Impact of Artificial Intelligence on Firm Performance: Exploring the Mediating Effect of Process-Oriented Dynamic Capabilities

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Abstract. Organizations still dependent on information technology innovation have already adopted the in AI subfields and techniques to adapt or disrupt the market while improvement their performance. Other research has examined the relationship between computing capabilities and organizational performance, with a mediating effect on dynamic process-driven capabilities. We extend this flow of literature and examine the same relationship by taking into account the capabilities of artificial intelligence (AI). Our conceptual framework is based on the paradox of productivity, resource-based view and dynamic capabilities. We relied on an in-depth review of 150 case studies collected on websites related to the integration of AI into organizations. Our study highlights the added value of AI capabilities, in terms of organizational performance, with a focus on improving organizational performance (financial, marketing, and administrative). Our analyses also show that companies improve their performance when they use capabilities of AI to reconfigure their dynamic process-driven capabilities.

Keywords: Capabilities of AI, Process-Driven Dynamics Capabilities, Firm performance.

1 Introduction

The year 1974 saw the advent of the first expert systems; the most famous being MYCIN [1, 2] designed to assist in the diagnosis and treatment of bacterial blood diseases. At the middle of the twentieth Century, McCulloch and Pitts worked on artificial neurons simulating the laws of logic [3]. Turing carried out research on a universal machine that is theoretically able to solve all problems by manipulating symbols [4, 5], and this was the starting point of investigations on an artificial system that might be as good as a human mind. In line with the fast-paced sophistication of technologies, Garry Kasparov, a world chess champion, was beaten in 1996 by the Deep Blue software of IBM [6]. In 1967, the first program of chess with satisfactory