Guest editorial

Big data analytics, dynamic capabilities and firm performance

Big data has high operational and strategic potential *vis-à-vis* business value creation and is simply the next big thing in innovation (Gobble, 2013) as it creates actionable ideas for firm performance and competitive advantage (Wamba *et al.*, 2015). Big data necessitates much more than application of new analytics (El-Kassar and Singh, 2018) as firms that learn to take advantage of big data unbridle new organizational abilities and value (Davenport *et al.*, 2012). It is also pertinent to note that corporate commitment to the use of big data analytics is very important as past literature suggest that the corporate commitment affects big data assimilation through acceptance and routinization routes (Singh and El-Kassar, 2019) and that in turn to enhance sustainable performance of the firms (Coluccia *et al.*, 2019). Several colleagues also suggest that for firms to have superior performance from their employees, they need to leverage analytics over the gut instincts (Del Giudice *et al.*, 2018; Davenport *et al.*, 2010) and that calls for a data driven decision-making culture (Santoro *et al.*, 2019; Soto-Acosta *et al.*, 2018; McAfee *et al.*, 2012). Needless to mention that use of business analytics for organizational value creation is dependent upon the roles played by the organizational decision-making processes, including resource allocation processes and resource orchestration processes (Helfat *et al.*, 2009; Teece, 1997) which requires examination and deeper understanding.

The extant literature suggests several examples of big data initiatives and treating it as firm's dynamic capabilities that help create business relevant knowledge, to add value, enhance performance and give competitive advantage to the firms over their rivals in the dynamic market, still top managers are conspicuously reluctant to regularly allocate resources to facilitate big data analytics (El-Kassar and Singh, 2018) for sustainable development of people, process, and organization (Budhwar *et al.*, 2018; Singh, 2018; Al-Ali *et al.*, 2017). Therefore, the aforementioned literature on big data for enhancing firm dynamic capabilities and performance suggest for an urgent need to examine them in much detail. It is in this context, we believe that the papers published in this special issue on "Big data analytics, dynamic capabilities, and firm performance" try to fill in the existing gaps in the literature and also to provide direction for future researches.

The first paper titled "Organizational capabilities that enable big data and predictive analytics diffusion and organizational performance: A resource-based perspective" is contextualized in Indian context. The study suggests that big data and predictive analytic (BDPA) mediates the influence of information technology deployment and human resource capabilities on organizational performance. Therefore, it suggests that BDPA plays critical role in business decisions in firms in India.

The second paper titled "Turning information quality into firm performance in big data economy" explores how information quality dynamics links the business value, the user satisfaction and the firm performance in the big data environment. This study was conducted in two countries – France, and the USA – and extends literature on big data literature, using appraisal-emotional response-coping framework, and suggests how to use information quality modeling *vis-à-vis* firm performance.

The next paper titled "Identifying industry 4.0 IoT enablers by integrated PCA-ISM-DEMATEL approach" suggests that IoT ecosystem and IoT Big Data are the critical enablers of the industry 4.0. This study used integrated approach-based hierarchical model and cause-effect relationship amongst the IoT enablers and the authors suggest them as novel initiative for the industry 4.0.

The fourth paper titled "Value creation through big data in emerging economies: the role of resource orchestration and entrepreneurial orientation" examines how managers arrange, bundle and use key assets from big data for value creation in firms the context of the emerging economies. The key findings of the study suggests that entrepreneurial orientation is essential that firms based in the emerging economies should leverage to create value through big data by bunching together and arranging key assets to enhance firm performance.

The next paper titled "Influence of basic research investment on corporate performance: Exploring the moderating effect of human capital structure" is situated in Chinese context. The findings of the study suggest that human resource is a dynamic ability and HR practice on knowledge stock influences firms' dynamic capability and that in turn to enhance competitiveness of the firms too.

The subsequent paper is titled "Role of cloud ERP and big data on firm performance: A dynamic capability view theory perspective." This study provides fresh insights on the role of cloud-based ERP services and BDPA on firm performance. Furthermore, this study attest to the business relevance of using cloud ERP and big data predictive analytics to enhance and sustain firm performance in the dynamic markets.

