The Impact of Big Data Analytics on the Organizational Performance - the Government Sector

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Purpose

The world has witnessed a growing interest in the topic of Big Data Analytics Capability (BDAC) (Ji-fan Ren et al., 2017; Mikalef et al., 2019b; Sambamurthy et al., 2003) and its key role in enhancing organizational performance (OP). This study aims to understand how and through what organizational capabilities BDAC can enhance OP (Kaplan, Robert S; Norton, 1996; Richard et al., 2009) in the government organizations of the United Arab Emirates (UAE). It examines the role of BDAC in enhancing OP and investigates the mediation of Organizational Learning (OL) (Bapuji & Crossan, 2004; Jerez-Gómez et al., 2005; van Grinsven & Visser, 2011; Yang et al., 2004) and Decision-Making (DM) (Shrestha et al., 2021; Susanne & Bruce, 1995) capabilities in the relationship of BDAC and OP utilizing Dynamic Capabilities (DCs) theory (Constance E. Helfat et al., 2007; Teece, 2007; Teece et al., 1997) via the following research questions: (a) 'What is the role of OL and DM capabilities in enabling the positive impact of BDAC on OP?' (b) 'How does BDACs affect OP via the DCs?'

Design / methodology / approach

Our study is based on the positivist research paradigm (Straub & Gefen, 2004), we developed our research constructs based on the insights from literature and the research context, then investigated the cross-relationships between them to validate our proposed hypotheses via our theoretical research model (figure 1). We used a survey-based approach for data collection, as this method can capture causal relationships between the constructs and ensure greater confidence in the generalizability of the results (Cavana, R., Delahaye, B. and Sekaran, 2001; Straub & Gefen, 2004). Considering the exploratory settings and the predictive theory underlaying our research (Straub & Gefen, 2004) and based on the guidelines provided by (Hair et al., 2021) we have employed Partial Least Squares Structural Equation Modeling (PLS–SEM) (Hair et al., 2020; Kaplan, 2000) for the empirical analysis and the validation of our hypotheses.
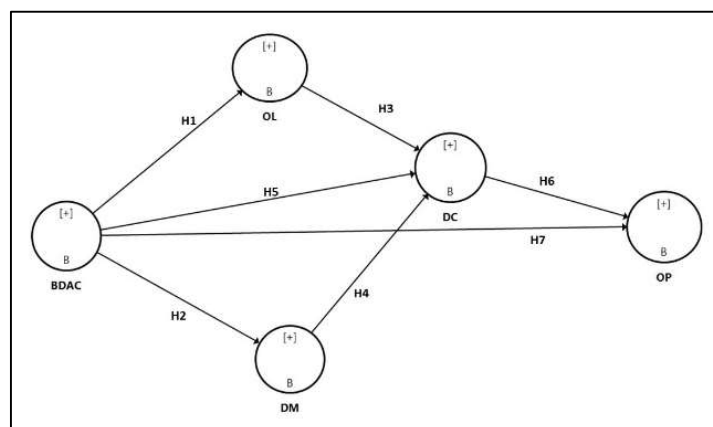

Figure. 1.Research Model and Hypotheses

Findings

The results empirically validate the proposed theoretical framework and confirm that organizational learning and decision-making are two important capabilities that enable the positive impact of BDAC on OP and further confirm the positive role of Dynamic capabilities in enhancing OP within the government sector.

Research implications

We empirically explained that OL and DM significantly impact the relationship between BDAC and OP. Many studies in the literature (Gupta & George, 2016; Mikalef et al., 2019a; Wamba et al., 2017) have argued that the main challenges in adopting BDAC are organizational than technical. Consistent with this view, we explained that the insights and knowledge generated from BDACs will be of little value if no proper OL and DM capabilities are established. Decision-makers can now generate insights from BDACs to augment their DM capability (Shamim et al., 2019; Shrestha et al., 2021). Furthermore, learning contributes to the speed of decision-making and the knowledge is used to make informed decisions (Fan et al., 2015; Janssen et al., 2017; Kos̈cielniak & Puto, 2015) to facilitate business growth. This is valuable because many organizations are still struggling to generate the required benefits of BDAC (Dieppe, 2020; Mikalef et al., 2018). Furthermore, we empirically use Dynamic capabilities in the government sector to illustrate the importance of having a continuous mechanism for renewal and the reconfiguration of the resources and capabilities to enhance OP in a rapid changing environment. Our results show that integrating BDAC with the organizational capabilities without the use of Dynamic capabilities will not succeed in enhancing OP because organizations require a continuous renewal mechanism to thrive. We are as well proposing a major contribution of the scales of measurement for BDACs, OL, DM, DCs and OP for the government sector.

Practical Implications

UAE is now considered as one of the leading data driven economies in the middle east, and government sector is a major contributor to the economy, thus, we suggest that managers in the government organizations must understand how to utilize the insights of BDAC, they need to understand what are the influenced organizational capabilities and how, this calls for immediate actions to develop a road map based on our proposed model as following: 1) use the scales of measurement as tools to build/renew the organizational capabilities, 2) adopt and build all required functions relevant to DCs and embed them in the existing structure, 3) set clear business goals and plans to setup all relevant processes, governance structures and teams for the established capabilities, and 4) build the required links between the capabilities once the different dimensions of each capability are well-established with the right technical talents.

Organizational culture plays main role in the development of the different organizational capabilities (Faridoon et al., 2022; Teece, 2016; Yang et al., 2004), managers need to understand their own cultural biases and start trusting the insights of BDACs. It is worth noting that with the right culture, management can invest more into BDACs in terms of tools, methods, and people (Thirathon et al., 2017) to ensure enhanced services to the public.

Originality / value

There is a consensus in the literature (Mikalef et al., 2019a; Mishra et al., 2019) that BDAC impacts the OP via other organizational capabilities. Nevertheless, there is significantly less research on how BDAC influence OP via other organizational capabilities and what are they. There is a real need to address this critical gap in the literature, as currently there is very little knowledge about this topic specially in the government sector. This research explores this gap and finds the relation between BDAC and OP and what organizational capabilities are associated with that relationship. Our findings suggest that organizational learning (Bapuji & Crossan, 2004; Jerez-Gómez et al., 2005; van Grinsven & Visser, 2011; Yang et al., 2004) and decision-making (Shrestha et al., 2021; Susanne & Bruce, 1995) are two important capabilities that enable BDAC to create business value. We also confirmed that such capabilities have a further positive effect on establishing dynamic capabilities and lead to an enhanced performance. We finally create four instruments to measure OL, DM, DC, and OP for the government sector.

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