondents reporting optimism, though cautious, about their business prospects in 2016, and more than half expecting to increase their orders and sales, while keeping their pricing the same.

Growth remains the critical emphasis for the majority of businesses including expansion into new geographic locations, emerging markets, lines of business and talent. Executives reported a dedication to investing in infrastructure with seven out of 10 planning to invest heavily in machinery, equipment, or technology in the next three years. Many of the business leaders have already invested or plan to invest up to $500,000 in these areas of business improvement as they strive for success and a competitive advantage. Aspirations to be competitors in global markets is a driving factor for many of the business leaders surveyed.

We continue to see operational risk top of mind with business leaders, although they don't appear to be sufficiently prepared to identify and mitigate it, with a little under half reporting a formal process to do so.

A primary focus for almost three-quarters of the executives was improved productivity for business growth. As a result, more than half of them have taken steps to invest in new technologies and automation, and almost two thirds have developed or plan to develop a formal productivity improvement strategy. They also plan to invest heavily in employee training, more technologies and automation.

Interestingly, while they are taking steps to improve productivity through automation, about half surveyed still use manual data collection and only a small percentage use automatic data collection software.

This lack of automation exemplifies a critical opportunity for improvement for executives. Technology is key to successful automation. The first step is for manufacturing leaders to analyze and evaluate all the organization's business processes to identify potential opportunities for automation, which is critical to the long-term success of their businesses.

We anticipate great success for Canadian manufacturing in the coming year. We are excited to witness and participate in the opportunities that lie ahead for manufacturers in Canada. SYSPRO Canada is proud to help Canadian companies grow and prosper.

**David Doyle**
Vice President of Sales, SYSPRO Canada

## Manufacturers' Outlook 2016

# Opportunities AHEAD...

# *Business growth beckons with freer access to developing global markets*

By Joe Terrett, Editor

Conditions are changing for Canadian manufacturers. For the bolder entrepreneurs, you could say they'll improve with the Trans-Pacific Partnership (despite concerns about some of the details), which follows recent trade agreements involving Europe and South Korea. Economic growth could be better. The Bank of Canada has downshifted its forecast for 2016 to 2% from an earlier projection of 2.3%; however, there are promising signs that manufacturers will enjoy a surge in exports to the US where consumers are expected to recharge the economy.

The 365 responses to the 2016 edition of the **PLANT** Manufacturers' Outlook survey show that owners and senior executives of companies across Canada, most of them with less than 100 employees, are looking forward to the year ahead. Almost a third (32%) of senior executives are flat-out optimistic about their prospects, but 57% are cautiously so.

The results are consistent with Outlook surveys going back to the 2010 edition. For the most part, companies stick to markets close to home, either domestic or the US; the top challenges are the same (costs, pricing, sales and the loonie, with some changing of position in importance); growth strategies are similar and conservative; they see productivity as important, but their efforts to improve it are limited; they're a bit light on innovation investment; and they're short-term on strategic thinking.

These observations and other issues were explored by 13 panellists representing manufacturers, industry analysts and providers of services who gathered at **PLANT's** offices in Toronto for the 2016 Outlook roundtable.

Northstar conducted the survey through September and October for **PLANT**, in partnership with sponsors Grant Thornton LLP, an accounting, tax and advisory firm, and SYSPRO Canada, a provider of ERP software and services. The survey's margin of error is +/- 5%, 19 times out of 20.

Who are these entrepreneurs? Most of the respondents (93%) come from SMEs, 38% have 24 or fewer employees,

*Seated (L-R) Glen Gilbert, Caroline Roberts, Brian Freeborn. Standing (L-R) David Jirku, David Jarrett, Al Diggins, David Doyle, Jim Menzies, Norman Holesh, John Rattray, Carlos Gomes, Ernie Lynch, David Fraser.*

## Introducing the 2016 Manufacturers' Outlook panel

**Al Diggins**
*President, General Manager*
**Excellence in Manufacturing Consortium**, Owen Sound, Ont.
Not-for-profit organization that helps manufacturers compete globally.

**David Fraser**
*Strategic Development Director*
**INKAS Group of Companies**, Toronto
Provides security solutions, including the manufacture of armoured vehicles.

**David Doyle**
*Vice-president Sales*
**SYSPRO Canada**, Burnaby, BC
Provides ERP software and services. Manufacturers' Outlook sponsor.

**Brian Freeborn**
*Operations Manager*
**Span Medical Products Canada**, Beamsville, Ont.
Manufactures products for healthcare facilities.

**Glen Gilbert**
*Partner, Tax Services*
**Grant Thornton LLP**, Toronto
Accounting, tax and advisory firm, Manufacturers' Outlook sponsor.

**Carlos Gomes**
*Senior Economist and Auto Industry Specialist*
**Scotia Capital**, Toronto
Corporate and investment banking, capital markets products and services.

**Norman Holesh**
*CEO*
**Additive Metal Manufacturing**, Concord, Ont.
Advanced additive manufacturing services for industry.

**David Jarrett**
*Vice-President Operations and Continuous Improvement*
**Multivans**, Bolton, Ont.
Manufacturer of truck bodies.

**David Jirku**
*Technical Solutions Architect*
**Cisco Systems Inc.**, Toronto
Designs, manufactures and sells networking equipment.

**Ernie Lynch**
*President*
**Lynch Fluid Controls Inc.**, Mississauga, Ont.
Manufactures fluid power, hydraulic and pneumatic components.

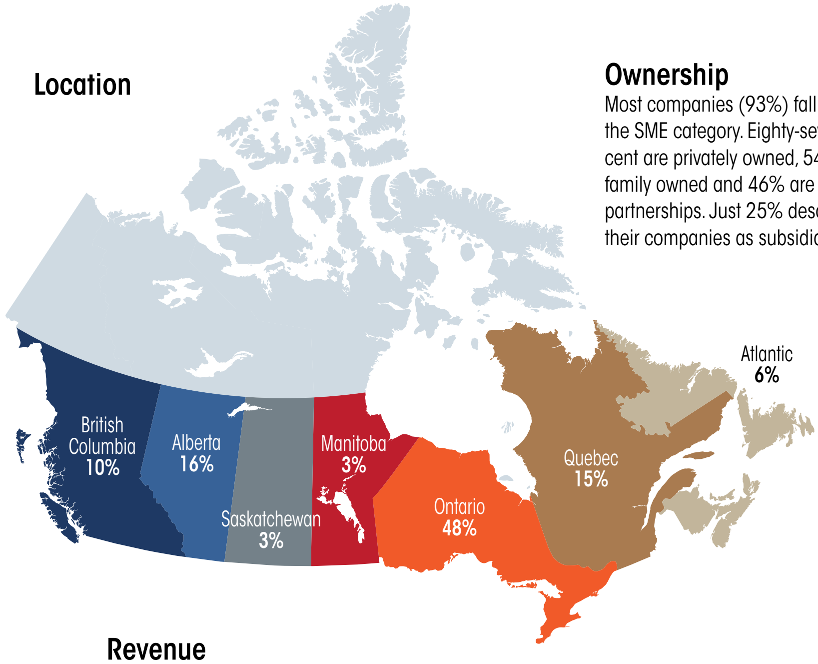
**Jim Menzies**
*National Manufacturing Leader*
**Grant Thornton LLP**, Toronto
Accounting, tax and advisory firm, Manufacturers' Outlook sponsor.

**John Rattray**
*Vice-president sales and marketing*
**Memex Inc.**, Burlington, Ont.
Provides factory floor data communications and efficiency systems.

**Caroline Roberts**
*President & CEO*
**Thoth Technology Inc.**, Pembroke, Ont.
Provides services and products for space applications.

# Demographics

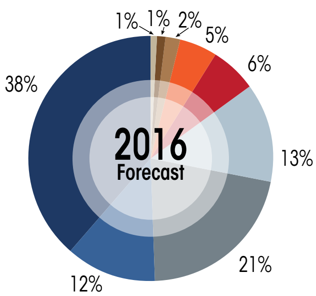
## Location




## Ownership

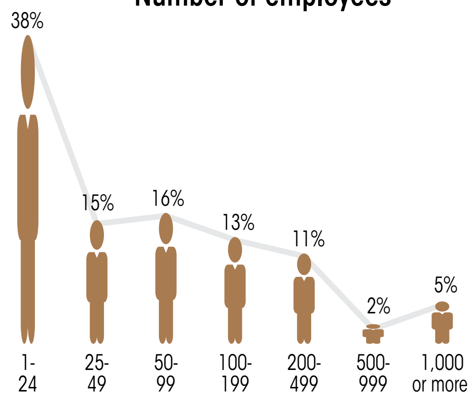
Most companies (93%) fall under the SME category. Eighty-seven per cent are privately owned, 54% family owned and 46% are partnerships. Just 25% described their companies as subsidiaries.

