PEEL HALTON EMPLOYER SURVEY

2017

LEPC
PEEL-HALTON
LOCAL EMPLOYMENT
PLANNING COUNCIL

Peel Halton
Employer Survey
Local Insights for a Better Workforce

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An electronic version of this document as well as the survey questionnaire are available at: https://www.peelhaltonlepc.com/reports

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PEEL HALTON LOCAL EMPLOYMENT PLANNING COUNCIL

BACKROUND

The Peel Halton Workforce Development Group (PHWDG) is a community based not-for-profit Corporation that serves the Peel and Halton regions. The PHWDG functions as a neutral broker of research, disseminator of information and facilitator of collaborative partnership development. The PHWDG works with the community to identify trends and opportunities in the labour market environment which impact our workforce. We then nurture the ideas which emerge from our consultations and seek to develop partnerships to address these issues, to further help our community to thrive in our local economy. Operating as part of the Local Boards Network of Ontario, PHWDG is one of 25 local planning board areas funded by the Ministry of Advanced Education and Skills Development (MAESD) to conduct and distribute local labour market research and engage community stakeholders in planning processes that support local solutions to local issues.

The PHWDG undertook the piloting of the Peel-Halton Local Employment Planning Council (LEPC) as of December 2015. The Peel-Halton LEPC is one of eight LEPC's across Ontario. Ontario launched the LEPC pilots as part of the ministry's work to modernize employment, training programs and services. LEPC's promote place-based approaches to workforce development, while generating and analyzing local labour market information. Additionally, LEPC's drive local approaches to the planning and delivery of employment and training programs and services. LEPC's also improve local labour market conditions through enhanced collection and distribution of local labour market information.

This report was prepared by Tom Zizys, a labour market analyst; Zidi Yang, Researcher/Analyst and Shalini da Cunha, the Executive Director of the Peel Halton Workforce Development Group.

EXECUTIVE SUMMARY

While technological change will cause disruptions in the kind of jobs that will be available and in the kind of skills that will be required for work, by an large employers do not feel it will cause reductions in the level of employment and may well increase employment. It is changing how work is being carried out, with more flexibility in where, when and how work is performed. And it is influencing how much they train and who they are hiring.

These are some of the findings from the 7th annual survey of employers carried out by the Peel Halton Workforce Development Group. The survey attracted almost 700 employers with an average response of 573 answers per questions, from a cross-section of employers that broadly reflected the profile of employers in Peel and Halton regions by industry. The survey sample of employers was skewed toward larger employers, with approximately 8% of Peel and Halton employers with 100 or more employees responding to the survey.

How employers thought about technological change and what strategies they used in response to that change, including how they took advantage of these changes as well as how they managed their operations, was very much a function of how quickly they adopted technology.

The literature on technological change proposes that there are distinct categories about how individuals and organizations respond to technological change, as follows:

- Innovators: first individuals to adopt an innovation, high risk tolerance
- Early Adopters: Second fastest group to adopt innovation, less risk-oriented
- Early Majority: Tend to be slower and conservative, but, open to new ideas
- Late Majority: Adopt innovation after the average member of society, highly skeptical
- Laggards: Last adopter of innovation, very conservative and prefer traditional ways

Far more of the survey respondents adopted technology sooner, distributed as follows:

- Innovators: 11%
- Early adopters: 26%
- Early majority: 48%
- Late majority: 10%
- Laggards: 5%

Slightly higher proportions of Innovators were found among Other Knowledge sector firms (Finance & Insurance; Information & Cultural Industries; Public Administration) and Manufacturers. Professional, Scientific & Technical Services are considerably more likely to be Innovators or Early Adopters. The Retail Trade sector had the largest proportion of responses falling in the Late Majority or Laggard categories. Small firms (1-4 employees) were somewhat more likely to be either Early Adopters or Early Majority, while the largest firms (100+ employees) were a little more likely to be Laggards.

Forty-seven percent of employers felt that technology would cause disruptions in their workforces, but with the net result being the same or more jobs. Another 22% felt technology would increase the number of jobs. Only 13% felt that technology would lead to less employment. Notably, 45% of Innovators felt technology would increase the number of jobs, while one in four (25%) of Retail Trade employers felt technology would

result in fewer jobs. Overall, the smaller the firm, the greater the worry about job losses.

As far as changes in the number of jobs in the last three years as a result of technology, two out of three employers said there had been no change, and another quarter said there had been job increases. Only 7% claimed that technology had caused a drop in employment in the recent past. Innovators were far more likely to report recent job gains (58%).

Survey respondents feel that technological change has resulted in more demand for technology-related skills, and secondarily for higher demand for human-specific skills. Seventy-six percent of respondents disagree with the proposition that there is no change in what skills are in demand as a result of technological change.

Six out of ten firms have provided training related to the adoption of new technology to their employees over the last two years, with larger firms more likely to provide training. Eighty percent of Laggards did not provide such training, while among industry sectors, 50% of firms in Accommodation & Food Services did not provide such training.

Technology is changing how work is being carried out. Forty-five or more of employers indicated that they have adopted these initiatives:

- Remote communication technologies (e.g. on-line meeting platform)(53%)
- Empowering workers to be more innovative and to think out of the box (49%)
- Flexible work hours (47%)
- Work from home (45%)
- Greater flexibility to accomplish jobs in new ways (45%)

Innovators and Early Adopters were notably more likely to adopt each of these tactics, while Laggards were far less likely to do so, and to a degree so were those in the Late Majority category.

Employers are also placing greater emphasis on the importance of computer skills and the ability to work with new technologies, as well as on creativity and innovation.

In terms of specific technologies, three-quarters of employers are making greater use of social media, and half are making greater use of advanced marketing techniques and data analytics. Overall, the larger the establishment, the greater use it made of these various strategies. Educational Services, Other Knowledge Sector and Retail Trade all made greater use of social media (over 85%). And even though Accommodation & Food Services made less use of the other options, they also scored 81% in their use of social media.

When it comes to the impact of technological change on the age of retirement, the responses are less clear-cut, although the consensus seems to be that it will actually delay the age of retirement, either only where there is training on new technologies (24%) or without any conditions (16%). Otherwise, a significant minority feel it will not have an impact on when

retirement will occur (28%). Others think it will accelerate retirement, either in all instances (14%) or only in those occupations or industries that have higher proportions of routine functions (16%).

Reliance on big data analytics was very much related to whether a firm was an early adopter or not, with Innovators expressing slightly more than some reliance, and Laggards falling in between some reliance and barely any reliance. Greater reliance on big data analytics was also correlated to the size of the firms, with larger firms being more likely to make use of big data than smaller firms. The Supply Chain, Professional, Scientific & Technical Services and Other Knowledge sectors are the top three industries that rely on big data analytics.

Finally, when it came to how employment service agencies could assist employers in the context of technological change, there was general support for the following:

- Increase awareness among job seekers about in-demand skill sets/jobs in the near future
- Improve resume screening and provide better matching between job candidates and the job requirements
- Facilitate quick and electronic access for employers to support programs and government funds
- Consult more with employers to better understand their individual needs

Several clear messages emerge from these survey results:

- While employers see technology causing disruptions to the labour market, they do not feel it will result in a net loss of jobs;
- Technology is changing how work is performed and what skills employers are seeking;
- Those companies that are quicker at embracing technology are not only making earlier use of new technology, they are more likely to adjust their strategies, to provide training to their employees, are more optimistic about the impact of technology on employment, and are more likely to report increases in employment at their firms over the last three years.

The survey confirms what the past history of technological change has taught us, that technological change causes disruptions, however the overall impact is productivity growth and an expanding economy, resulting in more jobs. What is necessary is to assist individuals in making the transition from declining occupations and industries to new opportunities in growing sectors and in acquiring and deploying new skills.

COMMUNITY IMPACT

"The Peel-Halton Workforce Development Group Employment Survey helps to identify the skill gaps that various organizations have experienced during the recruitment process, which when taken together both help to identify issues that face all organizations, and how we can work with community partner agencies to address those issues resulting in a better trained workforce pool. A better trained talent pool, especially in terms of soft skills, results in more confident and effective employees, greater organizational success, and helps our communities to prosper. The survey also provides insight as to how successful various industries are at managing their workforce, and helps to identify trends in workforce management."

