**Analysis in Brief**

# Analysis on expected use of artificial intelligence by businesses in Canada, third quarter of 2024

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# Analysis on expected use of artificial intelligence by businesses in Canada, third quarter of 2024

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The continuing adoption of artificial intelligence (AI) is anticipated due to its transformative potential across industries. Consequently, there is growing interest in understanding how and when businesses plan to implement AI capabilities. By the second quarter of 2024, 6.1%[1] of businesses had been using AI in producing goods or delivering services over the previous 12 months. This reflects the increasing recognition of AI's ability to enhance operational efficiencies and drive innovation.

From the beginning of July to early August 2024, Statistics Canada conducted the Canadian Survey on Business Conditions to collect information on the environment businesses are currently operating in and their expectations moving forward. This survey iteration introduced a new set of questions aimed at examining how businesses in Canada plan to use AI for producing goods or delivering services over the next 12 months, highlighting its potential impact across various industries.

This article expands on analysis from the second quarter of 2024,[2] which explored how businesses used AI over the past 12 months.[3] That report detailed the types of AI used by industry, as well as the impact of AI use on employee tasks and employment levels. This article shifts the focus to forward-looking questions, exploring how businesses plan to use AI over the next 12 months and the types of AI they intend to use when producing goods or delivering services. It also explores how businesses expect AI to affect their employment levels, what operational changes they anticipate over the next 12 months and why some are choosing not to use AI.

## The majority of businesses reported that artificial intelligence is not relevant to operations

Over the next 12 months, 10.6% of all businesses plan to use AI for producing goods or delivering services, with varying levels of uptake across industries. Leading the way among businesses that plan to use AI over the next 12 months are those in information and cultural industries (29.7%); professional, scientific and technical services (24.6%); and arts, entertainment and recreation (18.5%). In contrast, the majority of businesses (71.8%) reported not having plans to use AI, while 17.6% remain unsure about their AI use over the next 12 months.

Of businesses that do not plan to use AI to produce goods or deliver services over the next 12 months, almost three-quarters (74.2%) reported that this was because AI is not relevant to their current operations. Moreover, 9.3% reported a lack of knowledge on AI capabilities, 8.8% reported that the technology is not mature enough yet and 6.8% reported concerns about privacy or security as reasons why they do not plan to use AI.

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1. Statistics Canada. 2024. Table 33-10-0825-Use of artificial intelligence by businesses and organizations in producing goods or delivering services over the last 12 months, second quarter of 2024 [Data table].
2. Statistics Canada. 2024. Analysis on artificial intelligence use by businesses in Canada, second quarter of 2024.
3. Results from the second quarter of 2024 reflect businesses that have used AI in the past 12 months, while results from the third quarter of 2024 reflect businesses that plan to implement AI in the next 12 months. The Canadian Survey on Business Conditions employs a cross-sectional sampling approach each quarter, surveying different businesses at a single point in time. As such, the sample composition changed from the second quarter to the third, and direct comparisons between quarters cannot be made.

**Table 1**

**Reasons businesses do not plan to use artificial intelligence in producing goods or delivering services over the next 12 months, third quarter of 2024**

| | Percent of businesses among those that do not plan to use artificial intelligence (AI) over the next 12 months |
|---|---|
| Lack of knowledge on the capabilities of AI | 9.3 |
| AI is not a mature enough technology yet | 8.8 |
| Concerns about privacy or security | 6.8 |
| Too expensive | 6.1 |
| Lack of skilled workforce | 2.3 |
| Concerns about bias | 1.7 |
| Lack of required data | 1.6 |
| Laws and regulations prevent or restrict use of AI | 1.4 |
| Previous or current use of AI did not meet expectations | 1.0 |
| Other reason | 3.8 |
| AI is not relevant to the goods produced or services delivered | 74.2 |

**Notes:** The results in this table are based on the survey that was in collection from July 2 to August 6, 2024, and respondents were asked what their expectations would be over the next 12-month period. As a result, those 12 months could range from July 2, 2024, to August 6, 2025, depending on when the business responded.
**Source:** Canadian Survey on Business Conditions, third quarter of 2024 (Table 33-10-0879-01).

