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How to improve firm performance using big data analytics capability and business strategy alignment

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Abstract

The current fascination with big data has some organizations make big data analytics activities to improve firm performance. Thus, regarding big data analytics capability, it might work for some companies but not for others.

It seems that almost no one has made a significant difference through big data. To address this challenge, this study suggests a big data analytics capability model based on the resource-based theory and the entanglement view of socio-materialism.

The results show the big data analytics capability hierarchy, which has three basic components (i.e., management, technology, and employee capability) and eleven subcomponents (i.e., planning, investment, coordinating, controlling, connectivity, compatibility, modularity, technology management skills, technical skills, business skills, and relational skills).

Through Delphi studies together with online surveys of business analysts at the organization, the entanglement perspective of the high-order big data analytics capability model and its impact on firm performance was affirmed.

This article investigates how organizations capitalize on big data analytics to create a sustainable competitive edge and progress business efficiency through big data analytics. On the other hand, the study delineates different resources and sub-capabilities which it takes to develop the big data analytics capability.

INTRODUCTION

The significant advantage of business benefits has motivated companies to start investing in business analytics in a big way. Thus, it is estimated to attract more investments in the field of information and communication technology than any other IT sector.
Indeed, even though the number of businesses investing in business analytics is rising, the fact is that only some of them could convert the business analytics investments into a better business performance.

Hence, the topic is the most extremely vital and dynamic management studies of business analytics in the last 10 years. However, there is a shortage of several ideas or unrelated publications like business analytics, data analytics, big data analytics, and business intelligence, and analytics which is an area of academic research output. Taking the stand of leading scholars in the discipline, these ideas do not need to be taught as singular concepts that are independent of one another.

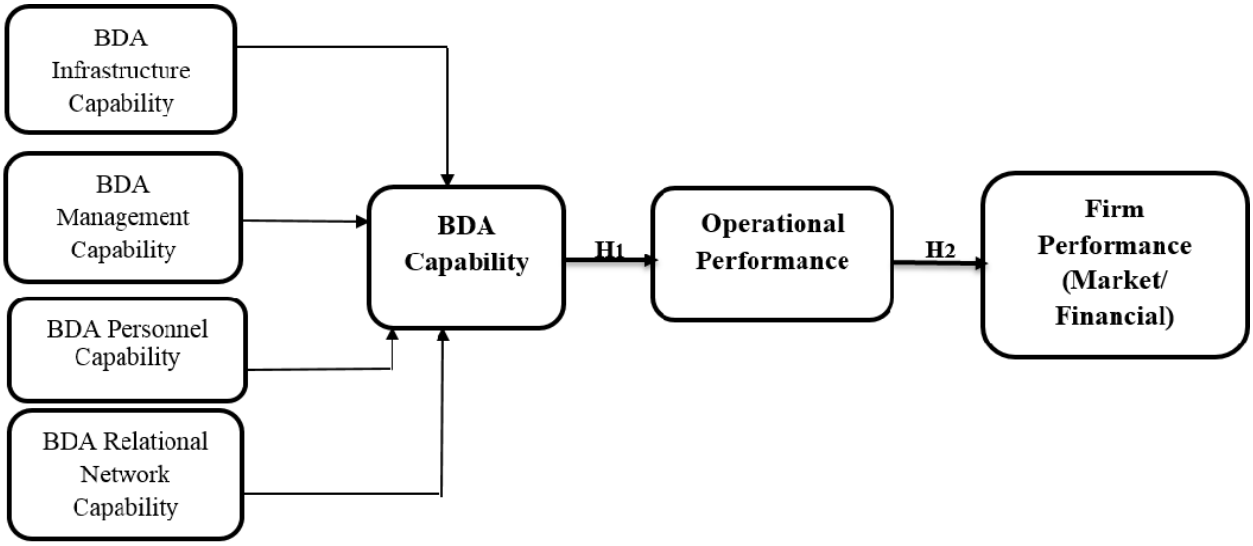
The paper will include all the vital concepts and a certain range of literature under the title business analytics. Such an activity may allow my study to reference more studies that are more relevant and carry out a more extended literature review than the ones conducted in the past.