## Revenue



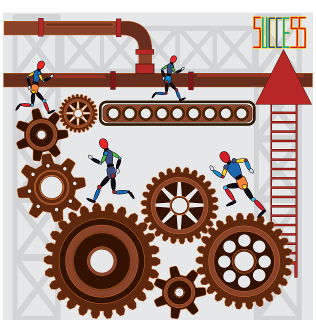

| | 2014 | 2015 |
|---|---|---|
| Up to $5M | 46% | 44% |
| $5M-$9M | 13% | 12% |
| $10M-$24M | 17% | 19% |
| $25M-$49M | 9% | 11% |
| $50M-$99M | 6% | 6% |
| $100M-$249M | 5% | 5% |
| $250M-$499M | 2% | 2% |
| $500M-$749M | 0% | 0% |
| $750M-$999M | 1% | 0% |
| $1 Billion or more | 1% | 1% |

## Number of employees




## Industry sectors served

| Industry | Per cent |
|---|---|
| Fabricated metal products | 25% |
| Miscellaneous manufacturing | 22% |
| Other | 19% |
| Machinery | 15% |
| Plastics and rubber products | 14% |
| Food and beverage | 13% |
| Automotive products, parts, components, systems | 12% |
| Electrical equipment, appliances and components | 11% |
| Wood products | 11% |
| Printing and related support activities | 9% |
| Petroleum and coal products | 9% |
| Computer and electronic products | 9% |
| Paper manufacturing | 8% |
| Chemicals | 8% |
| Aerospace products, parts, components, systems | 8% |
| Furniture and related products | 7% |
| Primary metal | 5% |
| Other transportation, related equipment | 5% |
| Ship and boat building | 4% |
| Textiles | 4% |
| Durable goods industries | 3% |
| Clothing | 3% |
| Non-metallic mineral products | 3% |
| Railroad rolling stock | 2% |
| Non-durable goods industries | 2% |
| Tobacco products | 1% |
| Leather and allied products | 1% |




## Operations

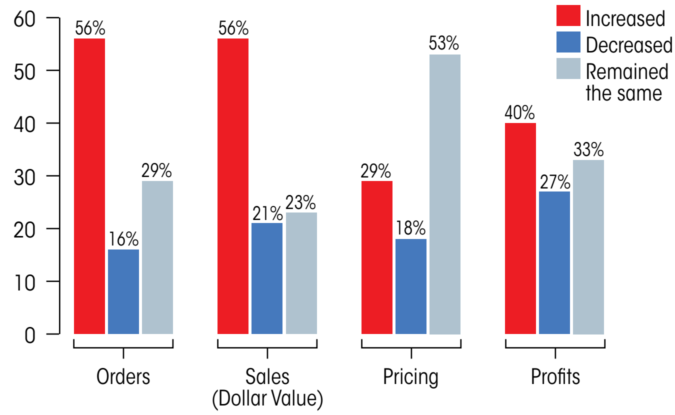
**87%** Have the ability to custom manufacture
**83%** Aggressively planning for opportunities longer term
**81%** North America is a priority over global markets (but pursuing new geographic markets is important to 72%)
**74%** Production is scalable to adjust quickly to high or low volumes and market changes
**60%** Actively engaged in reducing their carbon footprints
**58%** Environmental issues are strategic concerns
**45%** Will benefit from recent trade deals

# Business Outlook

and 38% are forecasting 2016 revenues of up to $5 million. Most (87%) are privately owned, and 54% of those firms are family owned or partnerships (46%). Just 25% identified themselves as subsidiaries of a multinational company. They're spread across Canada, almost half (48%) coming from Ontario's manufacturing heartland, 28% from the West, 15% from Quebec and 4% from Atlantic Canada.

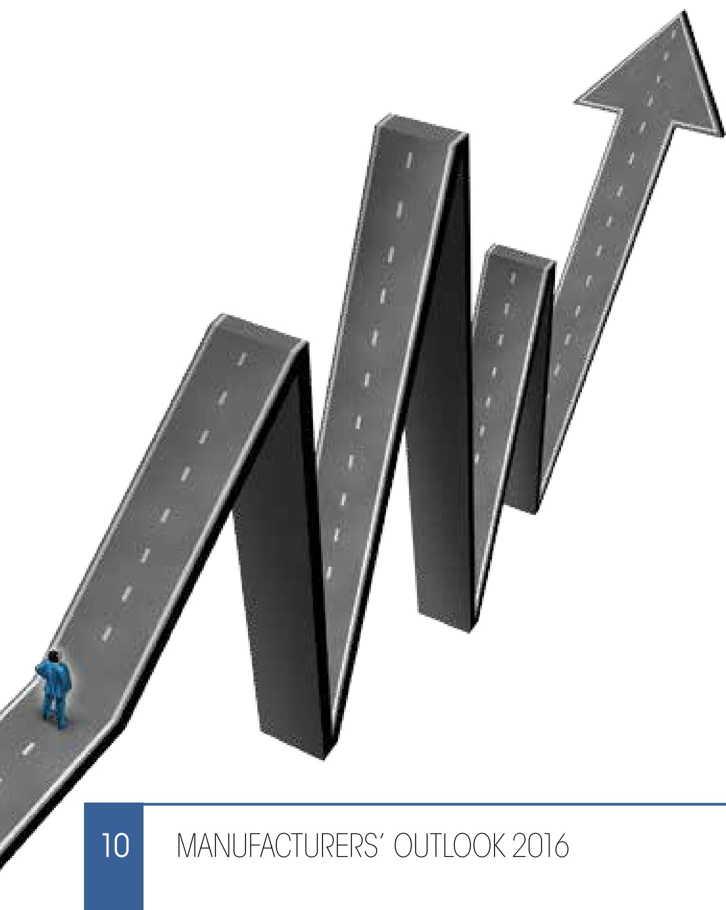
Manufacturers have reason to be optimistic, despite the predictions of weak growth they pick up in the media. Carlos Gomes, senior economist and auto industry specialist with Scotia Capital in Toronto, provided some economic context to the roundtable discussion. He described the global economy as continuing to improve, growing roughly 3% year-over-year, a result of moderation in the still robust growth of emerging markets. That's a bit softer than the 4% to 5% "normal" during an expansion phase, with much of the drag on growth coming from Russia and Brazil. China has slowed down to around 7% growth after

**Business growth**




**Growth constraints**

- **58%** General economic concerns
- **43%** Difficulty hiring skilled workers
- **27%** Production capacity
- **24%** Gaps in management skills
- **24%** New product development
- **19%** Number of willing and feasible target companies
- **19%** No clear growth strategy
- **17%** Lack of internal cash generation
- **16%** Regulatory issues
- **15%** Access to external financing
- **14%** Limited distribution capabilities



**Competitive advantages**

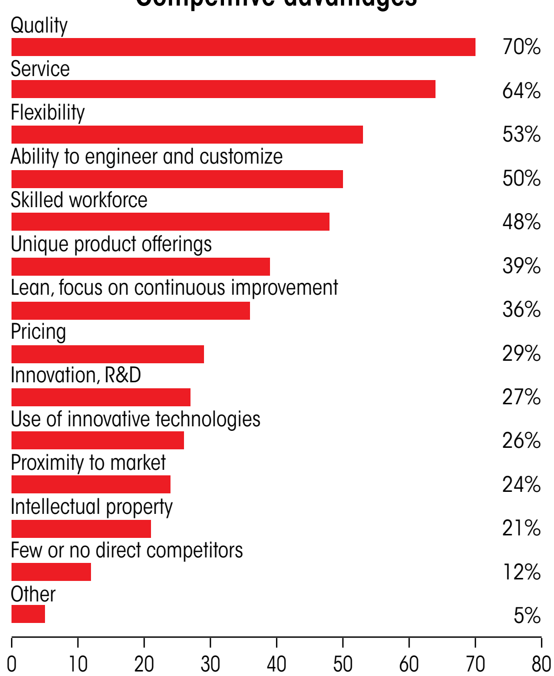


PHOTO: THINKSTOCK

### Greatest business challenges

| | |
|---|---|
| 53% | Pressures on pricing |
| 50% | Increasing sales/orders |
| 49% | Value of the Canadian dollar |
| 47% | Controlling/reducing costs |
| 47% | Economic conditions that impact Canada |
| 42% | Staffing – training/finding skilled workers |
| 37% | Improving productivity |
| 36% | Investing in new machinery, equipment, technology |
| 34% | Tougher competition in key markets |
| 28% | Entering new markets |
| 26% | Government regulations: red tape, associated costs |
| 25% | Developing new products |
| 24% | Gaining market share in NA |
| 19% | Cost of key inputs |
| 18% | Ability to expand capacity to meet demand |
| 16% | Gaining market share globally |
| 16% | Environmental issues, regulations |
| 15% | Investing in R&D, commercialization |
| 15% | Quality |
| 12% | Supply chain, logistics issues |
| 12% | Accessing new/advanced technology |
| 10% | Border issues |
| 7% | Accessing credit/financing |
| 6% | Barriers to foreign markets |
| 5% | Attracting investment for new product mandates |

consistently registering double-digits as it transitions from manufacturing to services, but it's still registering higher than North America.

"We're growing 3% to 3.5% (globally) – probably the type of range that has become the new norm," Gomes explained.

In Canada, manufacturing growth has been dampened by the downturn in energy. Looking at the numbers for machinery and equipment, for example, about 15% of it goes into the oil and gas sector, which has seen a decrease in orders and shipments of more than 40%.

