

A Model to Create Organizational Value with Big Data Analytics

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Value creation is a major factor not only in the sustainability of organizations but also in the maximization of profit, customer retention, business goals fulfillment, and revenue. When the value is intended to be created from Big Data scenarios, value creation entails being understood over a broader range of complexity. A question that arises here is how organizations can use this massive quantity of data and create business value? The present study seeks to provide a model for creating organizational value using Big Data Analytics (BDA). To this end, after reviewing the related literature and interviewing experts, the BDA-based organizational value creation model is developed. Accordingly, five hypotheses are formulated, and a questionnaire is prepared. Then, the respective questionnaire is given to the research statistical population (i.e., IT managers and experts, particularly those specializing in data analysis) to test the research hypotheses. In next phase, connections between model variables are scrutinized using the structural equation modeling (measurement and structural models). The results of the study indicate that investigating the infrastructures of the Big Data Analytics, as well as the capabilities of the organization and those of Big Data Analytics is the initial requirement to create organizational value using BDA. Thereby, the Big Data Analytics strategy is formulated, and ultimately, the organizational value is created as well.

Keywords: Value Creation, Big Data, Analytics, Model

1. INTRODUCTION

Value creation is a major factor not only in the sustainability of organizations but also in the maximization of profit, customer retention, business goals fulfillment, and revenue. Value creation is a complex process, especially when it involves the external and internal factors of the organization. Value creation is a central concept in the literature of management and organization, whether at the micro level (i.e., individual-level and group-level) or at the macro level (i.e., organizational theory, strategic management). From the financial point of view, it is asserted that the value is created when a business revenue (return on capital) is more than the expenses (cost of capital). However, some analysts insist on a broader definition of “value creation” that can be distinct from the traditional financial measures. Indeed, the traditional methods of organizational performance assessment are no longer sufficient in today’s economy.

Some experts suggest that value creation should be the first priority for all employees and all organization decisions. In Marakon Commentary, Ken Favaro declared that [1]: “If you put value creation first in the right way, your managers will know where and how to grow; they will deploy capital better than your competitors; they will develop more talent than your competitors”. As he adds, this, per se, will provide you with a considerable advantage in creating the ability to achieve long-term and profitable growth.

The Big Data term has emerged as a result of the explosive increase of global data and has mainly been used to describe such an extremely large data set. Big Data creates new opportunities for discovering new values, helps us achieve a deep understanding of the hidden values, and creates new challenges such as the way of efficiently managing and organizing such data. When the value is intended to be created from Big Data scenarios, value creation entails being understood over a broader range of complexity. In the business world, huge amounts of operational and financial data are stored in millions of different data sources, and organizations are required to analyze a large volume of

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data to find facts being previously unknown to them [2]. Big Data creates new opportunities for discovering new values, helps us achieve a deep understanding of the hidden values, and creates new challenges such as the way of efficiently managing and organizing huge amount of data. The continuous increase of business data undoubtedly needs a more efficient real-time analysis to enable organizations to utilize its full potential, create competitive advantage, and finally, create new business values. Big data is a relatively unknown discipline, and organizations may gradually realize its necessity for their businesses.

The Big Data Analytics (BDA) aims to collect intelligent data and convert them into the business edge. The Big Data Analytics, also known as big data mining, is the process of discovering the practical knowledge patterns through Big Data [3]. The BDA process may enable organizations to discover the ever-changing patterns of knowledge and optimize their business process models based on the analysis results. The BDA also helps organizations achieve their Value-to-Customer (V2C) and Value-to-Firm (V2F) because it enables them to employ the knowledge discovery operation and concomitantly improve the internal and external business process models related to operations, marketing plans, and workforce and resources management [4]. Some questions that arises here is how organizations can utilize this massive quantity of data and create business value. Many may ask whether Big Data can create real value. If so, how? When an organization successfully analyzes complex or large data, i.e., Big Data, how it can create value from such a process? Notably, what is the proper model for creating organizational value using Big Data Analytics?

Analyzing the history of existing research on the Big Data Analytics, mining the various existing cases, and connecting these findings to the value creation theories can shed light on the probable impact of Big Data on the organizational value creation. Therefore, the main issue kept under scrutiny in this study is to find a conceptual model for creating organizational value using Big Data Analytics.