Clifford Hennig-Pereira, Senior National Manager, Recruitment, RBC

"The Milton Chamber is proud to be a partner both in the Peel Halton Employer Survey and in a project related to the challenges of our local employers. As the workforce in Milton expands exponentially, it is imperative to have sound, accurate data. Often, though, it can be difficult to get data specific to our locale. The Peel Halton Employer Survey provides that source of sound, local information. "

Scott McCammon, CCE, President & CEO, Milton Chamber of Commerce

"The Peel Halton Employer Survey has provided tremendous data and insights into our local labour force. The survey provides a constructive method of capturing the gaps, demands, and perspective of community employers. This report has assisted us by providing important information which has helped keep our clients informed about how they can meet the changing demands of the local workforce."

Ishwar Harjani, Manager, Settlement and Employment Services, Indus Community Services

"COSTI Immigrant Services is proud to collaborate with the Peel Halton Workforce Development Group both through their Talent Hub and Peel Halton Workforce Employer Survey.
We are impressed with the scope and depth of the insights their Employer Survey provides to us about the needs and hiring intentions of employers across our market area. This resource is an invaluable planning tool enabling us to get an accurate gauge of employers' thoughts, actions and intentions as they relate to our need to adapt and align our employment services to match the changing work needs of both employers and job seekers.
Their tagline of providing "Local insights for a better workforce" is both an accurate and succinct descriptor of what their Employer Survey truly brings to us as an employment service provider. We look forward to deepening our relationship with them as they continue to provide actionable data that supports our marketing outreach and program initiatives. Continued success to PHWDG!"

David Lovelock, Manager Employment Services, COSTI Immigrant Services

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INTRODUCTION: SURVEY OVERVIEW & PROFILE OF RESPONDENTS

In its seventh year now, the Peel Halton Workforce Development Group has carried out an annual survey of local employers, to probe them regarding their hiring, training and workforce development practices. This survey has aimed to assist the many local stakeholders who have an interest in the local labour market by focusing on the perspective of local employers. These stakeholders include employment service providers, career counsellors, educators, trainers, economic development officers, among others.

This year a different approach was applied. Given the endless drumbeat of news about technological innovations, together with the release of several reports in the last year or so that have predicted drastic impacts as a result of technology replacing jobs, it was decided that we should devote the entire survey to investigate the impact of changing technology on employment. Before the actual survey results are presented and analyzed, we will provide a short overview of the recent literature about technology's impact on the labour market.

Before we do so, we wish to describe the respondents to this year's survey. In total, 699 employers started the survey, with an average of 573 responses per question (there is often a drop-off in participation through the length of a survey, with the number completing the survey not reflecting the fact that many uncompleted surveys still provide us with useful answers). Last year the average number of responses was 637, resulting in this year's survey having the second highest average response rate since the survey began. As always, this high response rate would not be possible without the over 40 community partners who helped disseminate the electronic survey to their employer e-mail lists.[1] It is also apparent that many employers appreciate the value of the survey, as over half (52%) request a copy of the survey results.[2]

A word on methodology

The survey was administered electronically through various channels such as social media (e.g., LinkedIn, Twitter), the PHLEPC website, e-mail campaigns and PHLEPC's community partners. In total, 798 employers started the survey, but that number was reduced to 699 after the survey was "cleaned up" – surveys with no substantive answers were eliminated. As well, where respondents provided contact information, their response relating to the industry classification was checked and where necessary corrected (almost 10% of employers misclassify the industry their establishment belongs to).3

When it comes to the analysis of the survey results, cross tabulation tables were created for each question, based on select industry groupings, such as employee size, geography and technology adoption stage of the company. Standard deviations for each question were calculated to identify

[1] See Acknowledgments page for list of this year partners.

[2] The content of the survey was greatly enhanced thanks to the input of an advisory committee which contributed to the design of the questions. See Acknowledgments page for a list of committee members.

3 To elaborate further on the approach to cleaning up the survey results: Firstly, any survey that consisted ONLY of responses to the location of the respondent, the industry the respondent belonged to, and/or the number of employees, was eliminated. Secondly, where a respondent selected an industry for their establishment, and where the name of the establishment was provided by the respondent at the end of the survey, these two responses were checked. In some cases, it was clear that the respondent had checked the wrong box for identifying his or her industry. In other cases, a search was made to determine if Industry Canada had a profile for that establishment and, if so, how Industry Canada classified that firm. If the Industry Canada classification was different from what the respondent selected, the respondent's response was changed to match the Industry Canada determination.

high and low outliers, as a way to identify the degree to which a particular subcategory of employer deviated from the average.

The survey is not a scientifically random survey. It is based on which employers are contacted and which employers choose to respond to the survey. The survey sample is compared in its various characteristics (in particular, industry and size) to the distribution of all employers across these categories as one gauge of the degree to which the survey represents the universe of employers in Peel and Halton Regions. As well, the comparison between different categories of employers may highlight the presence of differences between these groupings, if not the magnitude of their differences.

Table 1 compares the distribution of survey responses by geography to the distribution of employers in the seven municipalities of Peel and Halton Regions. There is a broad concordance between the survey distribution of employers and the actual distribution of employers by municipality; there is a slight under-representation of employers from Mississauga, and there is a slight over-representation of employers from Burlington, Oakville and Milton. Overall, there is an over-representation of employers from Peel and an under-representation of employers from Halton.

Table 1: Distribution of survey responses by geography

	Municipality	Share of survey responses	Actual share of employers in Peel and Halton
Peel	Mississauga	35.0%	39.2%
	Brampton	20.1%	29.6%
	Caledon	3.3%	4.0%
Halton	Burlington	11.6%	9.0%
	Oakville	15.6%	11.2%
	Milton	11.1%	4.5%
	Halton Hills	3.2%	2.7%

Actual distribution of employers from Canadian Business Counts

Table 2 profiles the survey responses by industry. The actual number of survey responses by industry and the percentage share of the total survey population by industry are presented, which is compared to the actual percentage distribution by industry of all establishments with employees in Peel and Halton.

For many industries, there is a broad concordance between the survey distribution of employers and the actual distribution. The three biggest discrepancies are in:

- Transportation and warehousing (12.6% lower than the actual)
- Manufacturing (11.4% higher than the actual)

- Educational Services (6.9% higher than the actual)

Differences of more than three percentage points are found in:

- Construction (3.8% lower than the actual)
- Wholesale Trade (3.2% lower than the actual)

Table 2: Distribution of survey responses by industry

	Survey number	Survey Percent	Actual Percent
Accommodation and Food Services	42	6.0%	5.2%
Administrative & Support, Waste Management	15	2.2%	4.4%
Agriculture, Forestry, Fishing and Hunting	10	1.4%	0.4%
Arts, Entertainment and Recreation	17	2.4%	0.9%
Construction	33	4.7%	8.5%
Educational Services	56	8.0%	1.1%
Finance and Insurance	30	4.3%	2.9%
Health Care and Social Assistance	65	9.3%	7.7%
Information and Cultural Industries	11	1.6%	1.0%
Management of Companies and Enterprises	7	1.0%	0.6%
Manufacturing	112	16.0%	5.4%
Mining, Quarrying, and Oil and Gas Extraction	3	0.4%	0.0%
Other Services (except Public Administration)†	42	6.0%	7.1%
Professional, Scientific & Technical Services	98	14.0%	15.5%
Public Administration	17	2.4%	0.1%
Real Estate and Rental and Leasing	15	2.2%	3.4%
Retail Trade	44	6.3%	9.1%
Transportation and Warehousing	49	7.0%	19.6%
Utilities	6	0.9%	0.1%
Wholesale Trade	27	3.9%	7.1%

Actual distribution of employers from Canadian Business Counts

† Such as automotive repair, hairdressing or dry-cleaning services

For the purposes of comparing later results, this survey analysis explored responses according to the following industry categories:

- Accommodation & Food Services
- Educational Services
- Health Care & Social Assistance
- Manufacturing
- Other Knowledge sector (Finance & Insurance; Information & Cultural Industries; Public Administration)

- Professional, Scientific & Technical Services
- Retail Trade
- Supply Chain (Wholesale Trade; Transportation & Warehousing)

Table 3 profiles the distribution of all establishments by number of employees. For the purposes of this table, we have limited the responses only to those that were located in Peel and Halton, so that we can make a comparison of the distribution by size of establishment to the actual number of employers present in Peel and Halton. As is evident from the table, the survey is over-represented by employers with a greater number of employees and under-represented by employers with fewer employees. Ultimately, this means that the survey sample represents a collection of employers who employ more workers than would be the case if this was a completely random survey. The survey respondents with more than 100 employees represent 8.2% of all establishments in Peel Halton with over 100 employees – around one out of every twelve large employers.