The automotive sector, which he said accounts for about 20% of overall shipments in Ontario, experienced a bit of a slowdown as the Fiat Chrysler van plant in Windsor, Ont. retooled from February to late May.

"The plant is now running at full speed so, you're going to see significant ramp up in production and activity, not only from the auto sector, but from the manufacturing sector as a whole," said Gomes.

Looking at Canada's trade numbers, he said non-resource exports have been picking up "significantly", especially through the summer. In August, automotive was once again the largest export sector, which he said hasn't happened since 2007.

"We're optimistic about the outlook for overall

# Business Outlook

### Revenue by country

| | |
|---|---|
| Canada | 64% |
| United States | 24% |
| China | 2% |
| Western Europe | 2% |
| Other | 2% |
| Mexico | 1% |
| Brazil | 1% |
| Other Central and South America | 1% |
| Japan | 1% |
| India | 1% |
| Central and Eastern Europe | 1% |
| Australia/New Zealand | 1% |
| Korea | 0% |

### Entering new markets over the next three years

| | |
|---|---|
| United States | 37% |
| Canada | 36% |
| Other Central and South America | 17% |
| Other | 16% |
| Western Europe | 15% |
| Mexico | 13% |
| China | 10% |
| Brazil | 10% |
| Central and Eastern Europe | 9% |
| Australia/New Zealand | 8% |
| India | 7% |
| Japan | 6% |
| Korea | 5% |


### Export services used

| | |
|---|---|
| Services offered by private sector (banks, consulting firms, etc.) | 39% |
| Export Development Canada (EDC) | 24% |
| Business Development Bank (BDC) | 24% |
| Services offered by provincial governments | 23% |
| Industry Canada Trade Data Online | 13% |
| Canadian Manufacturing & Exporter's Global Business Services | 11% |
| The Canadian Trade Commissioner Service | 8% |
| Canadian Commercial Corporation | 6% |
| Forum for International Trade Training programs | 2% |

manufacturing," he said, noting the improvement of conditions for developed markets. "For the US, the largest market for Canadian manufacturers, we're expecting growth rates next year of about 2.6%. That's the fastest rate since 2006. That's obviously good news for Canadian manufacturing."

## Business outlook and attitudes

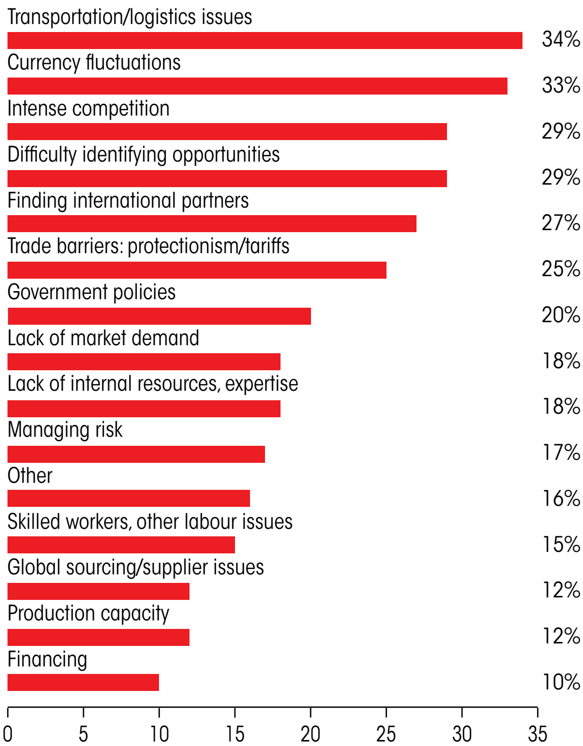
The Outlook survey shows manufacturers' top five growth strategies are new product development (identified by 56%); pursuing new customers in North America (55%); expanding sales and distribution channels (52%); pursuing new customers globally (44%), although only 25% of them propose to enter new foreign markets; and strengthening supply chain links and relationships (38%). Fifty-eight per cent identified general economic conditions as the most significant constraint to growth, a jump from last year's sample of 49%; and 43% said they had difficulty hiring skilled workers, which is consistent with last year's results.

Most companies (48%) intend to finance growth through internally generated cash flow, which is a significant change from last year's sample (70%), followed by bank financing (41%).

Over the next three years, 60% expect to hire new employees, 40% will add new lines of business, 28% intend to acquire other companies or lines of business (fifth on the list in last year's sample), and 27% expect to expand their plants.

Top executives identify their companies' top competitive advantages as quality and service; they see themselves as aggressively planning for opportunities in the longer term; they're concerned about improving productivity; and they claim their

**Constraints to increasing revenue outside North America**




*When we are 300 million people short of a real market, we have to be even more innovative...*

*— David Fraser*

companies have a strong culture of innovation. Environmental issues aren't strategic concerns for 42% and 40% are not actively engaged in reducing their carbon footprints.

When linking strategy deployment to the budgeting process, 33% said budget development is integrated with the strategy planning process; 31% said key strategic projects and major capital items are included in the budget; 28% said changes to the plan trigger revisions as required; and 8% said cross department and key strategic projects are included in department budgets.

Senior executives were also asked to indicate what best describes how they develop strategy and planning. Sixty-three per cent opt for flexibility: their plans are developed and refined through the year as needed; 21% develop plans within the organization and selected departments using company data; 10% have a formal process in place to develop plans using various measurement tools and performance analysis; and 6% said a formal process of strategic planning tools and third-party data assessments are used.

Which factors are key for Canadian manufacturers who must do business in a world that is segmenting into trade zones with specific memberships? The general consensus among the analysts and commentators is they have to be more productive and innovative, adopt advanced technologies and seek out opportunities in developing markets. The survey responses suggest Canadian companies have much to feel confident about and they're addressing many of these issues, but there's still much work to do.

Rob Hattin, president of ProVantage Automation and a roundtable panellist last year (but unable to participate this year), is greatly interested in the need for leadership in manufacturing. His company, based in Ancaster, Ont., is a provider of automation controls, design and integration services for automated manufacturing, and he's a past chairman of Canadian Manufacturers & Exporters (CME). Hattin didn't see a lot of boldness in the survey responses: much good intention, but not much progress from previous surveys. "It really comes down to mindset, and mindset translates into action. I don't see the ambition, in terms of growth and the importance of productivity, being executed. We talk about it, but we don't do it."

David Jarrett picked up on how few companies plan strategically.

He's the vice-president of operations and continuous improvement at Multivans in Bolton, Ont., a

*The successful use of a tool depends upon processes, people, and change management…*

*— David Doyle*

Strategy

# Think longer term

## …And leverage the Canadian brand

By Matt Powell, Associate Editor

Optimism is growing among Canadian manufacturers and Jim Menzies believes that's a good thing. But the leader of Grant Thornton Canada's national manufacturing group doesn't think manufacturers are looking far enough ahead. They depend instead on short term strategic models that risk shutting them out of opportunities close to home and abroad.

He believes manufacturers must improve their strategic thinking, and more importantly, get used to stepping outside of their normal boundaries.

"We're still seeing that same short-term approach that was applied during our economic downturn. Long-term, sophisticated, strategic planning and thinking doesn't seem to be pervasive among many manufacturers," says Menzies.

Instead, they're sticking to what they know.

"The reality is, manufacturing markets are changing, and Canadian companies must do a better job of placing themselves ahead of those changes."

**PLANT's** 2016 Manufacturers' Outlook survey of 365 manufacturing executives reveals 63% develop and refine their strategic plans as needed. Ten per cent have a formal planning process in place using various measurement tools and performance analysis, and 6% include third-party data and assessments.

Mitchell Osak, Grant Thornton Canada's managing director of strategic advisory services, believes staying true to a winning corporate strategy over the long run is very important, particularly for manufacturers that need to learn how to navigate global markets.

He also advocates staying the course on long-term strategy because it speeds up decision making and follow-through while enhancing efficiency and developing better relationships with customers and partners.

Consistency pays off over time, he adds.

"Manufacturers must extend their growth horizons beyond North America. There's a significant lack of acknowledgement, boldness or

confidence among manufacturers that Canadian firms can win in any market," he says.

The survey results show manufacturers are strategically focused on new product development (56%) and on opportunities within North America (55%). Meanwhile, entering new foreign markets over the next three years is not on the radar for 75% of the companies.

"There's absolutely no reason a lot of products made in Canada can't be sold anywhere in the world, yet there's a major resistance to embracing a global economy as opposed to a NAFTA economy," Osak says.

## Tyranny of the immediate

Menzies believes short-sighted strategic habits are also hampering manufacturers' ability to experience real growth because in most cases companies aren't willing to take a long-term jump and experience it. Instead, they're saddled by the tyranny of the immediate.

"Growth isn't an overnight occurrence – if you want to grow, you've got to focus on longer term goals, action steps and longer term results," says Menzies. "You only accomplish that by changing your mindset accordingly."

Osak, who also writes a strategy and leadership-focused column for the *Financial Post*, believes manufacturers should capitalize on the strengths identified in the survey: quality and service.

