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Automation and AI: What Does Adoption Look Like for Fifth District Businesses?

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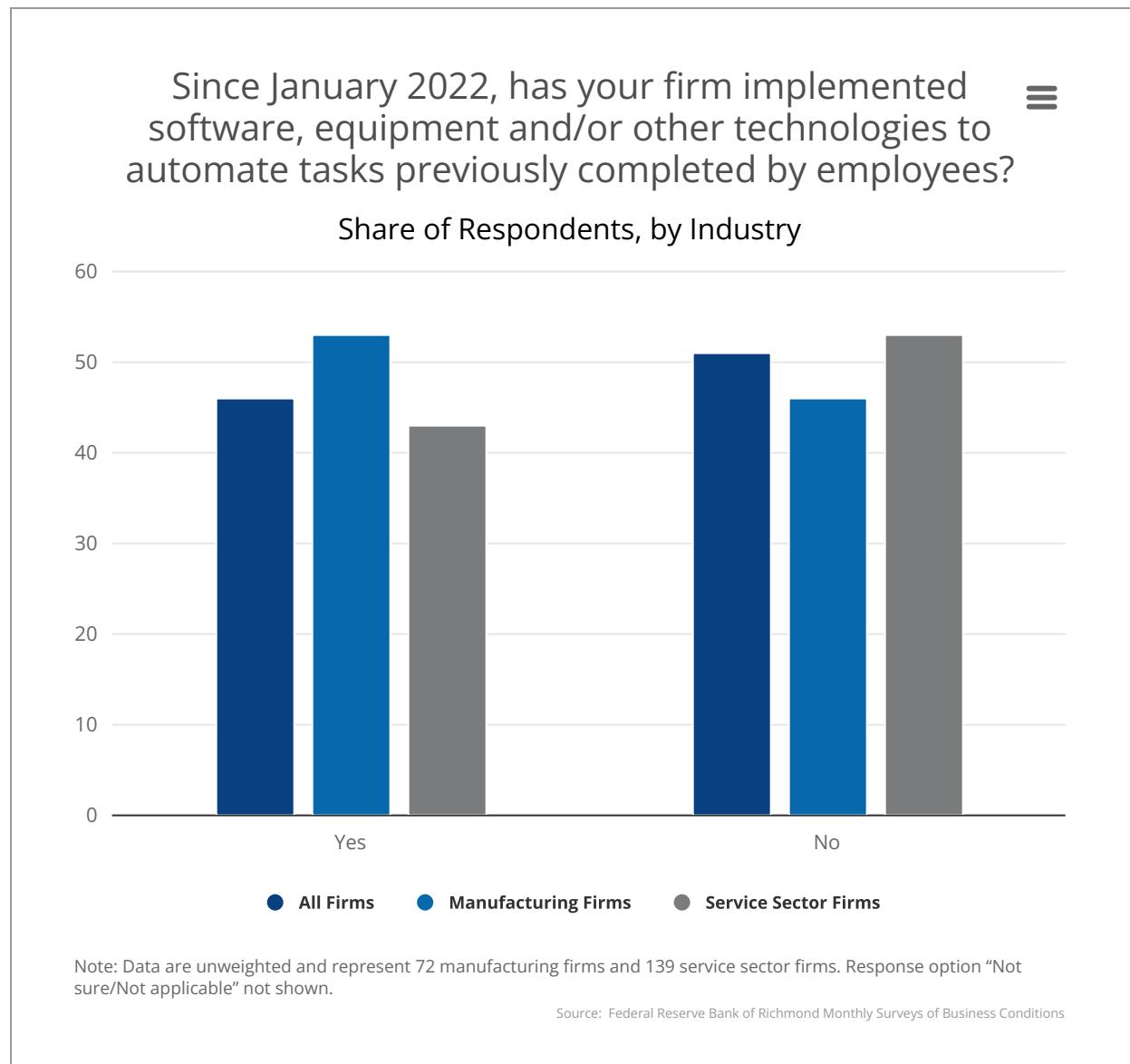
Technological developments shift the kinds of skills needed in the labor force. From innovations in agriculture to electricity to the personal computer to the internet, technology has shaped the way we work and the types of workers we need to produce the goods and provide the services that consumers demand. The tight labor market of the last few years has provided employers with further incentive to find ways to use automation to increase the productivity of existing workers and even reduce the need to hire more. The opportunities of artificial intelligence (AI), particularly generative AI, are potentially even more widespread.