Table 3: Distribution of survey respondents by number of employees

	1-4	5-19	20-99	100+
Actual number	48574	17860	7050	1654
Actual percent	64.6%	23.8%	9.4%	2.2%
Survey number	121	165	163	136
Survey percent	20.7%	28.2%	27.9%	23.2%
Survey as percent of actual	0.2%	0.9%	2.3%	8.2%

Actual distribution of employers from Canadian Business Counts

By and large, the profile of survey respondents, by geography, industry and number of employees, largely corresponds to their actual distribution in Peel and Halton, with a few instances of over- and under-sampling. As the various responses are presented, the analysis will usually present the data broken down by different categories, so that the different responses by industry and size of establishment can be drawn out from the overall result.

Background regarding technology and its impact on jobs

Before we present the analysis of the employer survey, we thought it would assist the reader to provide a review of the recent literature regarding the issue of changing technology and its potential impact on jobs. In the last several years, this issue has received a tremendous amount of media attention, for several reasons.

Starting in 2011, a number of books have drawn attention to technology's potential threat to jobs, with such dramatic titles as *Race Against the Machine* or *The Rise of the Robots*.[4] The traditional economist's

[4] The ominous future is spelled out in the full titles: Erik Brynjolfsson and Andrew McAfee, *Race Against the Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and the Economy* (2011); and Andrew McAfee and Erik Brynjolfsson, *The Second Machine Age: Work Progress And Prosperity In A Time Of Brilliant Technologies (2014); Martin Ford, The Rise of the Robots: Technology and the Threat of Mass Unemployment (2015).*

view is that technological change increases an economy's productivity, generating more wealth, spurring demand for new services and products, and thus increasing net employment, even though certain jobs may be lost in a technologically-redundant occupation. While these books acknowledge this past, they point out that this time the future may be different: the rapid pace of change, the advent of artificial intelligence which can duplicate virtually any human function, and the far more limited number of jobs generated by the digital economy, may all pose a significantly greater risk to net employment than previous waves of technological innovation.

Over the course of the same period, these books were joined by two separate studies from highly credible sources that appeared to place a definitive number to the potential job losses. The first report, from Oxford University, claimed that about 47% of all employment in the United States was at risk of computerization in the next decade or two, and that the risk was higher among jobs that were low paying and/or that required low levels of educational attainment. [5] The second study, from McKinsey & Company, a prestigious management consulting firm, examined functions within occupations, and estimated that 45% of work activities carried out in the United States could be automated using technology that already could be deployed.[6]

The approach used by these two studies was applied to the Canadian context, and the figures were equivalent to the US numbers: nearly 42% of the Canadian labour force is at a high risk of being affected by automation in the next decade or two, and similarly nearly 42% of tasks that Canadians are currently paid to do can be automated using existing technology.[7] The resulting news was definitive: "4 out of 10 Canadian jobs to be lost to technology."[8]

One reason why these reports and their accompanying media coverage have had considerable resonance is because we can easily imagine the consequences that technological change could have on jobs: the recent advances that promise driverless cars immediately provoke the thought: what will happen to all the truck drivers? Digital platforms like *Uber* and *Airbnb* are already having a profound and disruptive impact on the taxi and hospitality industries. Indeed, the squeeze on jobs seems to be coming from opposite sides, with mechanical robots and automatic check-in kiosks on the one hand and digital apps and platforms on the other.

[5] Carl Benedikt Frey and Michael A. Osborne, *The Future of Employment: How Susceptible Are Jobs to Computerisation?* University of Oxford, 2013.

[6] Michael Chui, James Manyika and Mehdi Miremadi, "Four Fundamentals of Workplace Automation," *McKinsey Quarterly*, November 2015.

[7] Craig Lamb, *The Talented Mr. Robot: The Impact of Automation on Canada's Workforce*, Brookfield Institute, 2016

[8] Daniel Otis, "Four out of 10 Canadian jobs to be lost to technology: report," *CTV News*, June 15, 2016 (accessed on November 28, 2017 <http://www.ctvnews.ca/business/four-out-of-10-canadian-jobs-to-be-lost-to-technology-report-1.2947847>.

The contrarian view has been well-expressed by David Autor, the labour economist from MIT.[9] He argues that we consistently overestimate how much technology is displacing or will displace work, and we similarly underestimate how much technology increases productivity, thus growing the economy and increasing the demand for labour. He also questions the extent to which the evolving technology will be able any time soon to take on functions that rely on interpersonal interaction, flexibility, adaptability and problem-solving. Indeed, what automation has done is place a premium on those skills, increasing their value precisely because these activities cannot be performed by machines, but only by capable humans.

This reaction to the doom-and-gloom of that first wave of predictions has resulted in some recent revisions to the initial forecasts. The theme that technology also contributes to job creation is signalled in McKinsey's most recent addition to the literature: *Jobs Lost, Jobs Gained: Workforce Transition in a Time of Automation*.[10] Their findings reflect what can only be called a significant overhaul of what has been to-date a dire prognosis:

- The proportion of jobs actually displaced by technology by 2030 will be lower than imagined, because of technical, economic and social factors that affect adoption;
- Even with automation, the demand for work and workers could increase as economies grow, partly fueled by productivity growth;
- However, while the level of demand for human workers seems likely not to decrease, the type of work being offered will likely be changing significantly, with continued need for higher levels of educational attainment and increasingly sophisticated soft skills capabilities;
- All this will require adaptation by educational, vocational and workforce development systems, particularly in how they support workers transitioning from jobs made obsolete by technology to jobs enabled by technology.

It is a common witticism to say that it is difficult to make predictions, especially about the future. Consider the following observation:

> The number of jobs lost to more efficient machines is only part of the problem. What worries many job experts more is that automation may prevent the economy from creating enough new jobs.

That quote is over 50 years old.[11]

Let us turn now to the present, and what employers have to say about the impact of technology on jobs.

[9] David Autor, "Why Are There Still So Many Jobs? The History and Future of Workplace Automation," *Journal of Economic Perspectives*, Vol. 29 (3), Summer 2015, pp. 3-30.

[10] James Manyika et al, *Jobs Lost, Jobs Gained: Workforce Transition in a Time of Automation*, McKinsey Global Institute, December 2017.

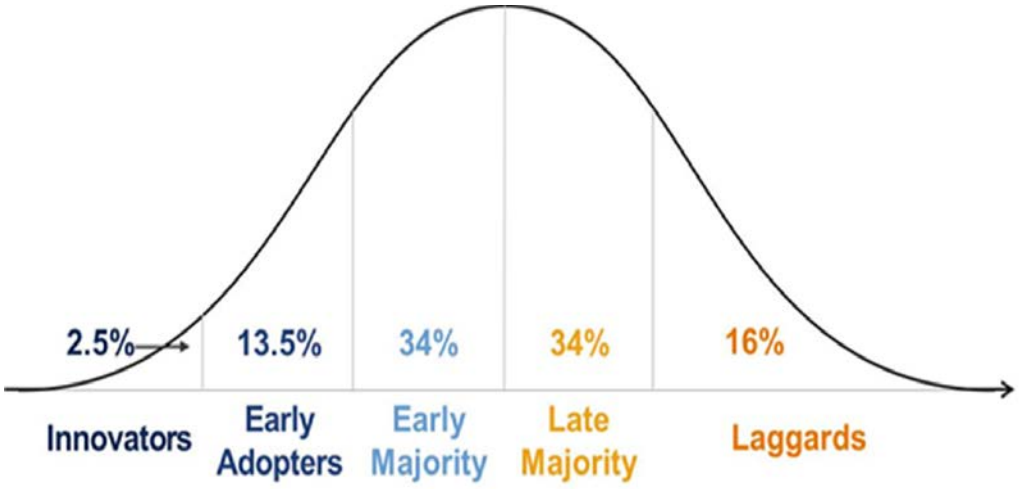
[11] "The Automation Jobless," *Time Magazine*, February 24, 1961, cited in Autor, p. 3.