"[Canadians] have a great reputation globally for quality, and in global markets outside of the usual ones (the US, Europe or China for instance), where there are major opportunities for companies to leverage the quality of their products," says Menzies.

Canadian companies must be able to identify global markets where growing middle classes are enhancing purchasing power, such as India and countries in Africa and South America, he adds. "The question is whether or not we will actually step up to the plate and do that."

Osak is confident that doing a better job of promoting the Canadian manufacturing brand by both industry and government will be key to gaining access to lucrative, growing markets.

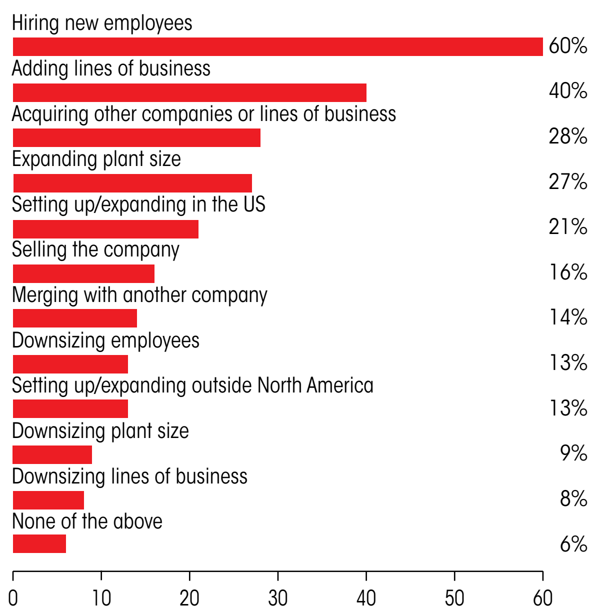
### Growth strategy over the next three years

| | |
|---|---|
| New product development | **56%** |
| Focus on opportunities in North America | **55%** |
| Expand sales and distribution channels | **52%** |
| Pursue new customers (global) | **44%** |
| Strengthen supply chain links and relationships | **38%** |
| Develop strategic alliances, joint-ventures, and/or partnerships | **33%** |
| Diversify industries served | **28%** |
| Utilize online marketing, commerce channels, SEO optimization, social media | **28%** |
| Enter new foreign markets | **25%** |
| Other | **5%** |

### Financing methods over the next three years

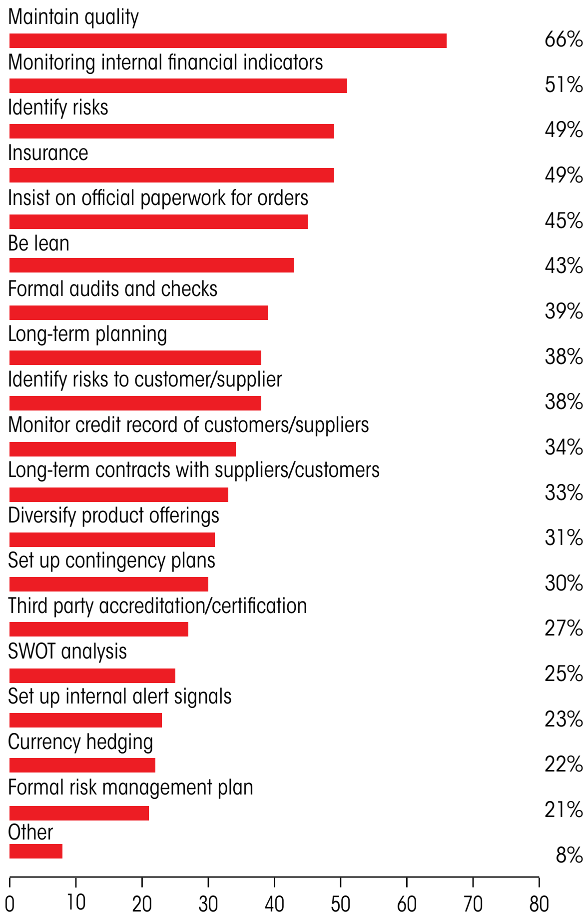
| | |
|---|---|
| Internally-generated cash flow | 48% |
| Bank financing | 41% |
| Private investors | 27% |
| Private equity | 17% |
| Government programs | 16% |
| BDC | 9% |
| Asset based financing | 8% |
| Leasing | 8% |
| EDC | 4% |
| Public offering | 3% |
| Subordinated/mezzanine debt | 1% |

### Anticipated changes over three years

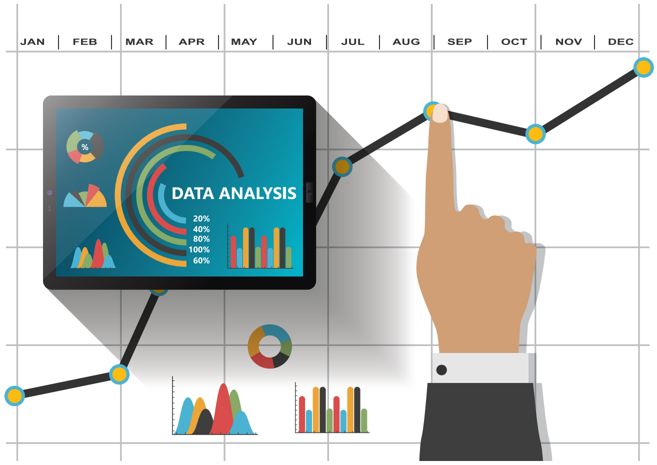


# Strategy

## Methods of mitigating risk




## Strategy development and planning




**63%** Plans are both developed and refined throughout the year, as needed.

**21%** Annual plans are developed within the organization and selected departments using existing company data.

**10%** A formal process is in place to develop plans using various measurement tools and performance analysis.

**6%** Plans are developed to implement the strategies using a formal process of strategic planning tools, third-party data and assessments.

## Strategy linked to budget


**33%** Budget development is integrated with the strategy planning process.

**31%** Key strategic projects and major capital items to support strategy are included in the budget.

**28%** Changes to the plan trigger revisions to the organization and department budgets, as required.

**8%** Department, cross-department, and key strategic projects are included in department budgets.

manufacturer of truck bodies. "One of the challenges I confronted when I first joined my organization was that we were kind of in a critical care ward. It was really all about making sure the patient was stabilized and then look to the future."

The company is now putting in place a well-structured strategic plan that includes a stress test to identify areas where the company might be susceptible.

"I don't sense manufacturing, in general, is very comfortable with strategic planning as critical to longer term success. We're warriors. We're going to get in there and fight our way through these challenges, but we're not going to think our way through them," said Jarrett.

"A lot of people say, 'Oh yes, I need to do something,' but can't find the time to do it," observed John Rattray, vice-president of sales and marketing for Memex Inc., a provider of factory floor data communications and efficiency systems in Burlington, Ont. "Looking at the survey, 68% said it's very important to look at productivity improvement, but I put this down to lip service. Only 28% said they planned to take any action – a gap of 40% there."

## Developing markets

Gomes said about 80% of Ontario's manufacturing exports go to the US, but with recently signed trade agreements, that has to change. Looking at the US and other countries involved in the Trans-Pacific Partnership, Canada's exports to other countries (less than 4%) is "totally out of whack with where we should be in terms of the global context."

Indeed, manufacturers continue to derive most of their revenue from North America. Breaking it down, 64% comes from Canada, 24% from the US, 2% from Western Europe, 2% from China and less than that from all other markets. Looking ahead three years, North America is still the preferred region for market expansion (37% to the US and 36% to new markets in Canada), followed by Mexico (13%), other Central and South American countries (17%), Brazil (10%), Western Europe (15%) and China (10%).

This likely has something to do with a conservative reserve, which Jim Menzies acknowledged as a notion that Canadian manufacturers are very good at keeping what they've got, but not so good at venturing out to get what they can. "I think that impacts the whole export decision," said the National Manufacturing Leader for Grant Thornton LLP. "Having the United States so close to us makes it easy to rely upon and expand into. There are a number of markets just as big as the US, but it seems, historically, we hesitate as manufacturers to go into these emerging markets."

"When we are 300 million people short of a real market, we have to be even more innovative," said David Fraser, a retired major-general and strategic development director for the INKAS Group of Companies in Toronto. It provides security solutions, including the manufacture of armoured vehicles.

"If we're going to exploit the TPP, we've got to actually become far more aggressive. And I just don't see us right now taking enough risks. We are too Canadian, okay? Canadians are risk-averse."

Norman Holesh believes the problem is not endemic to manufacturing. "Our entire structure of finance, of the economy, our thought processes are all conservative," said the CEO of Additive Metal Manufacturing, a new advanced additive manufacturing services company based in Concord, Ont. "To try and

*The biggest thing that people forget to look at is how they handle their material. That's the biggest cost in manufacturing, for small and midsize manufacturers…*

*— Brian Freeborn*

finance a company today is impossible. Bankers are not interested. The government is not interested. The feds, the province, nobody is interested. So, where is financing available? Unfortunately, it's available south of the border."

A BDC study found mid-sized companies declined by 17% from 2006 to 2010, but manufacturing was hit hard, losing half (from 2,807 firms to 1,381) from 2001 to 2010.