2. RELATED WORKS

Grover et al. [5] in their study entitled “Creating Strategic Business Value from Big Data Analytics” argue that in spite of the widespread propagation of Big Data and Big Data Analytics, the success rate of these projects and the strategic value created from such data is unclear. The authors acknowledge that the literature associated with BDA has mostly been focused on how to use BDA to improve organizational tactical capabilities, and few studies have dealt with its impact on creating organizational value. In addition, there are limitations on how to create strategic value for the organization. Notably, the ultimate success of any BDA project is to realize the strategic value of the business, which endows the organizations with a competitive edge. In this study, the authors describe the BDA value proposition by characterizing its components. Grover et al. propose a BDA value framework (Fig. 1) by extending the existing frameworks of the information technology value, then illustrate this framework through BDA applications in practice. Then, the proposed framework is discussed with regard to its ability to study the constructs and relationships that focus on the creation

and realization of BDA value. Also, the authors present a problem-based perspective of the suggested framework, where problems in BDA components can lead to the targeted research questions and future research areas. The research framework can help to provide crucial research planning for BDA, which can target research and practice based on the effective use of resources.

According to the proposed framework in this paper, the authors argue that the successful use of Big Data to achieve the strategic business value requires not only significant investment in data infrastructure and analytical technologies but also skilled analysts and strategic position. Businesses firmly need to assess the strategic role of the BDA and invest in data infrastructure, state-of-the-art tools, and data experts who are informed of the relevant technologies and data-driven business opportunities.

Zeng and Glaister [6] suggested a theoretical framework through which managers can manage data and create value by decentralizing, contextualizing, experimenting, and conveniently implementing insights acquired from data. The framework at issue is demonstrated in Figure 2.

In this research, a key contribution made by responding to the call to study how managers create value utilizing big data. To trace the causation chain, this research has recognized two modes of data-to-value process. Value generation with the aid of organizational data is largely transaction-driven, that is to say, firms tend to emphasize data analysis to create a more considerable economic rent. Value generation through open-access data network firms is substantially relation-driven, that is to say, the firms mostly focus on isolated datasets to gain a combined insight so as to create a larger economic rent also benefiting their business partners. Presenting an inductive model portraying data-driven value generation, the study provides insights on mechanisms describing why some firms outperform their counterparts in data-driven value generation. Analysis of the authors indicated that firms are different with respect to their abilities to create value, whether internally or externally, from big data.

Results of this research also confirm that enterprises concomitantly taking advantage of management and structured guidelines are more flexible and can effectively respond to the market changes. This research showed that firms tending to generate decentralized databases, follow ‘trial and error’ strategy, encourage collaboration between units, and have a curious outlook towards data-related issues are deemed to be more prone to generate value from data. The authors suggested that scattered data fail to be sufficient for maximizing data-based value generation. As they argued, value generation is closely related to the process of transferring relevant information through the internal firm-wide boundaries. In addition to concentrating on generating value directly from the firm-wide data network, enterprises take advantage of an open-access data network that provides a wide range of expanded and dynamic information dataset serving as a heterogeneous and complex source which is virtually impossible to be reproduced by individual firms.

Verhoef, Kooge, and Walk [4] in a book entitled “Creating Value with Big Data Analytics” indicated that in the CRM days, advisors inform that a lot of organizations are not successful to derive value from their Big Data tasks due to the lack of a data strategy. Therefore, the authors promised that the readers would

