RESEARCH ON AI APPLICATION TO COST ACCOUNTING: THE POSSIBILITY OF SOLVING CHALLENGES IN BANKING ACTIVITY-BASED COSTING

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ABSTRACT

Activity-Based Costing（ABC） was successively introduced to the Japanese banking industry mainly in the 2000s. However, from the 2010s onward, banks that had applied ABC fell into a situation where cost accounting staff became fixed, delayed delivery of cost data for use in management, and ABC was difficult to respond to changes in strategy and organization. One of the issues that cause these problems is the excessive burden of operation and maintenance of ABC. Therefore, we will examine the possibility of solving the problem of excessive burden of operation and maintenance by applying AI. The research method was action-research in which staff members of the bank actually applied AI to one of the Japanese banks currently applying ABC and evaluated whether or not it would lead to a reduction in the operation and maintenance burden. The results showed that the current ABC and the ABC with AI were able to calculate the same quality of results much faster than the current ABC. This allowed us to make decisions faster than anywhere else, and had a higher impact on management. In other words, it became clear that one of the ABC issues that had been thought to be difficult to solve in the Japanese banking industry could be solved by using AI, which has been in full swing since the latter half of the 2010s. This study is limited to the study of the effect of AI improvements to ABC as applied to service industries such as banking. However, the results of this study have significant implications for the effective and efficient operation of management accounting in all industries.

Keywords: *Activity-Based Costing; Bank; management accounting; Artificial Intelligence; machine learning; digital transformation*

1. INTRODUCTION

AI is increasingly used in business. The government's promotion of digitization and digital transformation (DX) of late is expected to increase the adoption of AI by businesses further. AI is being applied to journalizing and audits in the world of financial accounting. At present, however, AI is rarely applied to management accounting, which is responsible for corporate decision-making and performance evaluation. Applying AI to management accounting is required, where qualitative judgments in uncertain situations and future forecasts and estimates are important. However, compared to the application of AI to financial accounting, the application of AI to management accounting has been negligible.

Therefore, in this study, we specifically examine the applicability of AI to management accounting and its effectiveness based on previous studies of AI. We will examine the effectiveness of AI application to the Activity-Based Costing (ABC) of the banking industry (hereinafter, Banking ABC), which is a practical application of ABC, one of the strategic management accounting methods, by creating an experimental machine. Finally, the feasibility, effectiveness, and issues of AI application to management accounting are identified after the results of AI application experiments are verified by the bank's cost accounting staff.

2. PRECEDINGS STUDIES

We conduct a literature review of preceding studies' research on the application of AI to management accounting. As for the relationship between AI and work, Frey & Osborne (2017) has reported that the current AI is not yet as capable of negotiating and communicating, which requires reading between the lines and persuading with passion as a human being. However, they have warned that AI will soon replace humans in simple tasks. In the literature on accounting and AI in Japan, research, which is useful