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Coexisting with AI in the workplace: from RPA to DX

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Executive Summary



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Effective use of AI can help alleviate impending labor shortages facing Japan and also contribute to reforming Japan's workaholic office culture. AI's impact will reverberate across essentially all white-collar occupations. When deciding how to incorporate AI into their operations, companies should set their sights on digital transformation (DX) that creates new jobs for humans through reengineering task flows.

AI seen as solution to labor shortages

Japan's labor force will have 7.8 million fewer workers in 2030 than it did in 2014. Automation technologies as exemplified by AI are expected to alleviate the severe labor shortages facing Japan. However, a joint study conducted by NRI and the University of Oxford found that workers whose jobs are automatable account for, at most, only 49% of the labor force. This 49% represents jobs for which automation is technologically feasible. The subset of jobs that are actually automatable in practice is even smaller. In other words, AI and robotics alone cannot fully resolve Japan's labor shortages.

To keep the Japanese economy thriving amid population shrinkage, we humans will have to continue to play the leading role in the workplace while innovating to maximally utilize AI refined through deep learning. The keys to navigating such an AI era are coexistence with AI, white-collar automation and business process reengineering.

Strategic coexistence between AI and humans

AI is not a panacea, at least for the foreseeable future. It excels at certain tasks but fails at others. For example, AI itself cannot determine the optimal course of action in complex situations involving trade-offs. It likewise has difficulty with sophisticated communication such as playing mind games against an opponent or establishing rapport with someone. Additionally, AI cannot deal well with unprecedented discontinuous changes. In such situations, AI is no match for an intelligent human.

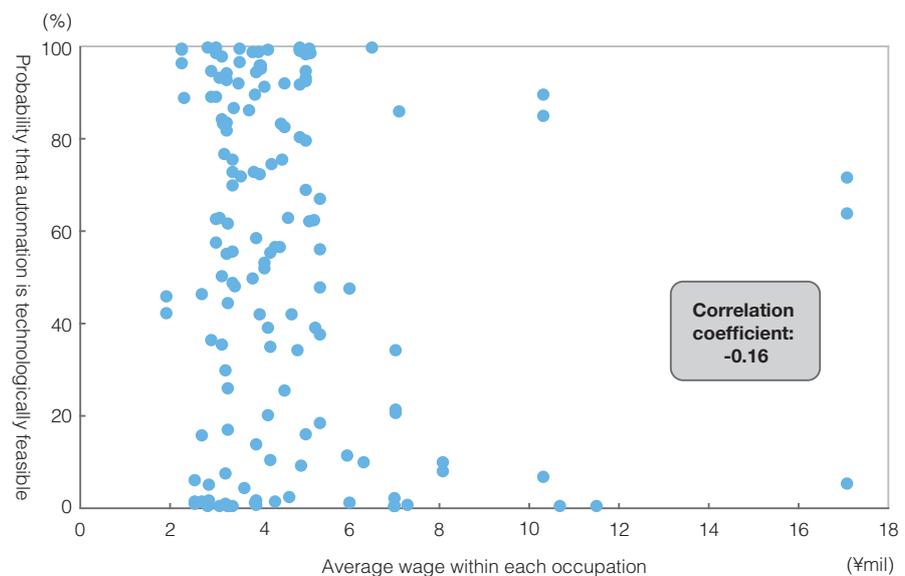
Humans and AI are therefore destined to collaborate with each other. To collaborate with AI, you must learn what AI can and cannot do well and be careful not to pursue automation of tasks that AI is not capable of performing well.

AI will have a major impact on all white-collar occupations

In the 20th century, robots and other industrial machinery automated blue-collar manufacturing jobs. In the 21st century, by contrast, AI-centric IT systems will automate white-collar office jobs. Highly automatable jobs are of course not limited to either the blue- or white-collar segment of the labor force. Going forward, however, more white-collar than blue-collar jobs will be automated because manufacturing is already highly automated whereas office automation is still in its infancy.

Reading the foregoing, you may assume that many office workers without the security of permanent, full-time employment may lose their jobs to automation. Office work is indeed highly automatable. Although RPA (robotic process automation) is being adopted in offices mainly to automate simple tasks, automation's scope is not limited to simple tasks. Other tasks at which AI excels include middle-management functions such as checking and monitoring, for example. IBM has developed an AI "lawyer" named Ross that has been deployed

Distribution of individual occupations' probability of automation as a function of average wage



Note: Average wage data are estimates based on the Ministry of Health, Labor and Welfare's Basic Survey on Wage Structure.

Source: Research collaboration between NRI and University of Oxford Associate Professor Michael A. Osborne (2015)

by a number of major US law firms. Ross works together with human lawyers on bankruptcy and other matters.

As shown in the accompanying graph, there is no correlation between the probability of an occupation being automated and the occupation's average wage, reflecting that a job's amenability to AI-based automation or computerization is not the same as whether the job is easy or difficult for humans to perform. A broad spectrum of white-collar work at which AI excels, ranging from office work to management and professional jobs, are being automated. Jobs that AI is incapable of doing satisfactorily will likely continue to be performed by humans.

Setting sights on digital transformation

As automation technologies proliferate and AI is increasingly used in the workplace, more and more people will be liberated from existing work. AI will play an important role in both alleviating labor shortages and reforming Japan's culture of overwork. As currently implemented, RPA automates individual tasks hitherto performed by humans while basically leaving the tasks' content and procedures unchanged. However, the RPA implementation process often results in standardization of tasks' content and/or procedures to increase efficiency and rationalization of business processes to better automate them. Additionally, front-line staff gain experience in differentiating between easily automatable tasks and tasks not readily amenable to automation.

In the future, series of multiple tasks will likely be automated all at once. To do so, companies will need to reengineer their business processes' content and procedures, capitalizing on the experience they are now amassing. In other words, task flows designed to be performed by humans will have to be reengineered to be performed collaboratively by humans and AIs.

Because automation eliminates the need for correction of human errors and management of employee motivation, checking and monitoring processes can be eliminated. Companies consequently should be able to streamline their middle-management ranks. Meanwhile, management personnel will spend more of their time making complex decisions based on AIs' recommendations and diverse data collected from computerized task flows.

For AI to perform a business process, all of the process's information inputs must be accurate digital data. Preparation of such data will be a new job for the human workforce. For example, when a financial institution sells investment products,

the precision of its sales-force risk monitoring would differ greatly depending on whether the information input into the monitoring process consists of a standard checklist that notes only that required disclosures have been made or detailed records of sales reps' conversations with customers. Accordingly, tasks such as data cleansing to filter out noise from collected data and preparation of digital records from action logs using voice recognition technologies will likely be important jobs for humans.

Restructuring and updating business processes that humans should perform in preparation for the eventual digitalization of those processes are steps toward digital transformation (DX) that can be taken today.

about NRI

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