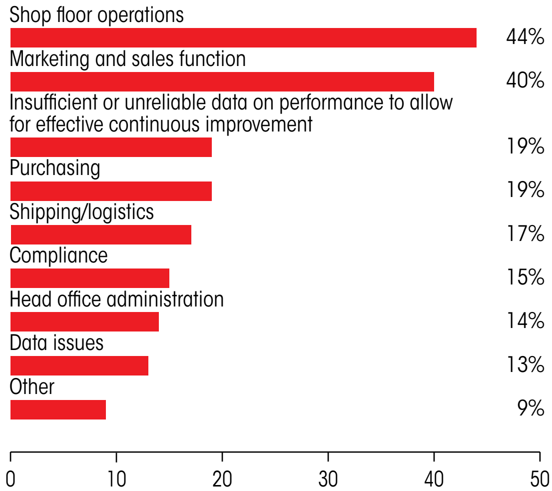
Hattin said the loss of so many of these plants has a lot to do with the stifling of smaller companies. It's difficult and expensive for them to seek business abroad. Governments focusing on landing large multinationals "we haven't seen before" by leveraging the CETA and TPP trade deals would provide an in to the big business supply chains, which would help smaller Canadian companies venture abroad and grow.

One thing Canadians don't get is the high regard

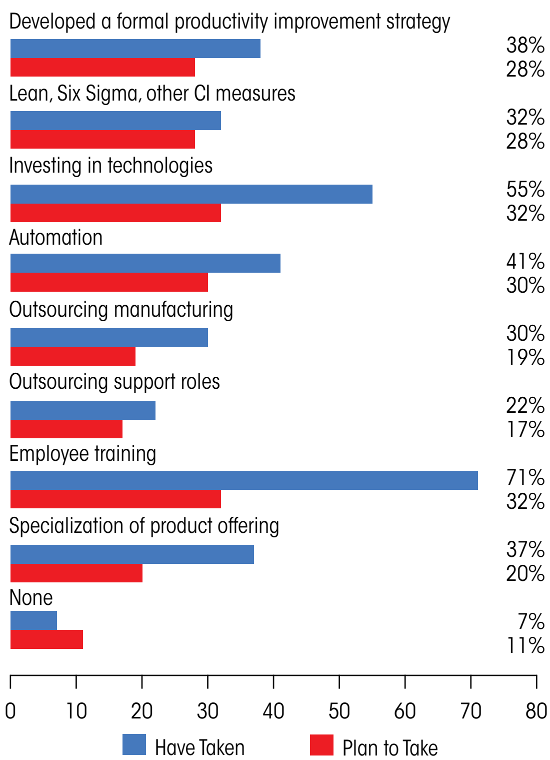
*When you get to a point where business owners are concerned about CRA being on site, and trying to limit what is or isn't SR&ED, that's unfortunate…*

*— Glen Gilbert*

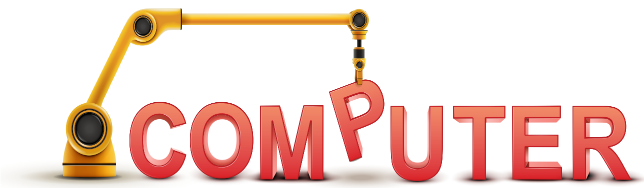
**Challenges to improving productivity**




**How productivity will be improved**



**Advanced technologies used**




| | |
|---|---|
| CAD/CAE/CAM | **48%** |
| Data acquisition, information integration and/or control technologies | **42%** |
| Computerized processing, fabrication and assembly technologies | **30%** |
| 3D printing/rapid prototyping | **17%** |
| Advanced robotics | **10%** |

**Importance of productivity**

**78%** Productivity as a major priority

**50%** Productivity has been affected by vacancies resulting from skills shortage/gap

for "Made in Canada," said Fraser. "I lived in Dubai, both as a soldier and as a civilian. They love Canada, because they say, 'Made in Canada. It has to be good. We want to buy it. We don't care about the price."

Made in Canada also benefits Caroline Roberts, president and CEO of Thoth Technology Inc. in Pembroke, Ont. Her company provides services and products for space applications. She said Canadian companies operating in the space sector have a "huge" advantage.

"When you're exporting, particularly to Asian countries, one thing you always have to be mindful of is the international regulations concerning controlled goods. Most space equipment is controlled or dual use. So if you're using American parts for your little infrared sensors, they can be subject to ITAR (International Traffic in Arms Regulations), which makes it hard for American companies to export."

Canadian companies (in the space sector) are also politically well-positioned to trade with countries that are out of bounds for American companies. For example, when the Canadian government published its recommendations for more cooperation with China in aerospace and space, Thoth Technology went directly to the trade commissioner at the Embassy in Beijing and asked for help to meet with Chinese aerospace companies. "They were hugely helpful. They set up meetings and came to them to provide an introduction, which was a wonderful advantage."

Fraser said there are plenty of exporting services available to manufacturers that are largely untapped resources. Indeed, companies were asked which export services they use, and surprisingly few are availing themselves of readily available assistance. Only 39% are using services from banks and consultants, Export Development Canada and/or the Business Development Bank (24% each) or services offered by provincial governments (23%). Other choices such as Industry Canada Trade Online or the Canadian Manufacturers & Exporters Global Business Services barely registered above 10% and others were as little as 2%.

"I never got it until I went to Dubai and started talking to trade commissioners," said Fraser. "They spend all their time creating a network and they can't get a Canadian company to walk through the door to use it. They are screaming for Canadian companies to go and exploit what they do for free."

Lynch Fluid Controls Inc., a manufacturer of fluid power, hydraulic and pneumatic components in Mississauga, Ont., exports to 60 countries, something president Ernie Lynch urges small and medium companies to do. Having people on staff that speak the customer's language is key.

Lynch's company appointed specialists, one of whom covers Latin America. She's from Ecquador, operates out of Dallas, and deals with all of the countries from the Mexico border south, but she is also helpful dealing with Spanish-speaking clients in the southern half of the US and California.

Technology

# Time to connect

## *Why manufacturers need to embrace the Internet of Things*

By Matt Powell, Associate Editor

David Jirku is a big fan of all things connected. He has, afterall, made a career of understanding how to maximize value in "things" connected to the internet, specifically as it relates to industry and manufacturing.

Cisco Systems Inc., where Jirku is an Internet of Things (IoT) consulting systems engineer in Toronto, is one of a handful of big companies leading the adoption of the technology, which promises to deliver new and incredibly useful capabilities to manufacturers (and virtually every other industry on the planet).

It's more than wearable devices, like FitBit bracelets, smartwatches, or even Google's Glass. Connecting the shop floor to the top floor – and into the cloud – would provide greater visibility into manufacturing operations to boost efficiencies and reduce downtime. For instance, an IoT-connected assembly line could provide line managers with the ability to detect production bottlenecks or impending maintenance before they happen. A report by global professional services firm Accenture suggests IoT-enabled plants would benefit from reduced repair costs (12%), maintenance (30%) and downtime (70%).

But Jirku believes manufacturers are reluctant to adopt this game-changer and not doing so could impede their competitiveness.

"A lot of companies recognize the value in adopting [IoT] technologies, but how many Canadian firms are willing to make that leap remains to be seen," he says.

Research firm IDC Canada, based in Toronto, is anticipating significant growth in IoT spending, reaching as much as $6.5 billion by 2018. That's up from $2.8 billion in 2013. And the number of IoT-connected devices will grow from 28 million in 2013 to 114 million by 2018 (excluding consumer devices).

**PLANT's** 2016 Manufacturers' Outlook survey results confirm manufacturers are reluctant to "connect." While 69% of respondents say they're going to invest in machinery and equipment over the next three years, only 28% are considering business intelligence or data analysis software systems.

### Collecting productivity data

**Monitoring via smartphone**

63% No ability to monitor plant operations
18% Less than a quarter
8% Half
6% Three quarters
5% Cover the entire plant

**Collecting productivity data**

49% Manually
29% Automatically
22% Aren't measuring

**Shop floor to top floor**

33% Not connecting
28% Connected
23% Somewhat likely to do so
16% Are likely to do so

Not a good thing, says Jirku. He believes data gathering and analysis is critical to "connected" continuous improvement.

"There's a general inability for companies to gather information that generates decision making abilities because they struggle to put technology to meaningful use and gather useful intelligence from their operations, particularly when it comes to driving efficiencies," says Jay Moodley, an IoT sales specialist at Cisco who works alongside Jirku.

"Part of being able to compete is being able to build products that people want at a competitive cost – IoT will help manufacturers make that happen."

Jirku notes valuable data is getting lost in the vortex. "Gathering data isn't actually useful unless you know how to use it. If you're going to invest in technology, you use the data that's being generated to improve the business across all lines. Innovation isn't just in building a product, it's improving the processes along the way."

The survey results reveal 44% of companies identify their biggest challenge in managing and improving productivity is related to shop floor operations, but 49% depend on manual collection and analysis, and 22% aren't measuring productivity at all. Twenty-eight per cent are connected to information management systems, but 33% haven't considered it. Perhaps most telling is that 63% of respondents don't have the ability to monitor their plants remotely using mobile technologies such as tablets and smartphones – key IoT tools.

