

Analysis of the impact of AI, etc. on Certified Public Accountant Services
- Simulations determine potential for productivity improvements in Certified Public Accountant services as a result of utilizing AI and other technologies

With the cooperation of the Japanese Institute of Certified Public Accountants, the Business and Economic Information Fusion Analysis Team at the RIKEN Center for Advanced Intelligence Project (AIP) has conducted research into the impact of Artificial Intelligence (AI) and other technologies on services performed by certified public accountants (CPAs).

Background

In recent years, AI and other technologies have developed at remarkable speed, and are now being implemented in a range of industries. In these circumstances, there are concerns whether AI is almighty and in the future they will dispossess humans of work. Some observers have begun to ask whether, by further significant advances in technology in a future, AI, and other technologies will deprive humans of work that they have previously performed.

To explore these issues, we first need to keep it in mind that the work carried out by humans is composed of a variety of different elements. Although AI and other technologies may be easily adopted in certain domains, there are also other domains to which they are not suited. Accordingly, it is too simplistic to simply state that humans will be substituted by technologies such as AI.

What is important is, by acquiring a full understanding of the content of the operations performed in each occupation, to identify which domain the use of AI and other technologies will lead to enhanced productivity.

In this point of view, the AIP Center conducted evidence-based research as to how CPAs can improve productivity in their auditing services by applying AI and other technologies. In the research, the AIP Center obtained the necessary information through the questionnaire surveys by certain accounting firms which perform the auditing services.

Research methodology

An overview of the research methodology follows;

1. Define several common domains of CPA activities in the current audit services and evaluate the potentiality of the substitution with human activities for AI and other technologies.
In this evaluation, Delphi method was used to reach the consensus of the opinions which the knowledgeable people in the AIP center gave on the potentiality of the substitution. .
2. Using the information obtained from the questionnaire surveys for certain accounting firms, a conjoint analysis was made to evaluate which domains of the auditing services give higher

priority in the personnel appraisal. In addition, we analyzed the correlation of this result of the conjoint analysis with the result of the evaluation by Delphi method performed in the step1 above. .

3. Using the information with working hours, remuneration and the potentiality of substitution by AI and other technologies obtained in step1 above, a simulation was performed as to how much productivity would increase in the common domains in the auditing services.

The information with working hours and remuneration was obtained from the questionnaire surveys for certain accounting firms.

Results

The results of the research follow :

1. We evaluate the potentiality of the audit manager's activities for the substitution by AI and other technologies was estimated as 34.7% and 45.6% in 10 year range and 30 year range respectively. We also evaluate such potentiality of the audit assistant's activities as 50.5% and 60.6%.
2. In several common domains of CPA activities for the current audit services, certain inverse correlations were observed between the potentiality of the substitution by AI and other technologies and the priority in personnel appraisal in accounting firms.
3. The potentiality for substitution by AI and other technologies will quantitatively lead to increase productivity in the CPA activities for audit services. Based on the working hours, and remuneration, substitution by AI would lead to improvements in productivity in activities by audit manager of 32.0% and 42.5% in 10 year range and 30 years range respectively. The equivalent figures in activities by audit assistant were 48.4% and 58.0%.