Rates of adoption of technology

When it comes to adopting new technology the theory is that individuals and institutions have different attitudes and capabilities. It has been suggested that the ease with which one adopts new technology can be described along a continuum, whose different categories are distributed more or less evenly.[12] Those categories are described as follows (with their expected distribution illustrated in Chart 1):

- Innovator: first individuals to adopt an innovation, high-risk tolerance
- Early adopter: Second fastest group to adopt innovation, less risk-oriented
- Early majority: Tend to be slower and conservative, but, open to new ideas
- Late majority: Adopt innovation after the average member of society, highly sceptical
- Laggard: Last adopter of innovation, very conservative and prefer traditional ways

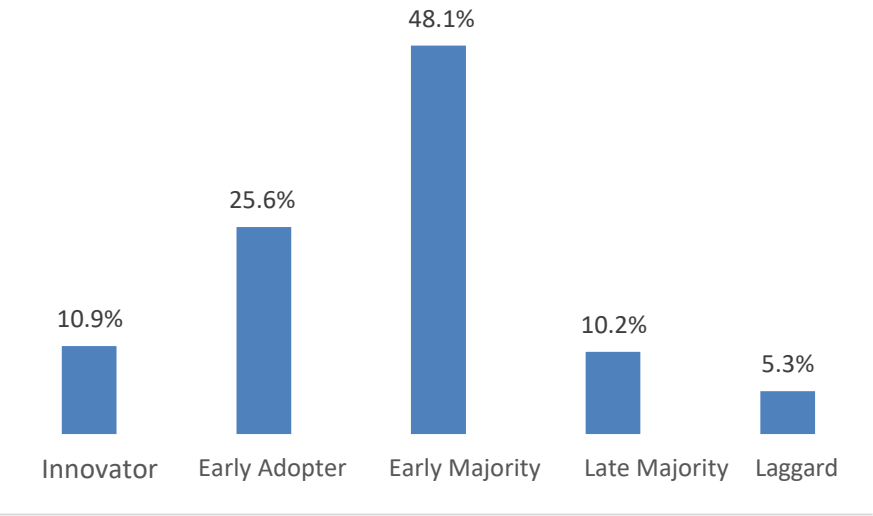
Chart 1: Distribution of categories of adopters of technology



For the survey, employers were asked which category of adopter best described their company, with the same description provided for each category as exists above. The responses are presented in Chart 2. By and large, most companies saw themselves as adopting technology earlier. Where the standard distribution of adopters in Chart 1 places half of respondents in the Late Majority and Laggards categories, the survey response had only 16% in those two categories.

[12] Everett Rogers, *Diffusion of innovations*, 5th Edition, 2003.

Chart 2: Characterizing the firm



These rates of adoption differ by certain categories of employers. The Other Knowledge sector (17%) and Manufacturers (16%) had the highest proportions of Innovators. Professional, Scientific & Technical Services are considerably more likely to be Innovators or Early Adopters, and only 3% of them placed themselves in the Late Majority or Laggard grouping. The Retail Trade sector had the largest proportion of responses falling in the Late Majority or Laggard categories. Small firms (1-4 employees) were somewhat more likely to be either Early Adopters or Early Majority, while the largest firms (100+ employees) were a little more likely to be Laggards (one in thirteen).

Expected impact of technology on number of jobs

Emerging technologies such as artificial intelligence and robotics have the potential to change work and employment practices. The survey sought to understand how technological trends will impact employment, beginning with the following question:
What is your general impression about the impact of emerging technological advancements (e.g. robotics, advanced manufacturing, artificial intelligence, etc.) on employment?

Employers were asked to select one answer from the following list. The responses are displayed in Chart 3 (with the labels slightly abbreviated):

- Does not impact employment
- Negatively impact employment or cause mass unemployment
- Cause disruptions, with some jobs lost but other jobs gained, with the net result being the same or more jobs
- Increase employment by introducing new jobs to the economy

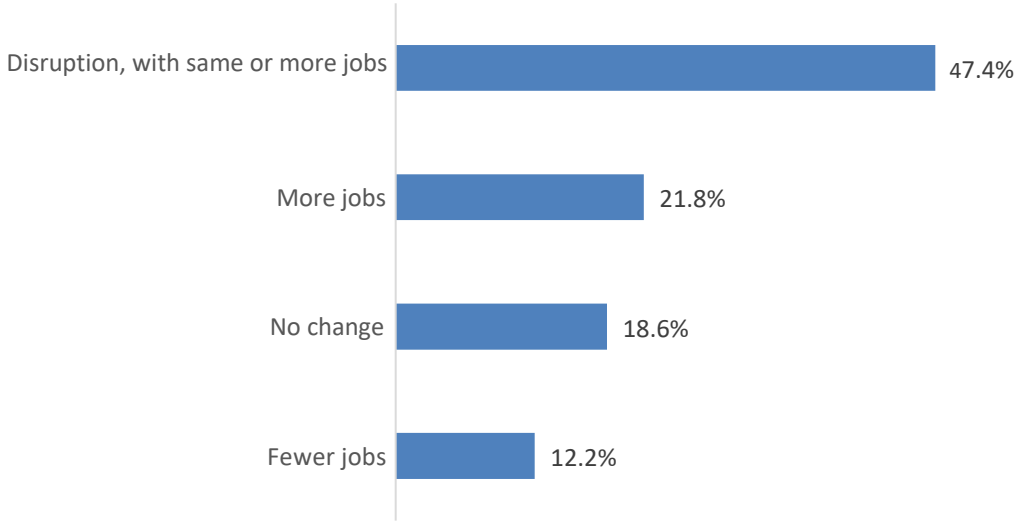
The overall message: yes, technology causes disruption, however the net result is either no change or an increase in the number of jobs. Almost half (47.4%) of all employers chose that response, with the next largest category (21.8%) claiming that technology would increase employment. Only 12.8% felt that technology would have a negative impact on employment levels.

There is a clear co-relation between the speed of technological adoption and one's views of its impact on employment. 45% of Innovators believe technology will have a beneficial impact on jobs, almost exactly twice the rate as the average response. At the other extreme, 17% of Laggards feel technology will result in job losses.

Employers in Retail Trade were far more likely to believe that technological change would have a negative impact on employment, with one in four (25%) expressing that view, double the average response. Very small firms (1-4 employees) were also more likely to predict job losses (18%), with that view diminishing with each successive employee-size category, with far fewer large firms (100+ employees) holding that view (10%).

On the other hand, Manufacturers were somewhat more likely to claim that technological change would increase the number of jobs (26% versus the average of 22%), as were large firms (25%).

Chart 3: General impression about the impact of emerging technological advancements



Impact of technology on net employment in last three years

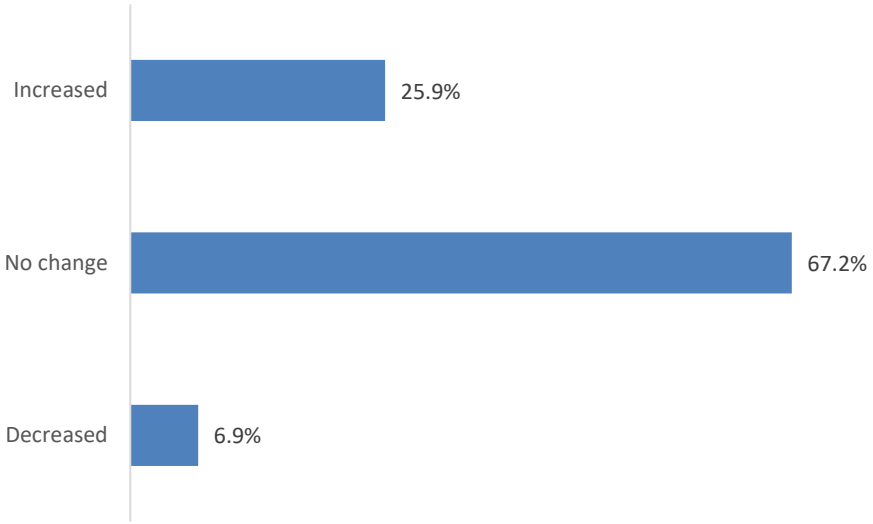
Chart 4 lists the proportion of respondents who reported on net employment impacts as a result of technological changes during the last three years. Two-thirds (67.2%) of businesses claimed no change in employment, another quarter (25.9%) of businesses experienced job increases while very few businesses (6.9%) cited job losses as a result of technological change. These responses are more

or less consistent with the answers provided in Chart 3 regarding expected future employment changes.

Once again, Innovators had far more positive experiences with technology, with 58% reporting job increases, more than twice the average result.

Very large firms (100+ employees) were more likely to report job gains (35%), as well as Professional, Scientific & Technical Services firms (34%), compared to the average response of 26%. While Retail Trade employers are more likely to predict job losses, their experience to-date shows fewer job losses and fewer job gains, with a significant majority (77%) reporting no change. The sector most likely to have experienced job losses has been the Supply Chain sector (14%, double the average figure of 7%).