Before automation or AI can provide any improvements in labor or total factor productivity, they have to be adopted. A recent [survey of financial leaders](#) indicated 60 percent of firms (and almost all large firms) have implemented software, equipment, or technology in the last year to automate tasks previously completed by employees, and of those, almost 40 percent reported specifically using AI technology. What's more, a much larger share of those planning automation in the next 12 months intend to engage AI tools. Between May 30 and June 19, we asked our Fifth District businesses if and why they were automating and using generative AI. Over the past two years, fewer than half of firms have engaged in new automation, and about 35 percent of those firms have implemented AI. On the other hand, more than half of the firms that intend to use automation over the next two years expect to implement AI in their work.

Firms Split on Automation Adoption

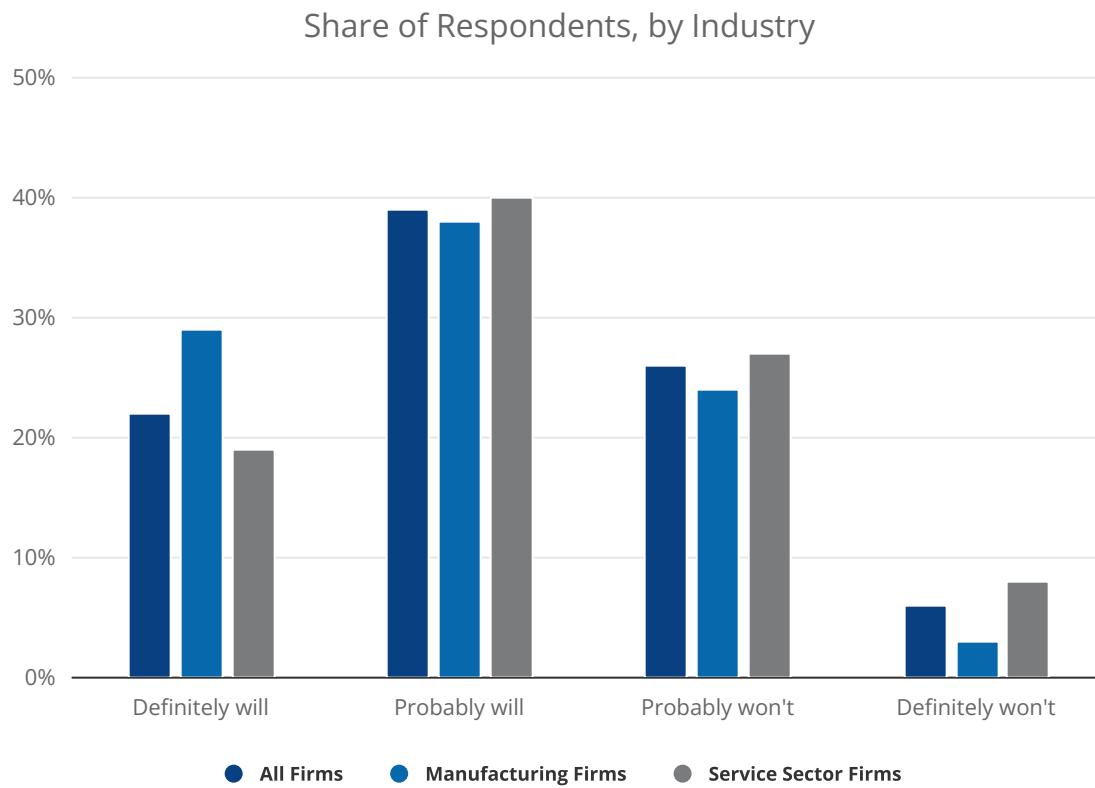
Of the Fifth District firms that responded, 46 percent had automated tasks in the past two years while 51 percent had not (the remainder were unsure). Manufacturing firms were more likely than service sector firms to have

implemented automation (53 percent compared to 43 percent).