## Text analytics expected to be the most common artificial intelligence application over the next 12 months

AI can be applied in numerous ways, ranging from enhancing data analytics to refining machine learning models. Among businesses that reported plans to use AI in producing goods or delivering services over the next 12 months (10.6%), over one-quarter plan to use AI for either text analytics (27.2%) or data analytics (26.7%). These uses were followed by marketing automation (19.4%), machine learning (18.8%), virtual agents or chatbots (18.7%) and natural language processing (15.4%). Among the businesses that were already using AI to produce goods or deliver services in the second quarter of 2024 (6.1% of all businesses), the most common use of AI was natural language processing, reported by over one-quarter (28.9%) of businesses.

In the second quarter of 2024, the uses and applications of AI varied across industries. A similar pattern was found in the third quarter of 2024, with 29.7% of businesses in information and cultural industries planning to use AI over the next 12 months, followed by 24.6% of those in professional, scientific and technical services and 18.5% of those in arts, entertainment and recreation. For businesses in information and cultural industries that plan to use AI, data analytics (36.9%) is the most common application, followed by marketing automation (32.9%) and machine learning (30.8%). Similarly, among businesses in professional, scientific, and technical services planning to use AI, the most common anticipated use of AI is also data analytics, reported by 34.9% of these businesses, followed by both machine learning (33.0%) and text analytics (33.0%). Of businesses in arts, entertainment and recreation that plan to use AI, over one-quarter (26.3%) plan to use it for virtual agents or chatbots, followed by both data analytics (18.8%) and marketing automation (18.8%).

**Table 2**

**Planned use of artificial intelligence in producing goods or delivering services over the next 12 months, by selected industry, third quarter of 2024**

| Type of artificial intelligence (AI) application planned for use | All industries | Information and cultural industries | Professional, scientific and technical services | Arts, entertainment and recreation |
|---|---|---|---|---|
| | | percent of businesses | | |
| **AI use planned in producing goods or delivering services** | **10.6** | **29.7** | **24.6** | **18.5** |
| Text analytics using AI | 27.2 | 29.7 | 33.0 | 16.4 |
| Data analytics using AI | 26.7 | 36.9 | 34.9 | 18.8 |
| Marketing automation using AI | 19.4 | 32.9 | 18.8 | 18.8 |
| Machine learning | 18.8 | 30.8 | 33.0 | 6.3 |
| Virtual agents or chatbots | 18.7 | 16.1 | 17.6 | 26.3 |
| Natural language processing | 15.4 | 17.7 | 20.3 | 10.2 |
| Speech or voice recognition using AI | 11.9 | 9.7 | 16.6 | 7.1 |
| Recommendation systems using AI | 11.7 | 25.8 | 17.1 | 6.8 |
| Large language models | 9.3 | 15.3 | 14.0 | 6.0 |
| Image or pattern recognition | 7.5 | 22.9 | 8.6 | 8.6 |

**Table 2**
**Planned use of artificial intelligence in producing goods or delivering services over the next 12 months, by selected industry, third quarter of 2024**

| Type of artificial intelligence (AI) application planned for use | All industries | Information and cultural industries | Professional, scientific and technical services | Arts, entertainment and recreation |
|---|---|---|---|---|
| | | percent of businesses | | |
| Decision-making systems based on AI | 6.3 | 11.6 | 8.2 | 1.1 |
| Robotics process automation | 6.2 | 11.8 | 6.4 | 5.3 |
| Deep learning | 5.3 | 10.9 | 12.1 | 0.9 |
| Machine or computer vision | 3.2 | 5.0 | 4.2 | 1.9 |
| Neural networks | 2.6 | 8.7 | 5.4 | 0.0 |
| Biometrics | 1.9 | 4.4 | 1.4 | 0.2 |
| Augmented reality | 1.3 | 6.7 | 1.2 | 2.8 |
| Other | 6.2 | 7.7 | 5.7 | 14.0 |

**Notes:** The results in this table are based on the survey that was in collection from July 2 to August 6, 2024, and respondents were asked what their expectations would be over the next 12-month period. As a result, those 12 months could range from July 2, 2024, to August 6, 2025, depending on when the business responded.
**Source:** Canadian Survey on Business Conditions, third quarter of 2024 (Table 33-10-0878-01).