Chart 4: Net employment change in the company as a result of technological changes

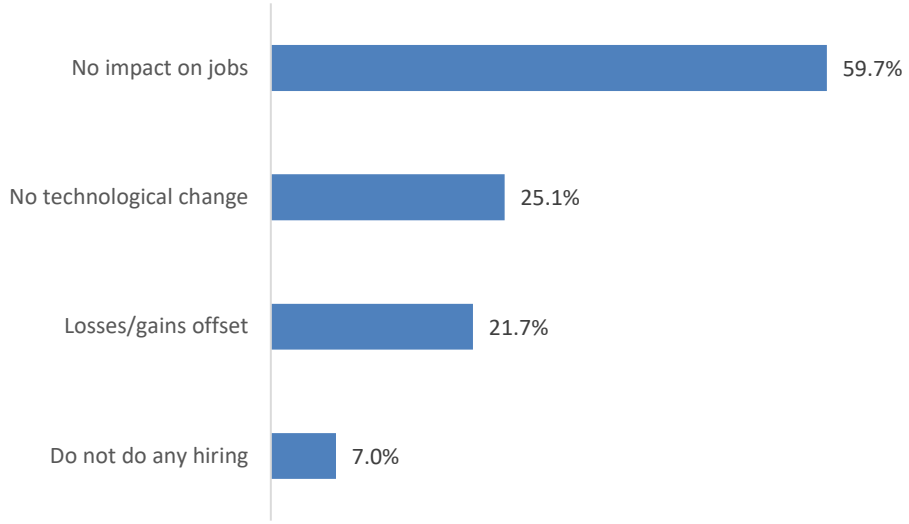


Those employers who indicated no net change in the number of jobs as a result of technological change were further asked to elaborate on their response. By far, the majority (60%) indicated that technological change simply had not had any impact on the number of jobs (Chart 5). Another quarter (25%) explained that they had not experienced any technological change. And for 21% of the respondents, the job losses and job gains offset each other. Only a very small proportion claimed that they had no change on net employment since they generally do not do any hiring.

The Health Care & Social Assistance industry was far more likely to state that technological change had no impact on the number of jobs (76% expressed that view, compared to the average response of 60%). Very large firms (100+ employees) and firms in the Other Knowledge sector were more likely to say that job losses and gains offset each other (both 32%, compared to an average of 22%).

Very small firms (1-4 employees) were more likely to say they did no hiring (15%), as did Professional, Scientific & Technical Services firms (17%).

Chart 5: Reason that net employment has not changed



Impact of technology on in-demand skills

Employers were further probed regarding how technological change was affecting the demand for various kinds of skills. Survey respondents were asked to indicate their level of agreement with each following assessment about the impact of technology advancements on skill demand. Technology advancements will:

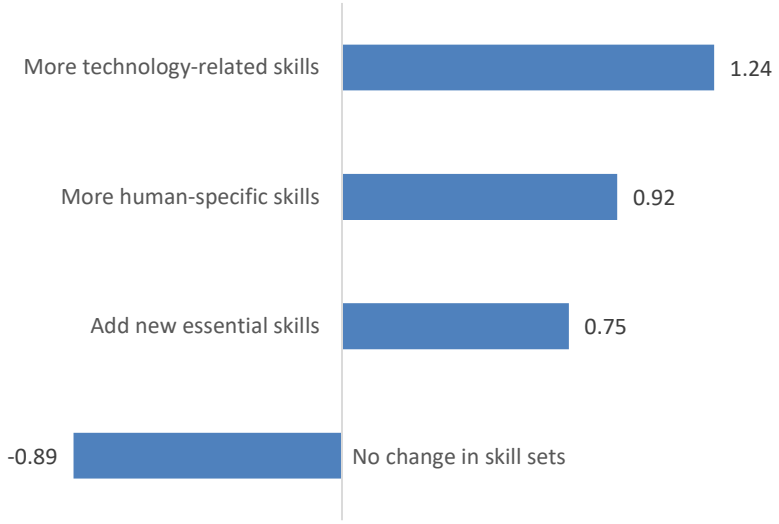
- Reshape the current in-demand skill sets toward technology related skills (e.g. programming, computer science, IT, etc.)
- Not replace current in-demand skill sets for each job, however, will add new essential skills to job requirements (e.g. computer literacy to work with robots or advanced machinery, data analytics, etc.)
- Shift the in-demand skill sets toward human-specific skills (e.g. interpersonal, innovation, negotiation, team work)
- There will be no change in the in-demand skill sets

The level of agreement was scored using the following rating:

- Strongly agree (+2)
- Somewhat agree (+1)
- Somewhat disagree (-1)
- Strongly disagree (-2)

The score for all answers was totaled and divided by the number of respondents for each statement. The scoring is illustrated in Chart 6.

Chart 6: Agreement with statements about technology advancements



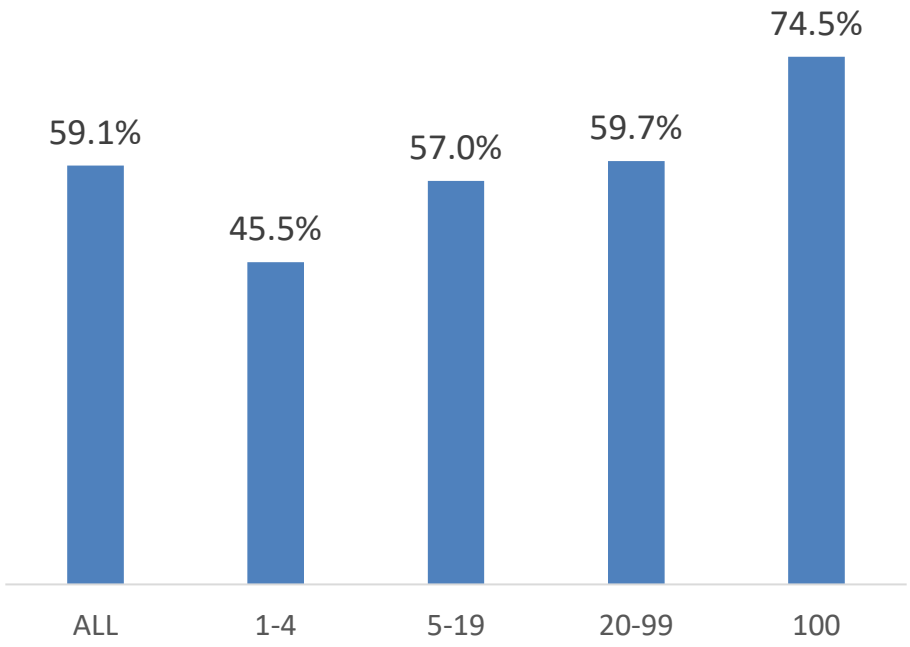
Overall, survey respondents feel that technological change has resulted in more demand for technology-related skills, and secondarily for higher demand for human-specific skills. 76% of respondents disagree with the proposition that there is no change in what skills are in demand. Firms in the Professional, Scientific & Technical Services as well as the Other Knowledge sector most strongly believed that the shift was towards more technology-related skills, and Innovators especially believed this was the case. The category of Innovators also most strongly believed that technology created a higher demand for human-specific skills.

Training in response to technological change

Employers were further asked if their employees had received any special or new training related to the adoption of new technologies over the last 24 months. Six out of ten (59%) said yes, and there was a clear trend (as shown in Chart 7), whereby the larger the firm the higher the proportion that provided training. Innovators especially provided training (82%), as did Early Adopters (69%), while a very large proportion of Laggards (80%) did not provide any such training.

Among specific sectors, Accommodation & Food Services were least likely to provide technology-related training (50%), while the highest proportions of training were found among the Other Knowledge sector (69%) and Educational Services (67%).

Chart 7: Proportion of employers, by size of firm providing specific or new training to employees related to the adoption of new technologies over the last 24 months

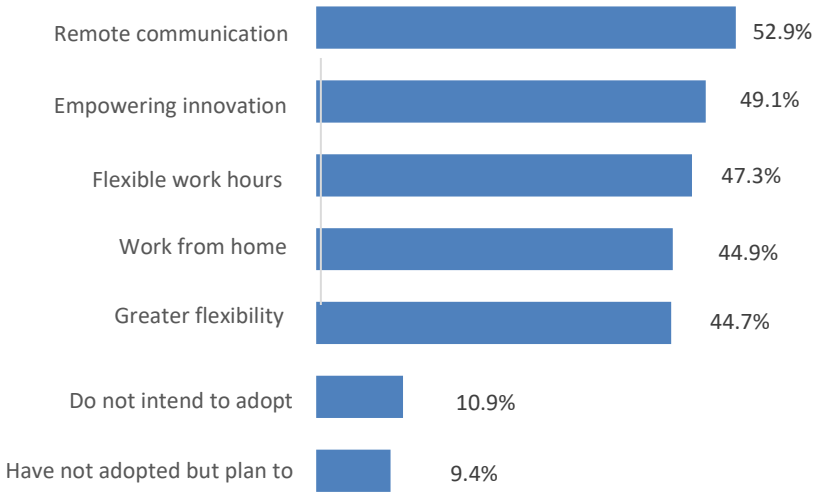


"Peel Halton employers appreciate the value of this survey, as over half (52%) request a copy of the survey results"

Adaptations in response to technological change

Technological changes have been reshaping the work place in different ways. Respondents were asked to select from a list those tactics that they have adopted in response to the impact of technology on the workplace and on how workers carry out their functions. The proportion of respondents who selected each tactic is presented in Chart 8.