The progress of big data has improved a company's analytics' need. It refers to the "increasing use of data along with statistics and quantitative methods, explanatory and predictive models and evidence-based management to support decision-making and actions".

On the other hand, the use of analytics technologies for extractions of value from big data is accompanied by high initial expenses for corporate.

However, in the field of hospitality the hotel's ratings play the most important role for the customers.

Consequently, accommodation businesses produce similar products and services, making the hotel business very competitive. As such, big data analytics may play a vital role for hotel firms in gaining competitive advantages.

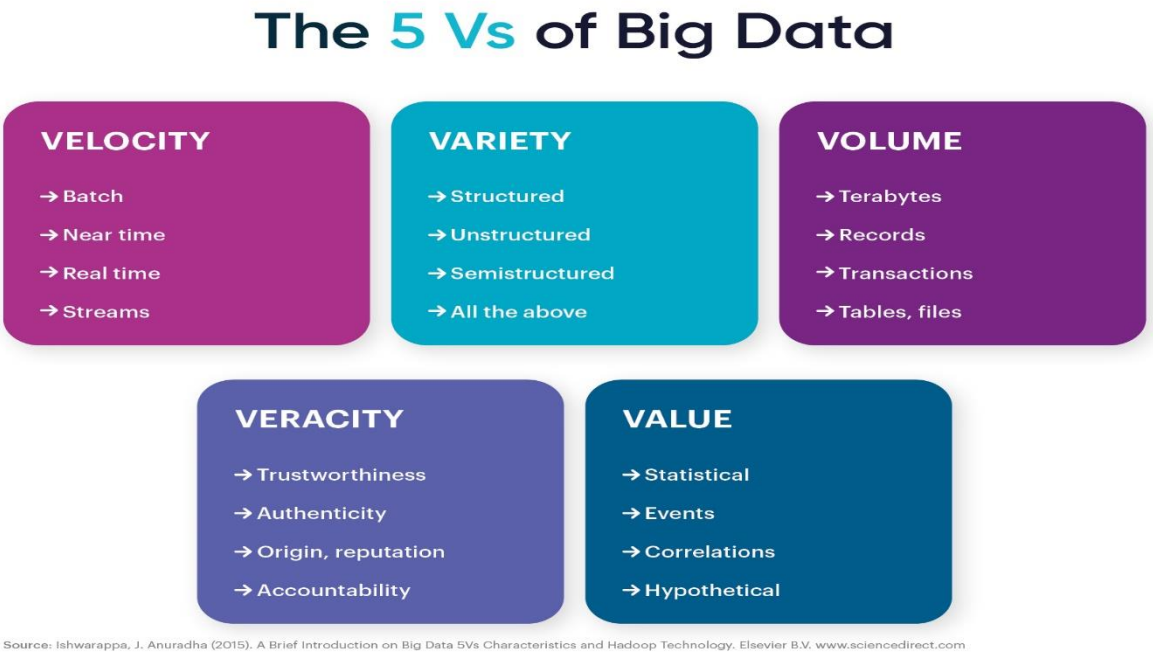


Demonstrate that with big data, tourist behavior and the tourism market can be more explored and understood by the researcher and practitioners who are a stakeholder of the sector.

Big Data Analytics With the fast development of information and communication technologies, big data are generated from a variety of sources, including internet traffic,

mobile phone transactions, user-generated content, social networks, sensors, business transactions, and other operational domains such as bioinformatics, healthcare, and finance.

When defining big data, the first property that comes to mind is the dimension. The latest definitions of big data **consider five "V's": Volume, Velocity, Variety, Veracity, and Value.**



Therefore, to understand in which ways the use of big data analytics by hotel firms enhances their performance and business value, the following research questions guide the development of this work:

I. What are the factors that influence the use of big data analytics by hotel firms?

II. What is the impact of the use of big data analytics on hotel firms' performance?

III. What is the effect of BDAC on decision making performance, competitive advantage, and firm performance?

LITERATURE REVIEW

In the literature review conducted by {Samara et al}, for the tourism sector, the authors found evidence that the usage of big data analytics can create value and benefits including "increased efficiency, productivity and profitability combined with an extremely rich and personalized experience for travelers".