Jirku and Moodley don't think adopting an IoT-enabled platform needs to be an overwhelming endeavour. Instead, a plan should focus on simplification and understanding your facility's core competencies.

It's still early days for IoT, but manufacturers must leverage the art of the possible, Jirku says. "Once you can identify an infrastructure as an end to a means, manufacturers recognize there's significant value in the connected world."

*For the US, the largest market for Canadian manufacturers, we're expecting growth rates next year of about 2.6%. That's the fastest rate since 2006...*

*— Carlos Gomes*

"By utilizing people from other countries, using their languages, using the context that they have from universities, and the companies they worked for prior to coming to Canada, we can infiltrate [markets] that much easier. And they can translate technical documents into Spanish, German, French, Japanese and Chinese. Those are innovative ways of making it easier to connect with other places," said Lynch.

The responses show 56% of the companies expect sales dollars and orders to increase, 40% are banking on higher profits and 29% anticipate higher pricing, while 33% see prices staying the same and 18% see them dropping. And companies are investing in their businesses. Priorities are machinery and equipment for 69%, training (61%), hiring staff (61%) and R&D (41%).

Most companies (30%) are investing between $100,000 to $499,000 in machinery, equipment and technology over the next three years, while 23% say they will spend less the $100,000, 11% will not invest and 11% don't know what they'll invest or didn't say. Thirty per cent are not investing in expansion, upgrades or new facilities.

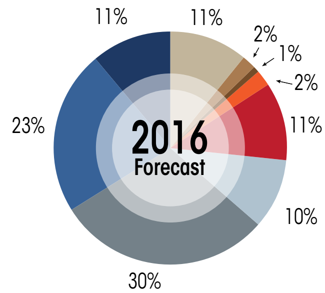
The federal government's Accelerated Capital

# Investment

> Manufacturers need to buck up and start doing their own training...
>
> — Al Diggins

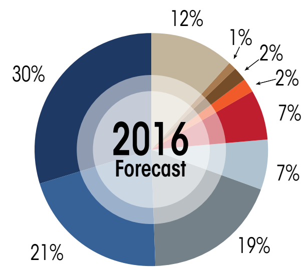
### Machinery, equipment, technology

| | 2014 | 2015 |
|---|---|---|
| None | 17% | 16% |
| Up to $99,999 | 28% | 27% |
| $100,000 to $499,999 | 25% | 27% |
| $500,000 to $999,999 | 8% | 8% |
| $1,000,000 to $4,999,999 | 11% | 12% |
| $5,000,000 to $9,999,999 | 2% | 2% |
| $10,000,000 to $19,999,999 | 2% | 2% |
| $20,000,000 or more | 0% | 0% |
| Don't know/not sure | 7% | 7% |




### Expansions, upgrades, new facilities

| | 2014 | 2015 |
|---|---|---|
| None | 42% | 36% |
| Up to $99,999 | 22% | 26% |
| $100,000 to $499,999 | 16% | 16% |
| $500,000 to $999,999 | 3% | 6% |
| $1,000,000 to $4,999,999 | 4% | 6% |
| $5,000,000 to $9,999,999 | 3% | 2% |
| $10,000,000 to $19,999,999 | 1% | 1% |
| $20,000,000 or more | 1% | 1% |
| Don't know/not sure | 8% | 7% |




Cost Allowance program (ACCA) is helping some manufacturers spend on machinery and equipment, but it has had no impact on investment decisions for 72% of the firms. Nine per cent said they wouldn't be investing in machinery and equipment without it, and 15% said it's allowing them to invest more.

## What concerns manufacturers

Al Diggins, president and general manager of the Excellence in Manufacturing Consortium (EMC), a national not-for-profit organization that helps manufacturers compete globally, sees members more or less reflecting the survey results. For the most part, he said they're focusing on reducing costs and cost containment, and some members are doing "pretty darn well."

Pricing is identified by 53% of manufacturers as the top challenge, followed closely by increasing sales (50%) and concern about the value of the loonie (49%). Controlling costs, usually the leader noted in past surveys, dropped to fourth spot, tied with concern about economic conditions (47%).

Holesh questioned why Canadian companies worry about pricing so much. "The truth of it is, we have no control over pricing. Our competition sets the price. We have little control. We can control what our input costs are and our production effectiveness. But the marketplace controls everything else," he said.

Concern about price is justifiable if you're in a race for the bottom, said Brian Freeborn, operations manager for Span Medical Products Canada in Beamsville, Ont., a manufacturer of products for healthcare facilities. "If you're looking at moving your company in a race to

## Three year forecast

69% Machinery, equipment, or technology

41% Research and development

28% Business intelligence, data analysis software systems

61% Training

37% Productivity projects

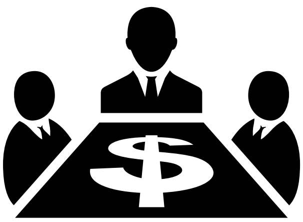
11% Sustainability, reduce carbon footprint

61% Hiring staff

34% Plant facilities

7% No investments planned

## ACCA* impact



**72%** No impact on investment decisions

**15%** Investing more because of it

**9%** Wouldn't be investing without it

**5%** Scaling back investment

* Accelerated capital cost allowance for investments in machinery, equipment, technology

*To try and finance a company today is impossible. Bankers are not interested. The government is not interested...*

*— Norman Holesh*

the top – like a product line – price becomes a non-issue because you can almost demand what price you want if you're the leader in the market place. It's what you're doing with your innovation and how are you taking your product to market, and how are you beating the competition with your product? That will drive improved price, not the race to the bottom."

Market price, static for the past eight years, is the top issue for Multivans.

"I'm only a year and a half into the industry so I'm struggling to understand how for eight years with material cost increases, labour increases and so on, our competitors can stay where they are. That being said, our second biggest issue right now is becoming bold and brazen enough to go down to the US and succeed."

He identified the Great Lakes states, with a 60-million population base that's in close proximity to Bolton, Ont., as a prime target. "I don't think there is a better time. The doors are wide open from a dollar, exchange rate point of view."

The company's market is seasonal, so production volumes aren't consistent throughout the year. They ebb and flow according to the availability of truck chassis, and demand generated by rental and leasing companies.

"We have to manage a pre-building philosophy, which is contrary to lean thinking, because we just don't have enough capacity to manage the peak," Jarrett explained.

He said the US market will help smooth out production."

Manufacturers continue to find skills gaps a concern with 50% reporting they're negatively affecting productivity. This year it's sales and

*I don't sense manufacturing, in general, is very comfortable with strategic planning as critical to longer-term success...*

*— David Jarrett*

marketing pros who are coming up short for 39% of the companies, followed by production (35%) and engineering (25%).

Half the companies are delivering internal training to cover shortages, and 73% are doing so by running inhouse workshops. More than a quarter (27%) are investing less than 2% of revenue on training, while on the other side, 13% are spending 8%. Most (47%) fall within 2% to 4%.

Thirty per cent are using outside services and running up more overtime, while 24% are hiring away from other companies.

Diggins acknowledged EMC members are challenged to find people with the right skills when they're needed.

"It's an imperative for everybody. Manufacturers need to buck up and start doing their own training," said Diggins. "Even in our own case, we've been trying to find the right person in IT. After six months, we said, 'Okay, we just have to hire a good person and take him to school.' A lot of the in-house training that went away about 20 years ago is coming full circle because you've not got the skills in the right place at the right time."

EMC is helping to fill the gaps. It's involved with the federal government in a labour market intelligence survey (Manufacturing GPS) involving 5,000 companies across Canada that will generate labour market information and human resources best practices.

The cost of electricity is a big issue for many manufacturers in Ontario. They must contend with the Global Adjustment, which accounts for differences between the market price and rates paid to regulated and contracted generators, and for conservation and demand management programs in addition to rising rates. For many companies, this assessment

amounts to thousands of dollars extra on their electricity bills. Ontario's electricity prices are among the highest in Canada and compared to many competing jurisdictions in the US. This is seen by critics as an impediment to attracting manufacturers to the province, and may encourage companies to leave.

Lynch is dealing with the high cost of electricity by moving to LED lighting and experimenting by producing hot water for parts washers using solar tubes.

The company has also installed its first 30,000-square-foot green roof.

"We paid extra to have this done, but there's the extra insulation, two membranes, a growth medium and sedum: that's the ground cover on the roof, which will help with insulating, and keep down heating costs."

## Productivity and technology

Manufacturers find themselves in the fourth industrial revolution, or Industry 4.0, which describes the "smart factory." It's characterized

PHOTO: THINKSTOCK

*There's an upfront cost and really a longer-term vision to adopt some of the changes that we preach as a technology company...*

*— David Jirku*

by interoperability, virtualization, decentralization, real-time capability, service orientation and modularity. This draws in the promise of Internet of Things (IoT) and Internet of Services (IoS) technologies, which can potentially accelerate productivity improvements, an area of chronic weakness in Canada.

The productivity section of the survey shows 94% of companies see it as generally important and 78% say it's important to business growth, but movement is slow in the technology area.