Chart 8: Tactics that employers have adopted in response to technology



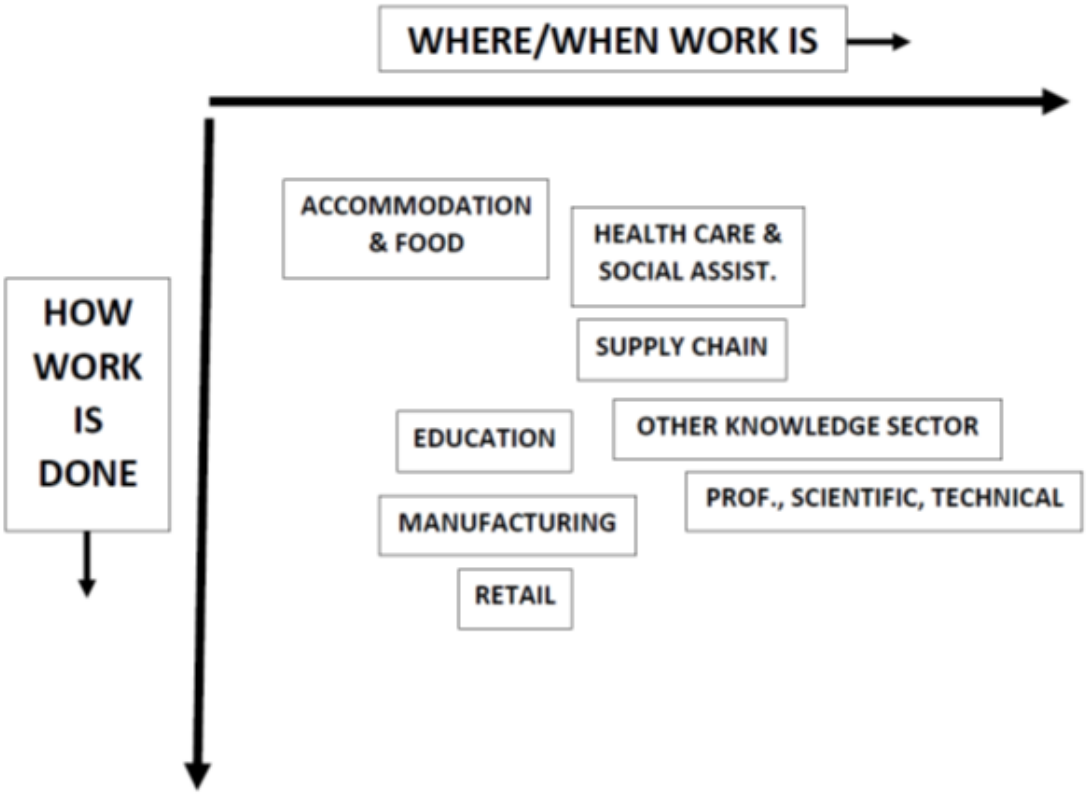
With respect to any given tactic, close to half of employers have adopted each one, with relatively little difference between the options. Innovators and Early Adopters were notably more likely to adopt each of these tactics, while Laggards were far less likely to do so, and to a degree so were those in the Late Majority category.

There were notable differences between the various industry sectors when it came to which tactics they adopted. The tactics could be divided into two broad categories: when and where work is carried out (flexible work hours; work from home; remote communications) and how work is carried out (empowering innovation; greater task flexibility).

Diagram 1 illustrates the comparative position of various industry sectors in terms of adopting tactics in response to technological change. The further out on the axis (further to the right and/or further down), the greater the adoption of these tactics.

Accommodation & Food Services showed the least adoption of these tactics, whether they related to where or when work is performed or how work is done. At the other end, both other Knowledge sector firms and Professional, Scientific & Technical Services establishments scored high on both these measures. Establishments in Educational Services, Retail Trade and Manufacturing scored lower in terms of changes in relation to where and when work was done, but scored high as far as how work was accomplished, whereas Health Care & Social Assistance exhibited the opposite: greater adjustments relating to when and where work is done, but less so in terms of how it is done. Finally, the Supply Chain sector scored in the medium range along both these axes.

Diagram 1: Degree of adoption of different types of tactics



Impact of technology on talent management

The next question asked respondents how technological advancements have changed their company's talent management approach, in particular their reliance on specific strategies, as follows:

- Train current employees to use new technologies or systems
- Hire new employees with hybrid skills (e.g. technical and business skills)
- Hire mature workers who can provide stability in changing times
- Hire "new collar" employees (i.e. individuals with no college diploma/university degree but with good technical skills and knowledge base)
- Hire younger employees who can adapt to changing technology much faster
- Hire new immigrants with the right technical skills, with less emphasis on language skills
- Terminate or re-assign employees whose duties can be carried out via automation
- Make no change to the talent management strategy

Three possible responses were each assigned a numerical value:

- We regularly do this (2)
- We sometimes do this (1)
- We never do this (0)

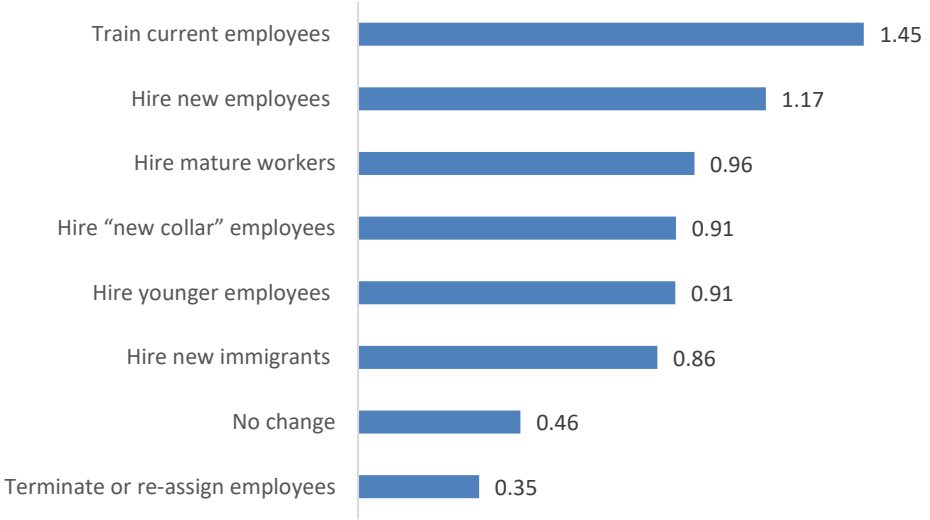
Chart 9 provides the average score for all respondents for each of these strategies. Innovators scored highest across all these strategies and Laggards scored lowest.

The strategy most often adopted is training current employees to use new technologies or systems. The strategy least likely to have been chosen is terminating or re-assigning employees. This accords with the earlier finding that this could be seen to support the earlier finding (Chart 4) that few employers have experienced net job losses over the last three years as a result of technological change.

When it comes to hiring, it would appear that the most attractive characteristic of a job candidate is the presence of hybrid skills (that is, technological skills in addition to the skills related to the business). This is particularly pronounced among large firms (100+ employees), Other Knowledge sector firms and Professional, Scientific & Technical Services establishments.

Some characteristics by sector: Retail Trade firms were more likely to hire “new collar” workers, while large firms (100+ employees) and Manufacturing companies were more likely to hire newcomers with the right technical skills, with less emphasis on language skills.