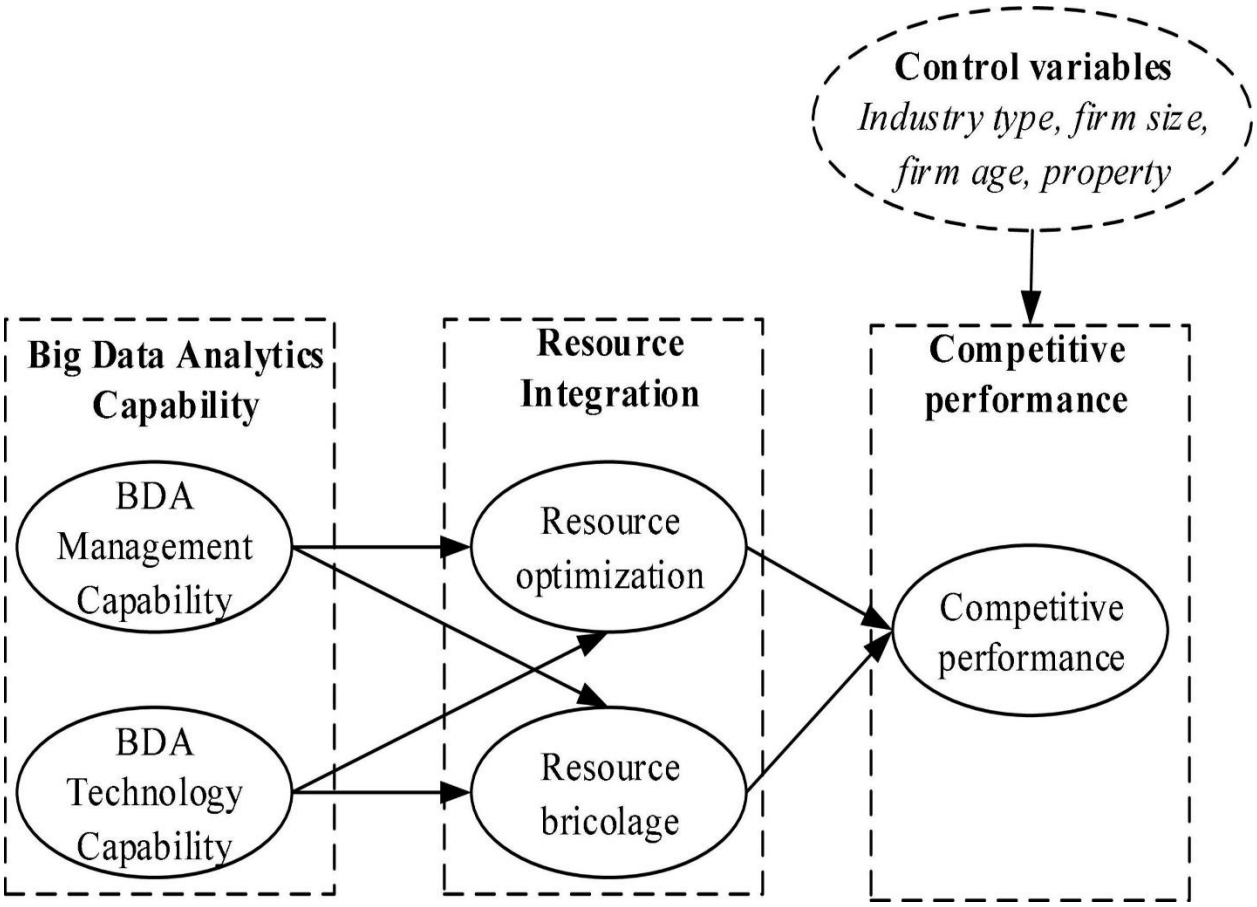
Considering that hotels offer very similar services and products, all the elements that may differentiate hotels from their competitors are crucial to gain a competitive advantage.

Many previous studies have been conducted on big data analytics capability, mainly to increase the understanding the variables influence big data analytics capability (Barlette and Baillette,2022; Behl, 2020; Cetindamar et al., 2022; Dubey et al., 2019; Olabode et al., 2022; S. Shamim et al.,2019.