## Larger businesses are more likely to have plans to use artificial intelligence over the next 12 months

Larger businesses may be better positioned to invest in AI due to their financial resources and capacity to handle complex operations. While 10.6% of all businesses plan to use AI over the next 12 months, those with 100 or more employees were more likely to report such plans (20.0%), compared with 12.6% of businesses with 20 to 99 employees, 10.0% of those with 5 to 19 employees and 10.2% of those with 1 to 4 employees.

For larger businesses with 100 or more employees that plan to use AI in producing goods or delivering services, 28.5% plan to use AI for data analytics, followed by machine learning (27.7%) and robotics process automation (20.0%). By contrast, among smaller businesses with 1 to 4 employees that plan to use AI, nearly one-third (31.6%) reported plans to use text analytics.

**Table 3**
**Planned use of artificial intelligence in producing goods or delivering services over the next 12 months, by business employment size, third quarter of 2024**

| Type of artificial intelligence (AI) application planned for use | All employment sizes | 1 to 4 employees | 5 to 19 employees | 20 to 99 employees | 100 or more employees |
|---|---|---|---|---|---|
| | | percent of businesses | | | |
| **AI use planned in producing goods or delivering services** | **10.6** | **10.2** | **10.0** | **12.6** | **20.0** |
| Text analytics using AI | 27.2 | 31.6 | 21.3 | 25.4 | 17.5 |
| Data analytics using AI | 26.7 | 24.7 | 27.4 | 32.2 | 28.5 |
| Marketing automation using AI | 19.4 | 18.7 | 22.0 | 20.0 | 4.7 |
| Machine learning | 18.8 | 21.4 | 11.8 | 21.3 | 27.7 |
| Virtual agents or chatbots | 18.7 | 13.1 | 26.5 | 25.3 | 11.2 |
| Natural language processing | 15.4 | 15.2 | 18.4 | 12.8 | 4.2 |
| Speech or voice recognition using AI | 11.9 | 13.6 | 11.5 | 8.6 | 3.5 |
| Recommendation systems using AI | 11.7 | 15.3 | 5.4 | 11.6 | 9.0 |
| Large language models | 9.3 | 10.2 | 6.3 | 12.5 | 9.0 |
| Image or pattern recognition | 7.5 | 7.8 | 6.8 | 7.9 | 7.6 |
| Decision-making systems based on AI | 6.3 | 5.8 | 3.7 | 14.2 | 5.9 |
| Robotics process automation | 6.2 | 3.6 | 6.6 | 12.3 | 20.0 |
| Deep learning | 5.3 | 5.5 | 5.0 | 6.7 | 0.3 |
| Machine or computer vision | 3.2 | 2.9 | 4.0 | 2.4 | 6.1 |
| Neural networks | 2.6 | 1.6 | 3.2 | 6.1 | 0.2 |
| Biometrics | 1.9 | 2.1 | 1.1 | 2.8 | 1.9 |
| Augmented reality | 1.3 | 1.3 | 1.6 | 1.4 | 0.3 |
| Other | 6.2 | 5.4 | 9.8 | 3.0 | 1.1 |

**Notes:** The results in this table are based on the survey that was in collection from July 2 to August 6, 2024, and respondents were asked what their expectations would be over the next 12-month period. As a result, those 12 months could range from July 2, 2024, to August 6, 2025, depending on when the business responded.
**Source:** Canadian Survey on Business Conditions, third quarter of 2024 (Table 33-10-0878-01).

## Most businesses expect no change to employment levels after implementing artificial intelligence

Despite concerns about job displacement related to AI, among the businesses that plan to use AI to produce goods or deliver services over the next 12 months, most (69.2%) expect no change to their employment levels, while 9.4% expect a decrease. This is consistent with findings from the second quarter of 2024, when the majority of businesses (84.9%) reported no significant change in their employment levels following AI implementation.