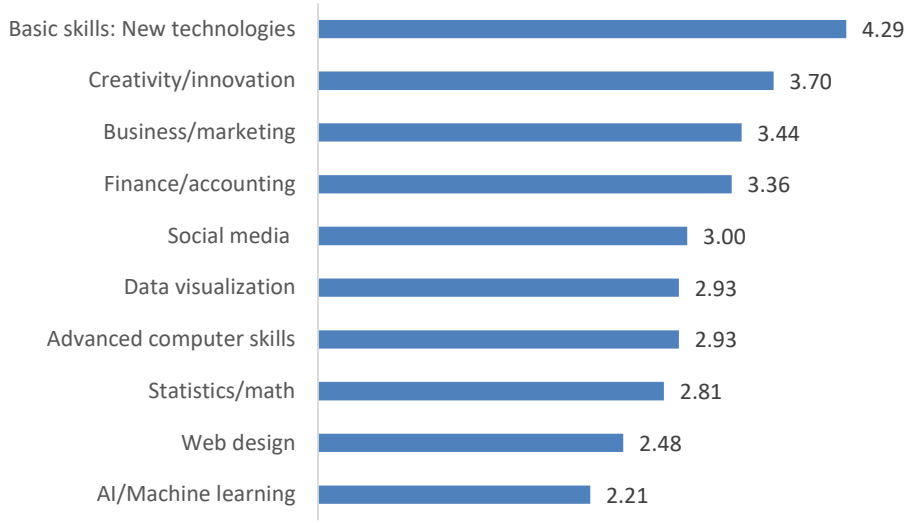
Chart 9: How have technological advancements changed company’s talent management strategy



Ranking of skill sets in response to technological change

Employers were next asked to rank the importance of specific skill sets, having regard for technology advancements and the future skill needs of their companies. Each skill was ranked from 1 to 5, where 5 indicated the highest importance. The average score for each skill has been calculated and presented in Chart 10. By far, basic computer skills (ability to work with new technologies) is the most important, followed by creativity and innovation, then business marketing skills. Once again, Innovators gave the highest scores for each of these skills. The lowest scores were found in two sectors: Accommodation & Food Services and Health Care & Social Assistance.

Chart 10: Considering technology advancements and future skill needs of companies, employers' ranking on the importance of skill sets



Adoption of new strategies as a result of technological change

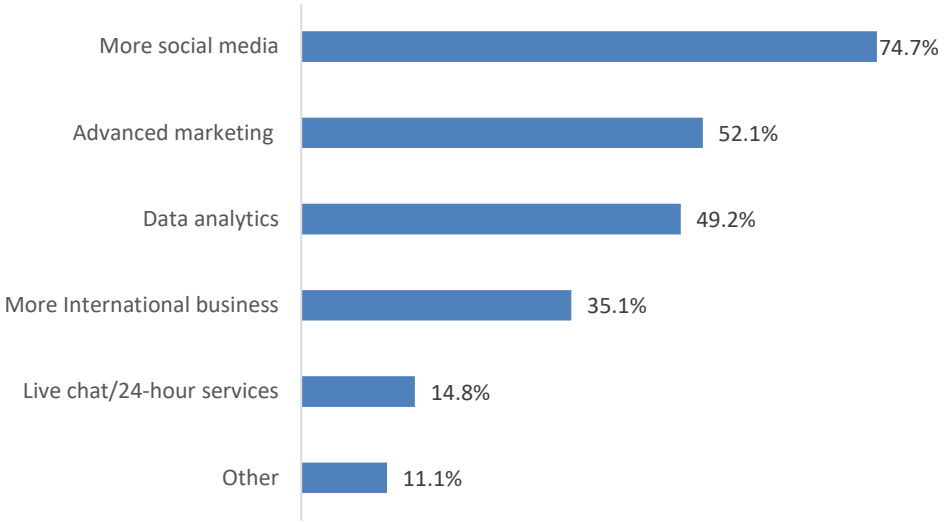
The new technology has created more ways to connect with other businesses and with customers, and the ease of capturing numerous data points makes possible the ability to target marketing to segments of the population or even customize communications with individual clients. Respondents were therefore asked to what extent they are undertaking such richer data collection and/or more sophisticated engagement with their potential markets and other stakeholders. Employers were asked the extent to which they engaged in the following activities:

- Providing live chat and 24-hour customer services
- Utilizing advanced marketing techniques (e.g. AdWords or Search Engine Optimization) to increase traffic
- Increasing international business relationships

- Utilizing data analytics to differentiate various groups of website viewers and to carry out targeted marketing
- Increasing use of social media to enhance connections with customers and businesses

Chart 11 indicates how many employers made use of each of these activities. The most common initiative in this regard was the increased use of social media to enhance connection with customers and businesses. The second and third most adopted practices were applying advanced marketing techniques and utilizing data analytics to differentiate various groups of website viewers and to carry out targeted marketing. Innovators almost always had the highest rates of use of these activities (over 60% for advanced marketing techniques, data analytics and international business relationships). Similarly, Late Majority and Laggard firms scored lower for these items.

Chart 11: Adjustments have been made in the companies in order to keep up with the trend of connected/sharing economy



Overall, the larger the establishment, the great use it made of these various initiatives. In particular, firms with over 100 employees were considerably more likely to make use of data analytics (58%, compared to the average of 52%), international business relationships (50%, compared to the average of 35%) and live chat/24-hour customer service (22% compared to 15%).

There were also differences by industry sectors. Educational Services, Other Knowledge Sector and Retail Trade all made greater use of social media (over 85%). And even though Accommodation & Food Services made less use of the other options, they also scored 81% in their use of social media.

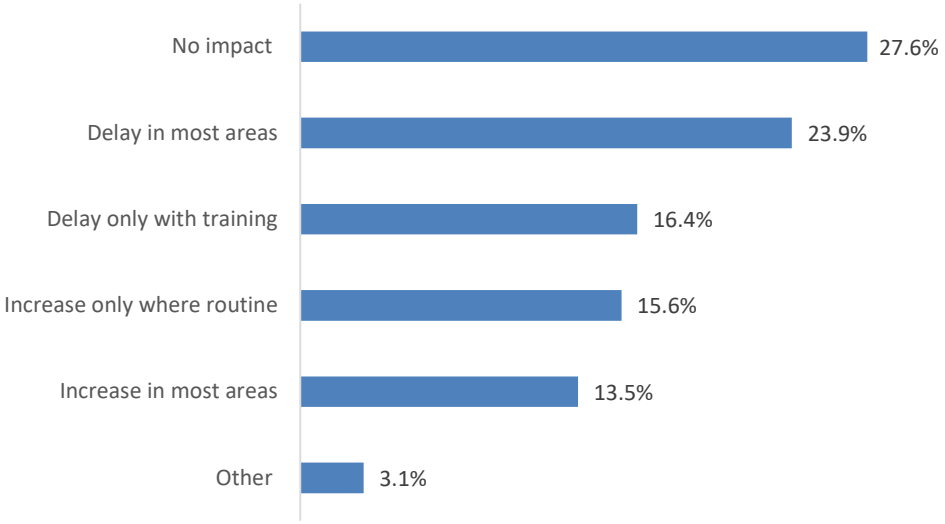
Greater reliance on data analytics was found among Other Knowledge Sector firms (61%) and the Supply Chain sector (59%). Increasing international relationships was cited by Manufacturing firms

(58%) and the Supply Chain sector (51%). Greater reliance on advanced marketing techniques was found with Educational Services (64%) and Retail Trade (58%). Overall, the Other Knowledge sector and Professional, Scientific & Technical Services firms made more use of all these techniques than other sectors.

Impact of technological change on the age of retirement

Employers were asked what they expected the impact of technological change was on the age of retirement (Chart 12). Slightly over a quarter (27.6%) feel technological changes will not impact retirement age. Another quarter (23.9%) believe technological changes will delay retirement age only in occupations or industries that offer on-the-job technological training to maintain the currency of workers' skills. One in six (16.4%) think technological changes will delay retirement age in most occupations or industries. There did not appear to be any clear patterns in these responses when analyzed by sub-categories.

Chart 12: The impact of technological changes on retirement age



Reliance on big data analytics

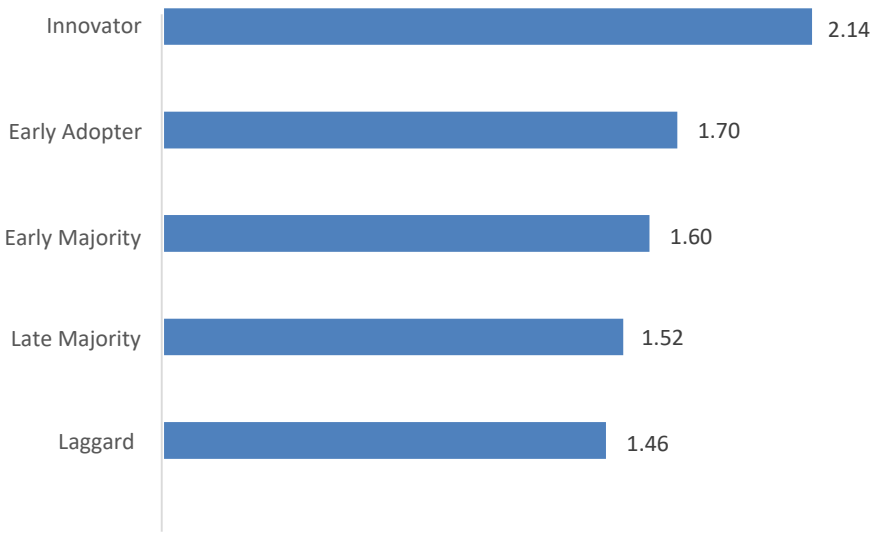
Charts 13-15 illustrate the level of reliance on big data analytics on the part of respondents, by size of firm, industry and the type of companies according to technology adoption life cycle.