The four most challenging areas for productivity improvement for 44% of the respondents continue to be shop floor operations, marketing and sales (40%), insufficient or unreliable data on performance and purchasing (both 19%).

Most companies are not making use of the latest technology to monitor and measure shop floor manufacturing equipment and operations shift by shift. Almost half (49%) measure and analyze productivity manually; 29% use automated data collection; but 22% aren't measuring; and only 38% have a formal improvement strategy in place.

Most (71%) have favoured employee training to improve productivity, 55% invested in technologies, 40% applied automation solutions, and 32% applied lean, Six Sigma and other continuous improvement measures.

Few companies use advanced robotics (10%) and just 17% are making use of 3D printing, but almost half (48%) are CAD/CAE/CAM-ready and 42% say they are using data acquisition, information integration and/or control technologies.

Only 28% of the companies have connected shop floor equipment to top floor information systems, although 44% say they are likely to do so over the next year. But 33% aren't making the connection.

Using a smart phone to monitor the plant remotely is still beyond most (63%) of the respondents. Just 5% can cover the entire plant,

PHOTO: THINKSTOCK

*Looking at the survey, 68% said it's very important to look at productivity improvement, but I put this down to lip service. Only 28% said they planned to take any action…*

*— John Rattray*

6% monitor three quarters, 8% cover half and 18% cover less than a quarter.

There's a resistance to adopt new processes or change the way things are done, said David Jirku, a technical solutions architect at Cisco Systems Inc. in Toronto. The company designs, makes and sells IT networking equipment to businesses, including manufacturers.

"There's an upfront cost and really a longer-term vision to adopt some of the changes that we preach as a technology company. If you're looking at changing something with a three-month ROI, the technology is not going to prove itself to be valuable. But if you look at transforming the business over the course of three to five years that's going to be the way you adopt the technology."

However, Rattray is seeing movement towards enlightenment. "There has been a huge change that we've seen and it's been literally in the last year and a half," he said. "We still believe we're dealing mostly with early adopters. The vast majority of people are still trying to figure things out. Certainly our business is growing. We're over 100% growth per year."

But he sees knowledge-based strategic planning and thinking, and how to apply technology to be a big issue. Most manufacturers, he said, are preoccupied with issues of the day and can't think outside the box. "Companies need help."

There is help available, but companies must also be prepared to change the way they do things.

"We sell a sophisticated piece of software. It's got lots of moving parts under the hood. But at the end of the day, software's just a tool. It's not a do-my-job button," said David Doyle, the vice-president of sales for SYSPRO Canada. "The successful use of a tool depends upon processes, people and change management, which is a change from, 'We've always done it this way,' to 'Here's a new, different way. Let's see if we can figure out if it's a better way or not.'"

Technology is also changing how business is conducted. The internet is transforming the way plants operate at the shop floor level, but it's also changing traditional, customer-facing functions such as sales.

"When somebody comes to our website and says, 'Oh, please contact me. I have selected you as one of the six vendors I want to talk to,' they are at least 75% of the way through their buying cycle…based on what they saw on the website or on social media," said Doyle.

He warned that anybody carrying a large

outward-facing sales team will need to strategize around the demise of that team, and how to reposition those resources under the new sales methodology.

## Developing innovators

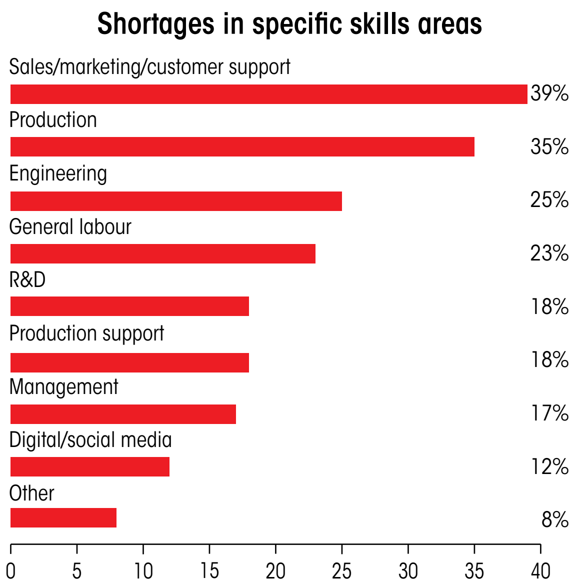
Innovation is also key to manufacturers who must contend with growing competitive pressures.

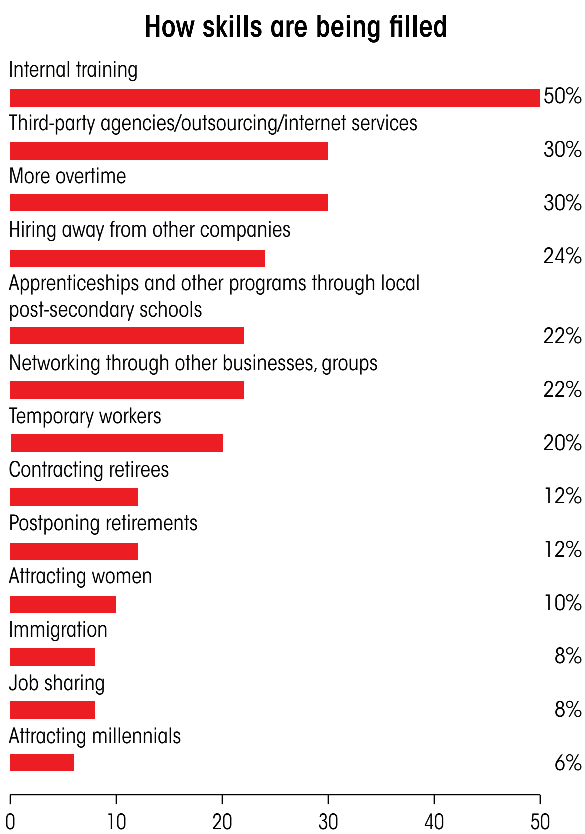
The Conference Board of Canada's innovation report card awarded Canada a C this year after years of Ds, and placed it ninth among 16 peer nations. But the Ottawa-based research firm qualifies this good news. Most international peers have increased R&D expenditures, while Canadian firms are moving in the opposite direction. And Canada is well behind the leaders registering patents.

The innovation section of the survey added some questions to explore in greater detail the state of readiness among manufacturers. The results reveal innovating is very important or vital to 71% of the companies and 94% intend to invest in it although 25% are sketchy about their plans. Twenty-eight per cent will invest 1% to 3% of revenue, which is less than the previous two years. They are followed by 18% who will allot 4% to 6%, and 23% who will spend from 7% to more than 10%. Companies falling in the 4% to more than 10% zone are increasing their investments next year. Over the next five years, 53% expect innovation spending to increase. However, 61% are not actively engaged in registering patents, trademarks or copyrights.

The top barriers to investment in innovation are cost versus benefit (for 56%), access to capital (37%) and access to skills (34%).

What percentage of staff is involved in R&D? For 40% of the firms, less than 1%. More than a third (34%) dedicate 1% to 5%. More than a



# Skills

*There are a number of markets just as big as the US, but it seems that, historically, we hesitate…*

*— Jim Menzies*

### Methods of skills training

| | |
|---|---|
| In-house workshops | 73% |
| Coaching, mentoring | 69% |
| Third party provider | 52% |
| Social media such as webinars | 22% |
| Working with local post-secondary institutions | 21% |
| Collaborations with networks, business groups | 15% |
| Don't provide training | 3% |

### Investment in skills training

| | |
|---|---|
| Less than 2% | 27% |
| 2% | 23% |
| 4% | 24% |
| 6% | 8% |
| 8% | 6% |
| More than 8% | 13% |

quarter of the respondents devote from 6% to more than 10% of their staff to R&D activities.

The federal SR&ED program is a key mechanism for financing industrial R&D, but 46% of survey respondents have not made use of it, nor do they plan to. Forty per cent said they have used it in the past and 37% say they will make use of it in 2016. How has SR&ED impacted innovation? More than two-thirds (67%) of the companies said it has had no impact on their activities.

When asked what support would make innovation easier, 47% identified lower tax rates on income directly generated from innovation activities, 42% called for easier access to financing, and 35% would like to see higher SR&ED tax credit rates as well as easier eligibility for the program.

Almost half (49%) of the companies are overcoming barriers by embedding an innovation culture throughout the organization and 45% are collaborating with other companies and organizations.

When Menzies studies the survey results, he sees the cautious optimism, but he believes companies are also only "cautiously" innovative. "If you look at some of these pure statistics: 71% of the companies believe that innovation is vital or very important. But they're spending less than 5% of revenue on it and they've got less than 5% of their employees dedicated to it."

Jarrett said there's no roadmap to show manufacturers how to become innovative and better R&D companies. Some manufacturers get stuck on a paradigm of designing from inside out, rather than from what's of value to the customer. "The engineering team has the answers. They know what they need to do. So they just keep doing that, not getting the desired results. It's a mistake to think you know your customer because you've been in an industry a long time."