According to Shamim et al. (2020), big data analytics capability mediates the relationship between contractual and relational governance and decision-making performance.

However, according to resource-based theory, what matters is not a single impact but a collection of independent variables. Therefore, in this study independent variables are such as customer orientation, entrepreneurial orientation, and technological orientation, which serves as a resource influencing big data analytics capability.

On the other hand, this research would like to investigate that once big data analytics capability is established, how it helps the organization to make decisions and whether that decision made by the top management will lead to a better firm performance, which will end up winning a competitive edge among rivals.



Research Methodology

Sampling

To develop a research model to measure big data analytics, this study began by investigating commonly cited dimensions that influence big data analytics in a big data environment. A quantitative technique was employed to conduct the present study. Online

survey questionnaire links were emailed to respondents requesting them to participate in this study.

This study solicited the views of senior managers, middle managers, and assistant managers who were well versed with big data. The study used a non-probabilistic sampling method known as purposive sampling. Hence, there were two criteria that were considered to select the manufacturing firms for this research. The first criterion of a participant is whether he/she is in a management position and supervises the activities of departments data science (big data), customer service, information technology, innovation, finance, organizational strategic planning, demand/supply planning, and operational excellence.

The second criterion was the size of the organization, either medium or large. As a result of this, the respondents were filtered by two screening questions which were part of the questionnaire.

We used these studies for support of 11 subdimensions (e.g. big data analytics planning, investment, coordination, control, connectivity, compatibility, modularity, technical knowledge, technology management knowledge, business knowledge and relational knowledge) under the three primary dimensions (e.g. management capability, infrastructure capability and talent capability) proposed in the conceptual model.

The journals were scanned with the help of relevant criteria, topical papers were picked out and downloaded.

Following objectives are outlined from the literature review:

1. To study the underpinning theories towards competitive advantage for firms.
2. To understand the evolution of big data and its characteristics.
3. To understand the role of predictive analytics in different domains.
4. To identify the constructs that contribute towards building big data and predictive analytics capability for firms.
5. To understand the significance of sustainable business development, review the role of environmental, social, and economic sustainability of supply chain.
6. To understand the role of supply base complexity on supply chain performance.
7. To determine the gaps in extant literature, develop a framework, define research questions and objectives of the study.

Resource Based Theory (RBT)

The resource-based theory relies on two core assumptions about firm-based resources to show why some firms perform better than others and
how to enhance firm performance.

Starting with, even though the firms work in the same industry, they are different in using a lot of resources (Peteraf & Barney 2003). This assumption, therefore, not only displays resource powerholders for the purpose of functioning in unique areas, but it also dismantles the need for firms to add new capabilities to their list of resources.

To solidify the problem, lack of resource facilitator is enhanced by the impenetrability of the exchanging resources barriers between firms. This way, the assumption implies resource immobility which shows that synergistic benefits of the resources help maintain these benefits over time (Barney, J. B., & Hesterly, W. 2012).

In addition to these two assumptions, the logic of resource-based theory embraces the VRIO framework which clearly states that firm performance depends on the extent to which a firm possesses simultaneously valuable (V), rare (R), imperfectly imitable resources (I) which are properly organized (O) (Amit and Schoemaker, 1993; Barney et al., 2001).

To begin, the firm can increase net revenue and decrease the net cost through leveraging of resources which is seen as capitalizing upon an opportunity and minimizing a threat (Barney and Arikan, 2001; Barney and Hesterly, 2012).