**Chart 1**
**Business' expectations of the impact of artificial intelligence on total employment, third quarter of 2024**
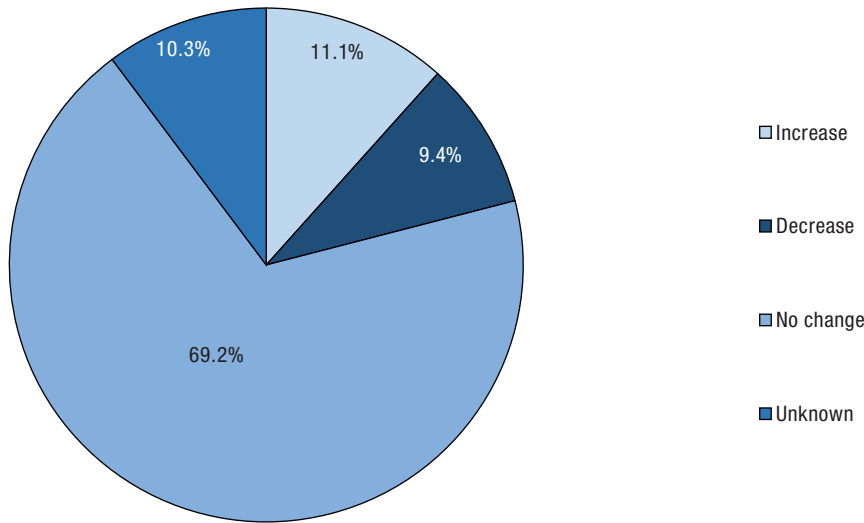


**Note:** The results in this table are based on the survey that was in collection from July 2 to August 6, 2024, and respondents were asked what their expectations would be over the next 12-month period. As a result, those 12 months could range from July 2, 2024, to August 6, 2025, depending on when the business responded.
**Source:** Canadian Survey on Business Conditions, third quarter of 2024 (Table 33-10-0880-01).

When examining business size, 11.8% of businesses with 100 or more employees anticipate a decrease in employment after implementing AI, compared with 10.4% of businesses with 20 to 99 employees, 10.1% of businesses with 5 to 19 employees and 8.5% of businesses with 1 to 4 employees.

By contrast, smaller businesses anticipate more job growth, with 18.6% of those with 20 to 99 employees, 10.9% of those with 1 to 4 employees and 9.0% of those with 5 to 19 employees expecting an increase in employment after implementing AI in the next 12 months. Conversely, 1.8% of businesses with 100 or more employees expect an increase in their employment levels.

## More businesses intend to train employees in artificial intelligence use

AI implementation has the potential to alter processes and workflows within business operations. Businesses that reported plans to use AI in producing goods or delivering services over the next 12 months were asked what changes they expect to make when AI is implemented. Nearly half (48.7%) of these businesses intend to train their current staff to use the new technology. This finding is consistent with results from the second quarter of 2024, when the most common adjustment among businesses that had implemented AI was training current staff in AI (38.5%).

Other changes expected after implementing AI over the next 12 months are developing new workflows (43.7%), purchasing cloud services or cloud storage (25.2%) and purchasing computing power or specialized equipment (18.6%). Conversely, hiring staff trained in AI was the least common expected change reported by businesses who plan to use AI to produce goods or deliver services, with 10.2% expecting this change.

## Methodology

From July 2 to August 6, 2024, representatives from businesses across Canada were invited to complete an online questionnaire about business conditions and business expectations moving forward. The Canadian Survey on Business Conditions uses a stratified random sample of business establishments with employees classified by geography, industry sector and size. Proportions are estimated using survey weights ensuring that the survey results are representative of all employer businesses in Canada. The total sample size for this iteration of the survey was 21,049, and results are based on responses from a total of 9,031 businesses or organizations.

## References

Statistics Canada. 2024. Canadian Survey on Business Conditions, third quarter of 2024.