When asked about their future plans to automate tasks, a majority of respondents indicated that they plan to automate tasks within the next two years. About three in five firms indicated that they "definitely" or "probably" will automate tasks in the future. Perhaps unsurprisingly, there is a relationship between firms' automation to date and their plans for future automation. Those that have already automated tasks are more likely to indicate that they will continue to automate in the future; those that have not are more likely to say that they do not plan to automate within the next two years. That said, there is a portion of respondents (20 percent) who have not yet implemented task automation but plan to in the near future.

Over the next two years, does your firm plan on implementing software, equipment and/or other technologies to automate tasks previously completed by employees?



Note: Data are unweighted and represent 72 manufacturing firms and 139 service sector firms. Response option "Not sure" not shown.

Source: Federal Reserve Bank of Richmond Monthly Surveys of Business Conditions

What do we know about the reasons that firms are automating or planning to automate? Overall, businesses appear to be approaching automation as a way to complement, rather than to replace, workers. Eighty-five percent of the respondent firms that automated tasks did so to enhance business processes. Increasing the quantity and quality of employee output were also top motivators. Although we hear anecdotally about the tight labor market as an incentive for automation, these survey results indicate that businesses were somewhat less likely to automate tasks in order to reduce staffing or labor costs or, particularly, because they were unable to find workers with the required skill sets.

Reasons for Automating Tasks Previously Completed by Employees

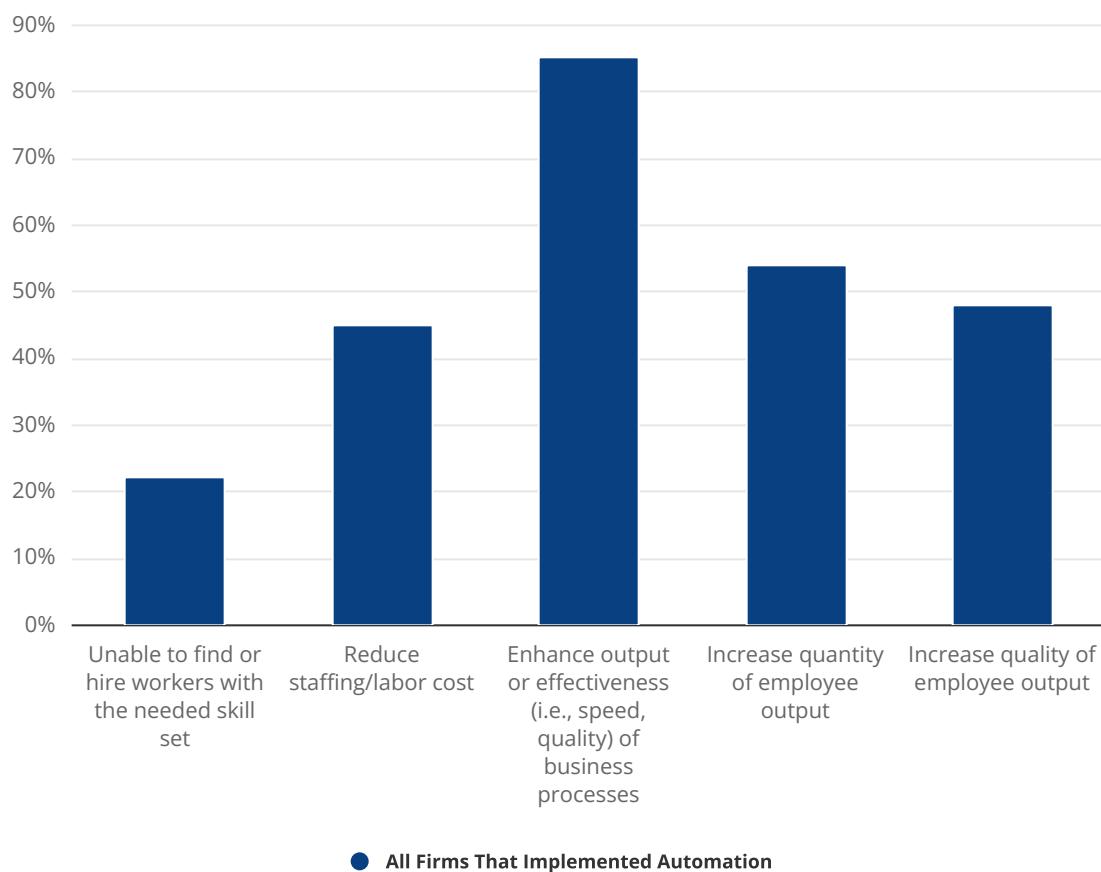
Since January 2022

Over the Next Two Years

Why did your firm decide to automate tasks previously completed by employees?