The scoring for measuring reliance was as follow:

- High reliance (3)
- Some reliance (2)
- Barely any reliance (1)
- No reliance (0)

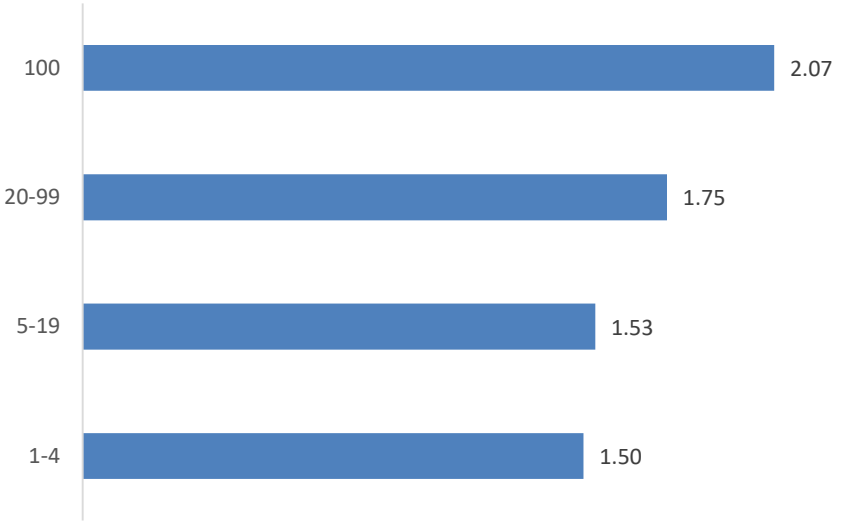
Reliance on big data analytics was very much related to the degree to which a firm was an early or a late adopter (Chart 13).

Chart 13: The level of reliance of business on big data analytics, by type of firm



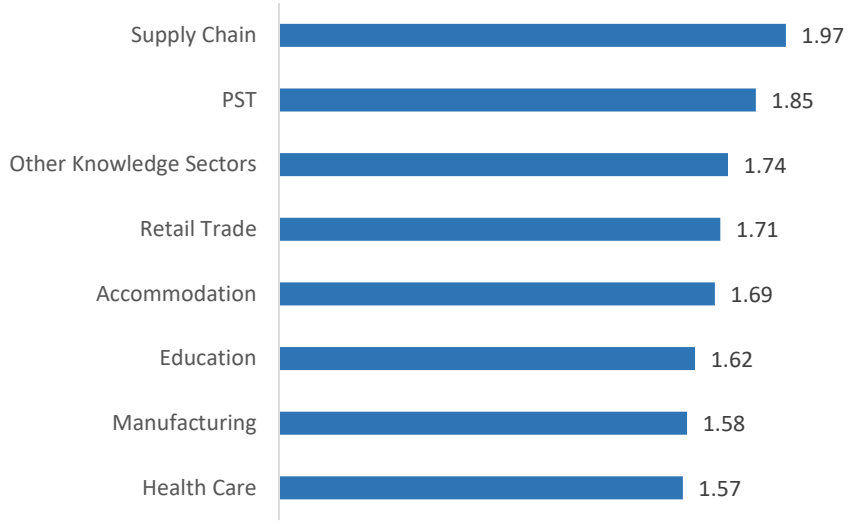
Greater reliance on big data analytics was also correlated to the size of the firms, with larger firms being more likely to make use of big data than smaller firms (Chart 14).

Chart 14: The level of reliance of business on big data analytics, by size of firm



Finally, the Supply Chain, Professional, Scientific & Technical Services and Other Knowledge sectors are the top three industries that rely on big data analytics (Chart 15).

Chart 15: The level of reliance of business on big data analytics, by industry cluster



How can employment service agencies help?

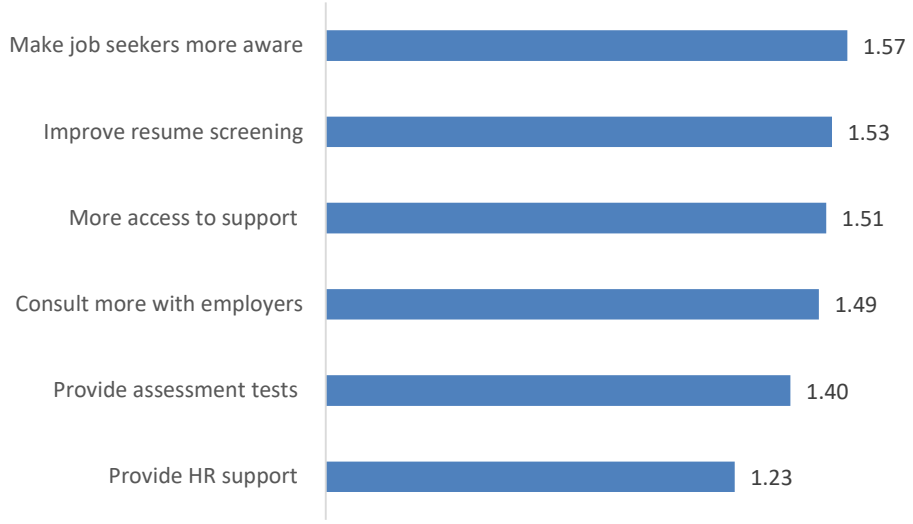
One of the mandates of public employment service agencies is to help employers in recruitment and training. Employers were asked which activities should these agencies focus on if they are to support employers, particularly in the context of technological change. Respondents were asked to assign a level of priority to each of the following options:

- Increase awareness among job seekers about in-demand skill sets/jobs in the near future
- Improve resume screening and provide better matching between job candidates and the job requirements
- Facilitate quick and electronic access for employers to support programs and government funds
- Consult more with employers to better understand their individual needs
- Provide assessment tests to evaluate candidates' expertise in soft or in technical skills
- Provide human resources support for recruitment and training (e.g., on-boarding support)

All the possible responses were each assigned a numerical value:

- High priority (2)
- Some priority (1)
- Not a priority (0)

Chart 16: The possible functions employers think public employment services agencies should emphasize or improve to support adjustment to technological changes



According to employers; employment service agencies should focus on emphasizing in-demand skills/jobs among job seekers.

CONCLUSION

Several clear messages emerge from these survey results:

- While employers see technology causing disruptions to the labour market, they do not feel it will result in a net loss of jobs;
- Technology is changing how work is performed and what skills employers are seeking;
- Those companies that are quicker at embracing technology are not only making earlier use of new technology, they are more likely to adjust their strategies, to provide training to their employees, are more optimistic about the impact of technology on employment, and are more likely to report increase in employment at their firms over the last three years.

The survey confirms what the past history of technological change has taught us that technological change causes disruptions, however the overall impact is productivity growth and an expanding economy, resulting in more jobs. What is necessary is to assist individuals in making the transition from declining occupations and industries to new opportunities in growing sectors and in acquiring and deploying new skills.

Certainly, some of those skills relate to technology itself. Employers were clear that they required workers who knew their way around technology. Presumably this means the entire range of skills, from developing and running programs to applying specific skills (engaging in large data analytics, be familiar with different social media platforms). But it also including enhanced soft skills, those functions that automation still cannot undertake, from being creative to persuading, from working in teams to providing mentoring or personal attention to others.

While the survey has shed light on the dynamic between technology and jobs, it also leaves some questions unanswered, matters that would warrant further investigation, for example:

- While we know that different companies adopt technology at different rates, we don't know why - is it because of the company's culture or is it a response to one's competitive environmemt?
- While there is a correlation between early adopters of technology and an increase in employment among those firms, is there a causal relationship? That is, does early adoption of technology actually lead to an increase in employment among those firms?
- If training was made more available or more accessible, would that increase the rate of technological adoption or is there some other intervention which would cause firms to adopt technology more quickly?

PEEL-HALTON
LOCAL EMPLOYMENT
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This report was prepared under the direction of the Peel Halton Workforce Development Group in association with the Peel Halton Local Employment Planning Council. For more information, please visit www.peelhaltonlepc.com