This special issue moves to the next paper titled "Interplay between information systems and environmental management in ISO 14001-certified companies: implications for future research on big data" wherein it aims to find out how information systems contributes to the evolutionary process of corporate environmental management and its implications for big data research. This study suggests a framework that identifies the support of IS for corporate environmental practices.

The succeeding paper titled "Transforming big data into knowledge: the role of knowledge management practice" investigates on how big data collected using social media influences knowledge management practices, innovation processes and business performance. The findings of the study suggest that innovation capacity directly influences customer relationship performance. Furthermore, this study suggests that big data retrieved from social media improves both knowledge management practices and innovation capacity.

The ninth paper titled "Big data analytics capabilities and knowledge management: Impact on firm performance." The key findings of the study suggest that organizations which have developed better big data analytic capabilities – technological and managerial – significantly enhances their performance. Furthermore, this study also suggests that knowledge management orientation plays critical role in increasing the overall effect of the big data analytic capabilities.

The next paper titled "Big data visualisation, geographic information systems and decision making in healthcare management" contributes to current scholarly debate on the value of Big Data for effective healthcare management. Based on the findings of the study, the authors suggest that existing technologies for data analytics can empower decision makers and even the public with knowledge on pollution.

The subsequent paper titled "The integration between knowledge management and dynamic capabilities in agile organizations" in contexts that requires organizational agility. Based on the findings of the study, the authors proposes a model to describe the modus operandi of a startup and enables it to develop the cycles of testing, measurement and seizure of knowledge in dynamic and uncertain contexts.

The succeeding paper titled "Big data for business management in the retail sector" investigates how does firm uses big data to transform organizational practices for the express purpose of potential benefits in the retail industry. The paper suggests that big data deployment influences business functions as the need for skilled human resources arises along with the need for data infrastructure.

This special issue moves on to another paper titled "A bibliometric analysis of research on big data analytics for business and management" examines thoroughly to classify literature linking big data analytics and management phenomena. The paper presents an interpretive framework that analyzes definitional perspectives and applications of big data analytics in the management field. The paper also suggests a general taxonomy that enhances understanding of big data *vis-à-vis* business value.

The 14th paper titled "Talent management under a big data induced revolution: The double-edged sword effects of challenge stressors on creativity" examines the effect of challenge stressors on creativity and the boundary conditions of the relationship. This study reveals boundary conditions by investigating dispositional and contextual factors which may accentuate the positive effect while attenuating the negative effect of challenge stressors on employee creativity.

The next paper titled "Innovating through digital revolution. The role of soft skills and big data in increasing firm performance" for developing good connect between human and technological side of the organization. The findings of the study suggest that firms' investment in big data mediates the linkage between human resources' organizational behavior and the organizational economic performance.

The subsequent paper titled "Big data and dynamic capabilities: A bibliometric analysis and systematic literature review" attempts to identify and address the gaps in the existing literature on big data and dynamic capabilities. The findings of the study reveals four clusters, namely, big data and supply chain management, knowledge management, decision making, business process management and big data analytics.

The succeeding paper titled "Combining organizational change management and organizational ambidexterity using data transformation" investigates and suggests for practicable data-driven theory for the implementation and management of organizational change by combining together both organization ambidexterity and change management research. The study suggests for well-grounded change management program as key tool attain competitive differentiation through ambidexterity.

The 18th paper titled "Big data analytics capability in supply chain agility: The moderating effect of organizational flexibility." It is grounded in the dynamic capability theory and the contingency theory and the findings of the study suggest that big data analytics capability influences both supply chain agility and competitive advantage. Moreover, the results of the study make useful contributions to literature in the domain of big data analytics capability, supply chain agility and competitive advantage.

The next paper titled "Big data management: Implications of dynamic capabilities and data incubator" advances understanding on how to strategically deal with contemporary challenges of big data management, related to data veracity and data value. The authors used inductive-constructivist approach to propose a framework of data incubator to develop insights on data veracity and value.