Freeborn emphasized innovation is more than research: it's about the people involved in the research, from engineering to the plant floor, and it's about innovating processes.

"The biggest thing that people forget to look at is how they handle their material. That's the biggest cost for small and midsize manufacturers. Laying a weld, tightening a screw, that's your value add. But the rest of the time everybody's handling material and that's where you have to drive cost out."

While the competition moves production to Mexico and China, Freeborn's team is driving the right ideas, and going after the processes. "I'm not putting in a lot of sexy technology. The biggest thing I've done in the last year is I put in a robotic drill press."

Roberts believes Canadian companies are very good at innovation, but was surprised to see 61% of the companies not interested in registering for patents or trademarks. "Maybe companies for whom that's a driver could find ways and opportunities to network with other companies that aren't so good at innovating," she suggested.

Diggins wondered if recent changes to the SR&ED (which included reducing the percent of eligible overhead expenses and contracted services claimed, and capital expense eligibility cancelled) have discouraged some manufacturers from focusing on true innovation.

Roberts observed there is a difference between innovation and scientific research and development. "SR&ED is definitely focused at the sort of iterative approach that goes into scientific research, which is what we focus on. For our company it's been hugely beneficial."

Qualifying for SR&ED is getting more difficult, said Menzies. "I also think that many manufacturers struggle with the notion of having the CRA in their shop. And they know that if they make an SR&ED claim [the CRA is] coming for a visit. I think that causes some manufacturers to shy away from that program. I think the program is fairly well received by companies that are into scientific research and experimental development. Whether or not it's actually driving innovation, the court's out."

Lynch, noting Canadian companies have a lot of services available to them, said "when I see 46% have not and do not plan to exercise SR&ED credits, that's either laziness or it's just lack of vision and poor management. It's there, why not take advantage of it?"

INKAS uses SR&ED every year, and Fraser described it as a good news/bad news story. "Good news is it allows us to experiment and try out new things. The bad news is I see CRA in my offices far more than I ever want to."

One issue is understanding exactly what the government expects out of the SR&ED application, and it's getting more and more complex, while the CRA is becoming more restrictive in terms of what it allows, said Fraser. "What they allowed three years ago, they don't allow today. My company is starting to look at why we're even doing this stuff. Three years ago we could re-develop a hinge. Today, they don't think that's innovative. They don't think that's experimentation, they just

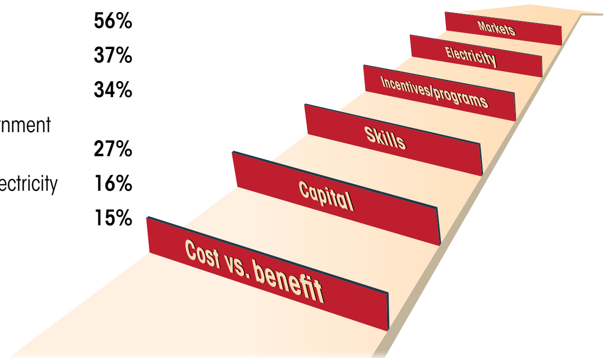
*When I see 46% have not and do not plan to exercise SR&ED credits, that's either laziness or it's just lack of vision and poor management...*

*— Ernie Lynch*

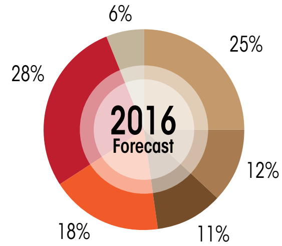
# Innovation

## Barriers to investment and implementation

| | |
|---|---|
| Cost vs. benefit | 56% |
| Access to capital | 37% |
| Access to skills | 34% |
| Lack of effective government incentives/programs | 27% |
| Input costs such as electricity | 16% |
| Access to markets | 15% |



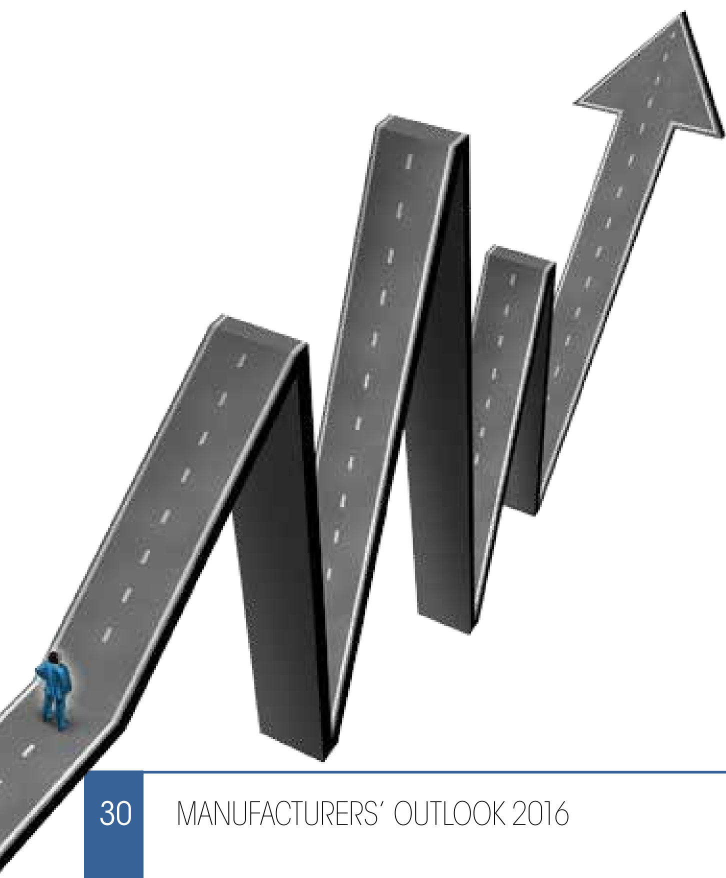

## Percentage of revenue invested in innovation




| | 2014 | 2015 |
|---|---|---|
| 0% | 17% | 10% |
| 1-3% | 35% | 35% |
| 4-6% | 13% | 17% |
| 7-10% | 8% | 10% |
| More than 10% | 9% | 10% |
| Don't know/not sure | 19% | 18% |

## How companies are overcoming barriers

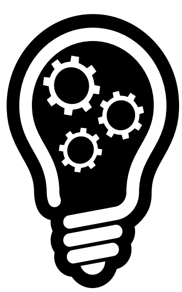
- **49%** Embedding innovation culture throughout the organization
- **45%** Collaborating with other companies/ organizations; pooling resources
- **27%** Closer connections with sources of training and apprenticeships
- **23%** Developing virtual prototypes vs. manufactured ones



## What excutives say would make innovation easier

- **47%** Lower tax rates on income directly generated from innovation activities
- **42%** Easier access to financing
- **35%** Higher SR&ED tax credit rates/easier eligibility
- **20%** Immigration law reform allowing more skilled labour to enter Canada
- **16%** Government sponsored recognition programs for successful innovators
- **15%** Better protection of IP/patents in foreign countries


## Attitudes



- **79%** Have a "strong" innovation culture
- **71%** Innovation is vital or very important to their businesses; not so much for 25%; and not important to 4%
- **61%** Not actively engaged in registering patents, trade marks or copyrights; 8% are very active

**Percentage of staff involved in R&D**

| | |
|---|---|
| Less 1% | **40%** |
| 1%-5% | **34%** |
| 6%-10% | **13%** |
| 10%-plus | **13%** |

**SR&ED**

**67%** No impact on innovation; 17% have invested more because of it;16% will invest more

**53%** Expect investment to increase over the next five years; 43% will spend the same amount

**37%** Plan to take advantage of the federal tax credit; 46% have not or don't plan to do so

*When you're exporting, particularly to Asian countries, one thing you always have to be mindful of is the international regulations concerning controlled goods...*

*— Caroline Roberts*

think that's normal product development."

"We sometimes see that in application of government policy as it relates to taxation," said Glen Gilbert, partner, tax services at Grant Thornton. "It starts out as incentive and then the CRA – tasked with administration of that policy – moves away from an attitude of support to one of policing…When you get to a point where business owners are concerned about CRA being on site, and trying to limit what is or isn't SR&ED, that's unfortunate, because that's not the intended approach. That's not, from a policy point of view, healthy."

Roberts pointed out another issue. The SR&ED program is really designed to foster inefficiency because of its iterative focus. "If you're trying to innovate something new to solve a production problem to create a new product, if you nail it the first time, none of that is admissible. You have to fail repeatedly. It's the failure that's valuable …"

Despite the challenges all manufacturers must address, roundtable panellists, like the survey respondents, were optimistic about the future.

Doyle cited Canada's poor productivity as an area in need of improvement. "If we can shine a spotlight on that and bring in some skills, collaboration and tools to address it, things will be okay."

Lynch said he is "pumped" about what Canada is doing and what manufacturers are able to do. "We're probably in one of the most advantageous places in the world to be as manufacturers. We just need to take advantage of that and get the job done."

Said Freeborn, "We have a lot of smart people in this country and I think it's all about leveraging those people and making the right decisions, taking the risk and moving forward."

Indeed, the time has come for manufacturers to move from survival mode and focus more on the factors that will drive success.