Share of Respondents



Note: Data are unweighted and represent 98 firms. Response option "Other" not shown. Respondents could select multiple options.

Source: Federal Reserve Bank of Richmond Monthly Surveys of Business Conditions

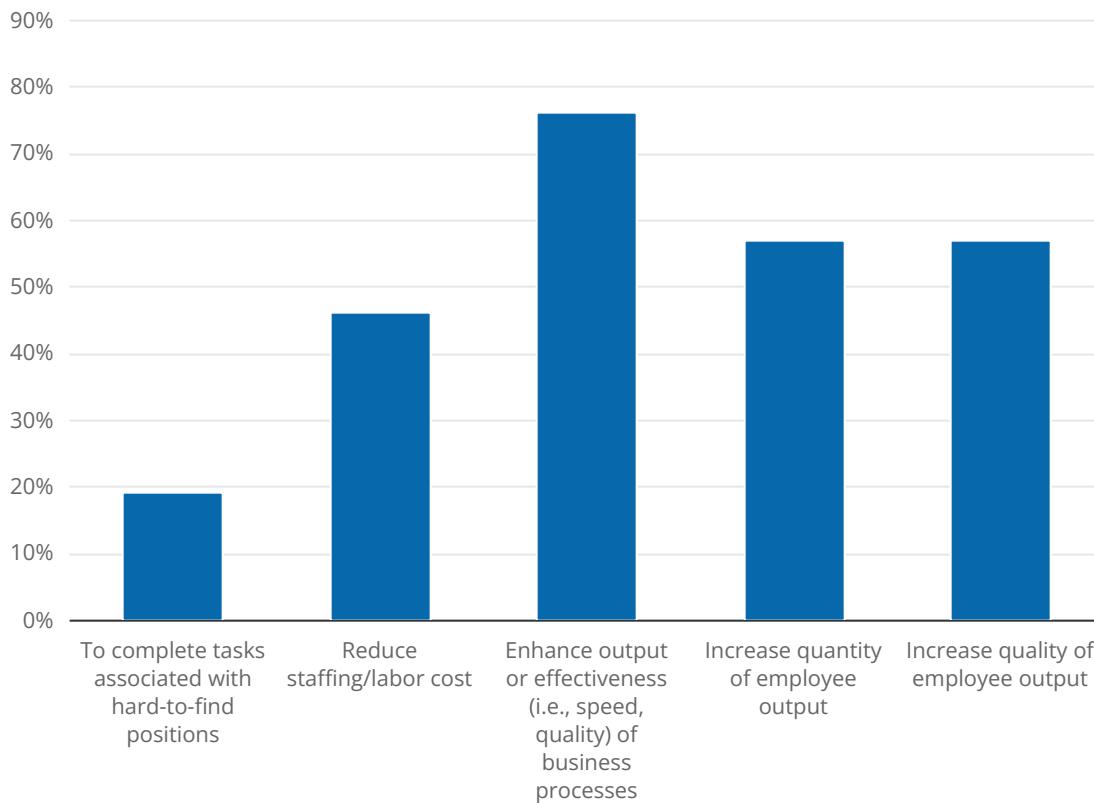
Within Automation, Some Firms Move on AI

The survey respondents who have or plan to pursue automation were asked additional questions to gauge their current or planned use of AI. About one-third of these firms indicated that their automation since 2022 has involved AI. Interestingly, although service sector firms were less likely to automate at all, they

Why does your firm anticipate automating tasks previously completed by employees?