The penultimate paper titled "Challenges with Big Data Analytics in Service Supply Chains in the UAE" examines key challenges associated with big data analytics in service supply chains in the context of the United Arab Emirates. The paper finds factors, calculate their influence over service supply chain, and suggests for adopting broad and all-inclusive view while adopting big data.

The last paper titled "How do different types of interorganizational ties matter in technological exploration?" argues for making a distinction in boundary-spanning exploration between explorative learning from partners and explorative learning from non-partners. The paper suggests that clique-spanning ties positively influences explorative learning from partners, but not on explorative learning from non-partners. Overall, this paper advances the exiting literature and suggests for future researches.

We hope that the special issue on "Big data analytics, dynamic capabilities, and firm performance" provides varied and deep insights and throw agenda for future researches.

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References

Al-Ali, A.A., Singh, S.K., Al-Nahyan, M. and Sohal, A.S. (2017), "Change management through leadership: the mediating role of organizational culture", *International Journal of Organizational Analysis*, Vol. 25 No. 4, pp. 723-739.

Budhwar, P., Pereira, V., Mellahi, K. and Singh, S.K. (2018), "The state of HRM in the Middle East: challenges and future research agenda", *Asia Pacific Journal of Management*, pp. 1-29, available at: https://doi.org/10.1007/s10490-018-9614-8

Coluccia, D., Dabić, M., Del Giudice, M., Fontana, S. and Solimene, S. (2019), "R&D innovation indicator and its effects on the market: an empirical assessment from a financial perspective", *Journal of Business Research*, available at: https://doi.org/10.1016/j.jbusres.2019.04.015

Davenport, T.H., Harris, J. and Shapiro, J. (2010), "Competing on talent analytics", *Harvard Business Review*, Vol. 88 No. 10, pp. 52-58.

Davenport, T.H., Barth, P. and Bean, R. (2012), "How big data is different", *MIT Sloan Management Review*, Vol. 54 No. 1, pp. 22-24.

Del Giudice, M., Carayannis, E.G., Palacios-Marqués, D., Soto-Acosta, P. and Meissner, D. (2018), "The human dimension of open innovation", *Management Decision*, Vol. 56 No. 6, pp. 1159-1166.

El-Kassar, A.N. and Singh, S.K. (2018), "Green innovation and organizational performance: the influence of big data and the moderating role of management commitment and HR practices", *Technological Forecasting and Social Change*, Vol. 144, pp. 483-498.

Gobble, M.M. (2013), "Big data: the next big thing in innovation", *Research-Technology Management*, Vol. 56 No. 1, pp. 64-67.

Helfat, C.E., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D. and Winter, S.G. (2009), *Dynamic Capabilities: Understanding Strategic Change in Organizations*, John Wiley & Sons.

McAfee, A., Brynjolfsson, E., Davenport, T.H., Patil, D.J. and Barton, D. (2012), "Big data: the management revolution", *Harvard Business Review*, Vol. 90 No. 10, pp. 60-68.

Santoro, G., Thrassou, A., Bresciani, S. and Del Giudice, M. (2019), "Do knowledge management and dynamic capabilities affect ambidextrous entrepreneurial intensity and firms' performance?", *IEEE Transactions on Engineering Management*, available at: https://doi.org/10.1109/TEM.2019.2907874

Singh, S.K. (2018), "Sustainable people, process and organization management in emerging markets", *Benchmarking: An International Journal*, Vol. 25 No. 3, pp. 774-776.

Singh, S.K. and El-Kassar, A.N. (2019), "Role of big data analytics in developing sustainable capabilities", *Journal of Cleaner Production*, Vol. 213, pp. 1264-1273.

Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-533.

Soto-Acosta, P., Del Giudice, M. and Scuotto, V. (2018), "Emerging issues on business innovation ecosystems: the role of information and communication technologies (ICTs) for knowledge management (KM) and innovation within and among enterprises", *Baltic Journal of Management*, Vol. 13 No. 3, pp. 298-302.

Wamba, S.F., Akter, S., Edwards, A., Chopin, G. and Gnanzou, D. (2015), "How 'big data' can make big impact: findings from a systematic review and a longitudinal case study", *International Journal of Production Economics*, Vol. 165, pp. 234-246.

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