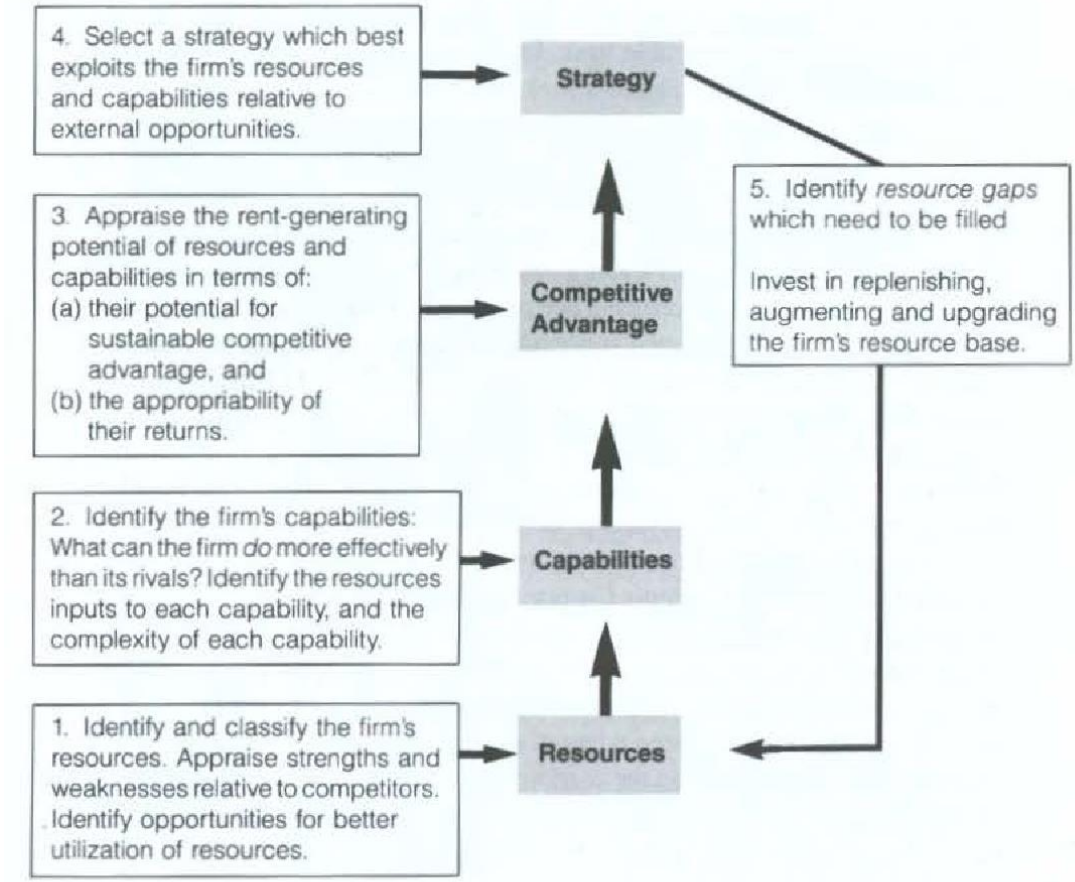
First, rare facet refers to a situation where resources are owned by a few companies to have a competitive edge.

Following, the imperfectly imitable part means that resources cannot be replicated or substituted because they are very expensive to imitate.

According to research, the resource relatedness among resources within a firm makes it difficult for competitors to mimic (Morgan et al., 2009). Resource complementarity is present when one resource facilitates the other to use it to enhance firm performance.

Finally, the organization dimension focuses on the proper management of valuable, rare, and imperfectly imitable resources to leverage their full competitive potential (Barney and Clark, 2007).

Figure 1. A Resource-Based Approach to Strategy Analysis: A Practical Framework



CONCLUSION

This research demonstrates a theory of big data analytics capability strategy that shows how the big data analytics capability strategy dimensions and sub-dimensions can be used to create a favorable big data analytics capability strategy climate.

Whilst several studies show that management, technology and talent capability are significant in a big data environment, our work sheds light on the roles of the resource-based theory and entanglement view in postulating an integrated big data analytics capability model and overall effect on firm's performance. Our data indicate that the technological factors such as expected benefits and technology compatibility do not directly influence the use of big data analytics and that the use of data technologies and tools greatly depends on the staff's capabilities and knowledge.

A lack of awareness of the expected benefits of data analysis and the technological compatibility can encourage this outcome. Nevertheless, our study revealed that organizational readiness and competitive pressure led to big data analytics usage in a way that top management played the mediating role.

The available literature has demonstrated that senior management has a critical contribution to the successful deployment of an IT system since if they have faith in this innovation. In accord with Hypothesis 3, the findings reveal that the factors of the organization such as the presence of the internal knowledge to apply big data analytics will stimulate top managers to use big data analytics.