Share of Respondents

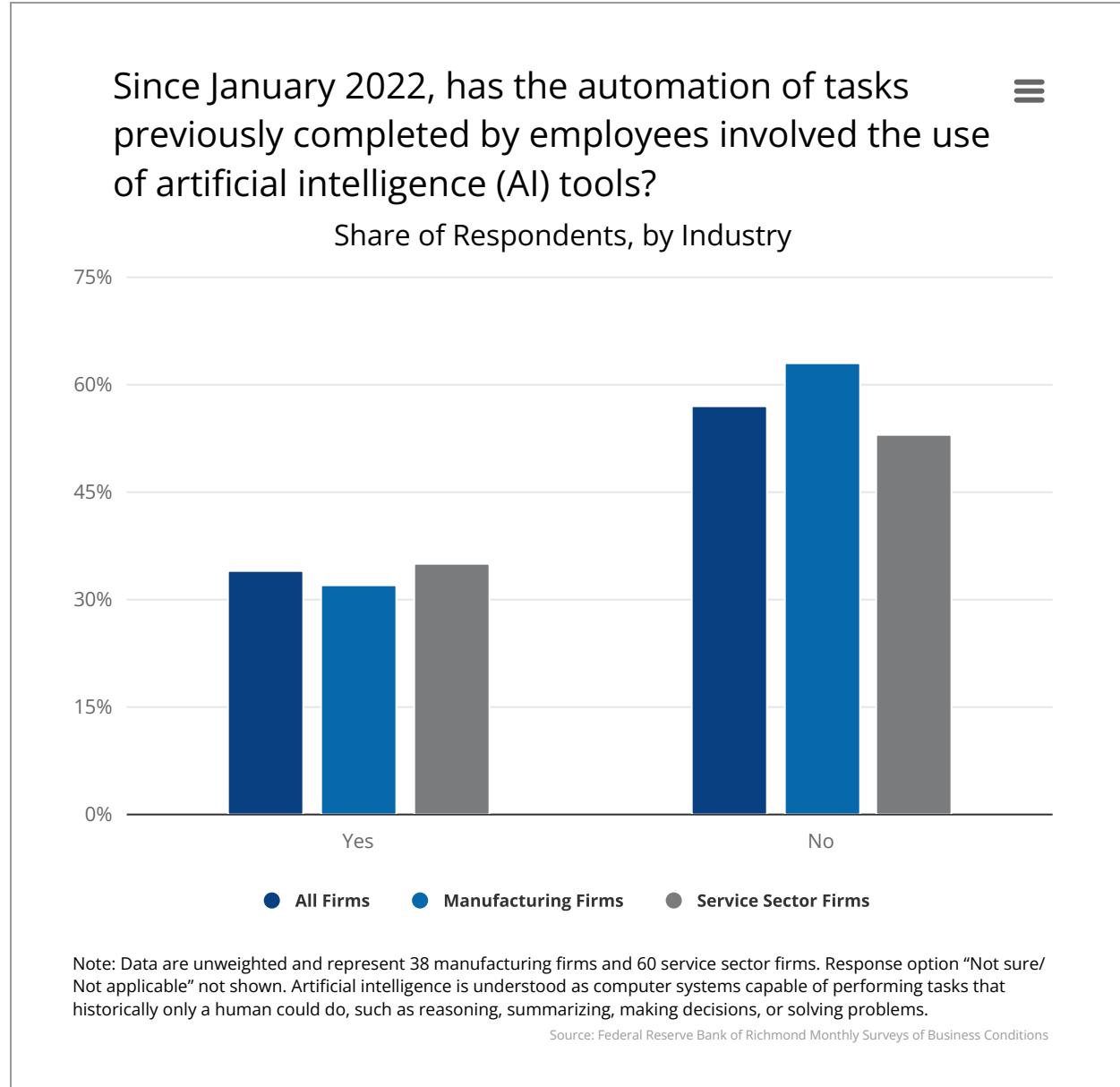


● All Firms That Definitely or Probably Will Implement Automation

Note: Data are unweighted and represent 129 firms. Response option "Other" not shown. Respondents could select multiple options.