Apart from this, the researcher can look more deeply into the tourist consumer behavior, which could be done by identifying the factors that prevent the use of big data analytics or expanding the scope of the study to other regions.

We particularly enrich the scientific knowledge around the integration of the resource-based theory with the contingency theory, at the crossroads of technology and management sciences. Empirically, we demonstrated the extent to which big data analytics solutions can provide companies with a competitive advantage and the role played by environmental contingencies.

On the other hand, we stated the absence of a moderating influence of the environmental dynamism on the relationship between business value and firm performance. The study offers evidence that the big data analytics business value brings higher firm performance where markets are in a growing phase.

REFERENCES

1. Abbasi, A., Sarker, S., Chiang, R.H., 2016. Big Data Research in Information Systems: Toward an Inclusive Research Agenda. J. Assoc. Inf. Syst.
2. Agarwal, R., Dhar, V., 2014. Big data, data science, and analytics: The opportunity and challenge for IS research. INFORMS.
3. Akter, S., Wamba, S.F., Gunasekaran, A., Dubey, R., Childe, S.J., 2016. How to improve firm performance using big data analytics capability and business strategy alignment? Int. J. Prod. Econ.
4. Ardito, L., Scuotto, V., Del Giudice, M., Petruzzelli, A.M., 2018. A bibliometric analysis of research on Big Data analytics for business and management. Manag. Decis.
5. Avital, M., Beck, R., King, J., Rossi, M., Teigland, R., 2016. Jumping on the Blockchain Bandwagon: Lessons of the Past and Outlook to the Future.
6. Kaufman, B.E., 2015. The RBV theory foundation of strategic HRM: critical flaws, problems for research and practice, and an alternative economics paradigm.
7. Arora, B., & Rahman, Z. 2016. Using Big Data Analytics for Competitive Advantage. International Journal of Innovative Research and Development.
8. Barney, J.B. 1991. Firm resources and sustained competitive advantage. Journal of Management, Vol. 17.
9. Chen, X., &Siau, K. 2012. Effect of Business Intelligence and IT Infrastructure Flexibility

on Organizational Agility. In Proceedings of the 33rd International Conference on Information Systems, Orlando, Florida.

10. Deep, R., &Narwal, K. P. 2014. Intellectual capital and its association with financial performance: A study of Indian textile sector. International Journal of Management & Business Research.

11. Grant, R. M. 1996. Towards A knowledge-based theory of the firm. Strategic Management Journal, Vol. 17, Issue Winter Special.

12. Riahi-Belkaoui, A. 2002. Intellectual Capital and Firm Performance of U.S. Multinational Firms: A Study of the Resource-Based and Stakeholder Views. SSRN Electronic Journal.

13. Baesens, B.; Bapna, R.; Marsden, J.R.; Vanthienen, J.; Zhao, J.L. Transformational issues of big data and analytics in networked business. MIS Q. 2014.

14. Kaisler, Stephen, Frank Armour, J. Alberto Espinosa, and William Money. 2013. Big data: Issues and challenges moving forward. Paper presented at 2013 46th Hawaii International Conference on System Sciences, Maui, HI, USA, January 7–10; Piscataway: IEEE.

15. Chen, Hsinchun, Roger H. L. Chiang, and Veda C. Storey. 2012. Business intelligence and analytics: From big data to big impact.

16. Jourdan, Zack, R. Kelly Rainer, and Thomas E. Marshall. 2008. Business intelligence: An analysis of literature. Information Systems Management.

17. Amit, R., Schoemaker, P.J., 1993. Strategic assets and organizational rent. Strategic management journal 14.

18. Barney, J., 1991. Firm resources and sustained competitive advantage. Journal of management.

19. Barney, J., Wright, M., Ketchen, D.J., 2001. The resource-based view of the firm: Ten years after 1991.

20. Barney, J.B., Clark, D.N., 2007. Resource-based theory: Creating and sustaining competitive advantage. Oxford University Press Oxford.

21. Grant, R.M., 1991. The resource-based theory of competitive advantage: implications for strategy formulation. Knowledge and Strategy. (Ed. M. Zack)

22. Lu, Y., Ramamurthy, K., 2011. Understanding the link between information technology capability and organizational agility: an empirical examination.