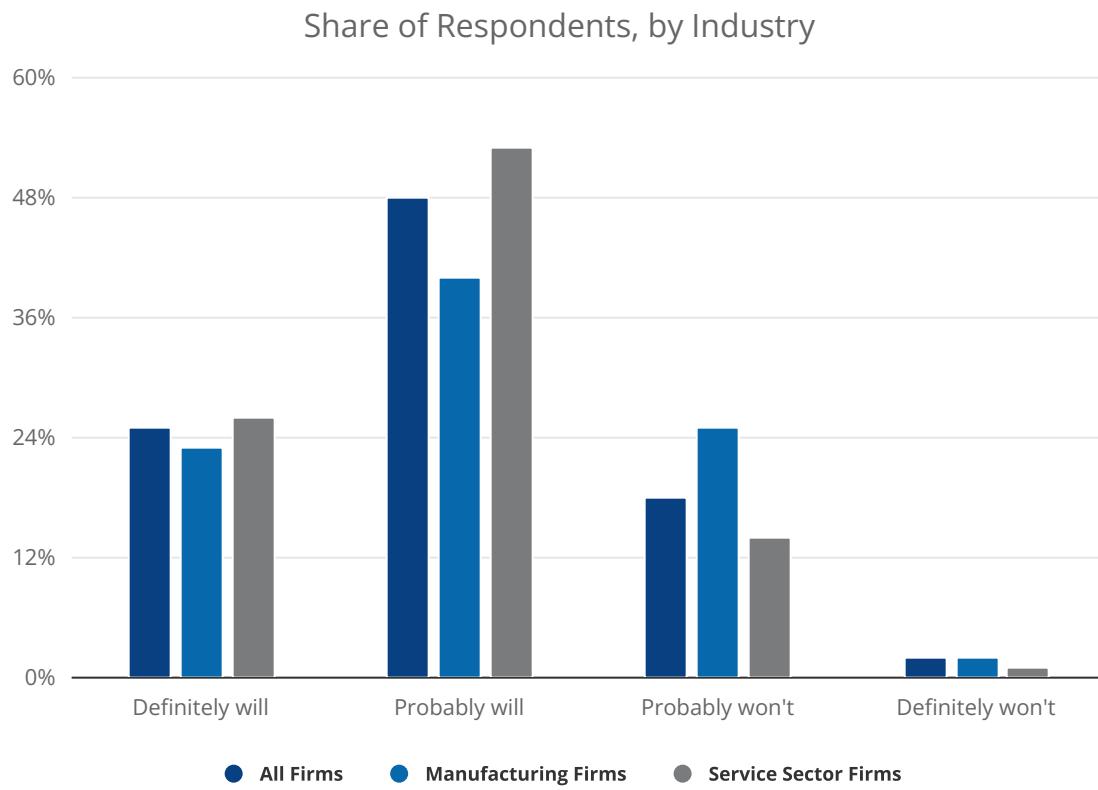
Source: Federal Reserve Bank of Richmond Monthly Surveys of Business Conditions

were slightly more likely than manufacturing firms to say that their automation involved AI (35 percent compared to 32 percent). While small, this difference may be suggestive of the ways that existing AI tools can complement service-oriented tasks.



Nearly three-fourths of firms that have already pursued automation plan to incorporate AI tools in the future. Again, we see a slightly higher rate of planned adoption among service sector firms.

Over the next two years, will the automation of tasks 



Note: Data are unweighted and represent 48 manufacturing firms and 81 service sector firms. Response option "Not sure" not shown. Artificial intelligence is understood as computer systems capable of performing tasks that historically only a human could do, such as reasoning, summarizing, making decisions, or solving problems.

Source: Federal Reserve Bank of Richmond Monthly Surveys of Business Conditions

Conclusion

Firms continue to innovate and automate, although responses from Fifth District business respondents illustrate that we are in the early days of AI adoption. Firms are split in their intent around automation, which may or may not be a pursuit that ultimately integrates AI tools. As new technology develops, business surveys will continue to be a core source of information to help measure and understand the extent of automation and AI adoption and its economic implications.

Views expressed are those of the author(s) and do not necessarily reflect those of the Federal Reserve Bank of Richmond or the Federal Reserve System.

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