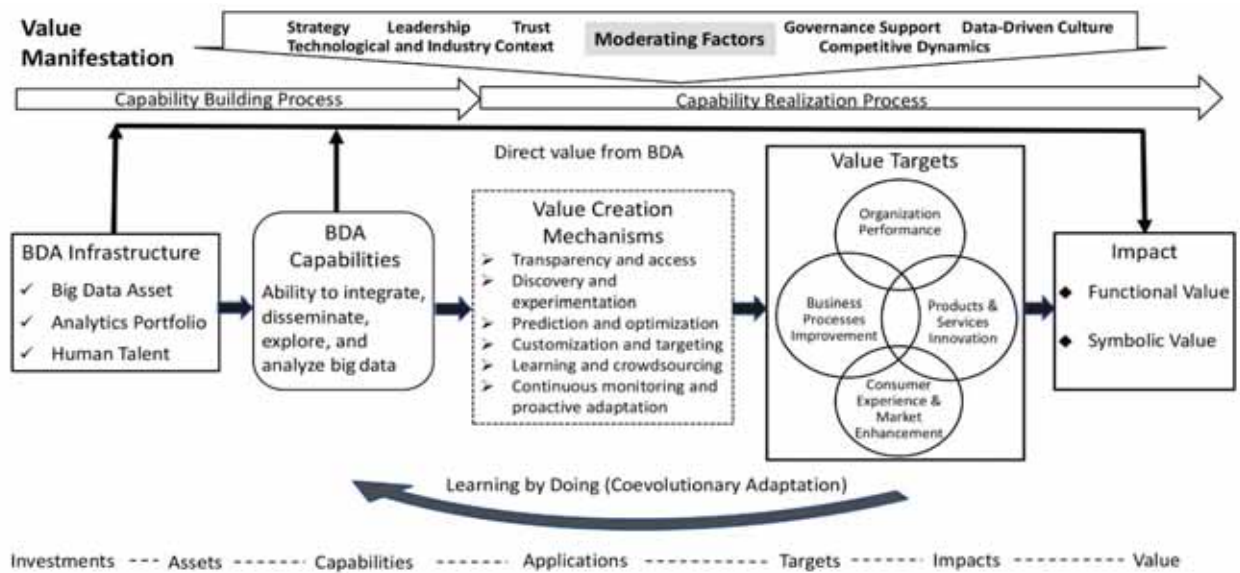


Figure 1 Creating value using Big Data Analytics [5].

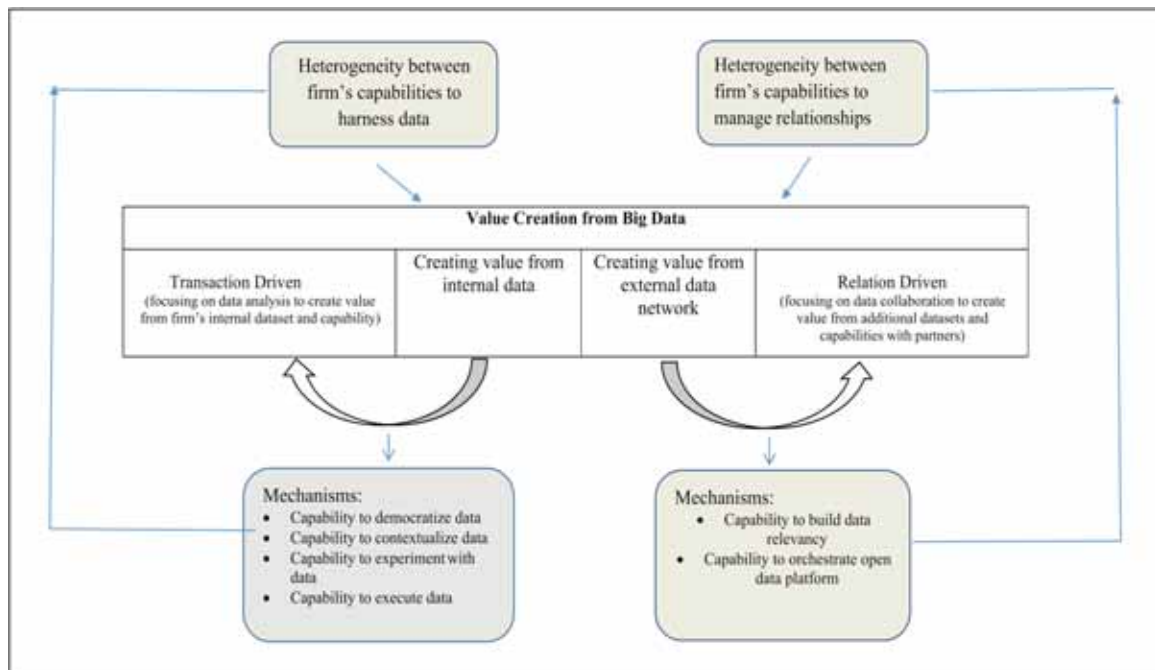


Figure 2 . The proposed framework for data-based value generation [6].

be offered with an answer for addressing and overcoming the challenges faced in the extraction of value from a wide range of information available, finally leading to better decisions and improved competitive benefit. Moreover, the subtitle ‘making smarter marketing decisions’ is believed to have a considerable attachment to the main title.

The book mainly serves as a model or framework for data-based value generation (see Figure 3). The critical steps in this model cover suites of metrics, data assets, Big Data abilities, Big Data Analytics, and Big Data value. At first, a brief review is presented, and then the stages are fully described one-by-one in the following chapters. The key themes for each stage are addressed in the opening chapters, and then their main associated problems are dealt with in the following sub-chapters. The

seminal part of the book is dedicated to the description of various data analysis techniques which are mostly known by a majority of readers (e.g., decision tree models, cluster analysis, time-series, and RFM). The book explicitly explains that the era of Big Data by no means labels traditional analytical techniques as primitive methods, it instead implies that the applications are currently more nuanced due to the vast majority of databases.

According to the authors, procedures, employees, systems, and firms are the crucial players in successfully developing BD. Therefore, improving skills, creating a team of experienced and well-informed members, developing well-structured systems and procedures, and revising the organization for providing highest influence on decision making seem to be the matters of significant importance. Improvement of tactics, such as

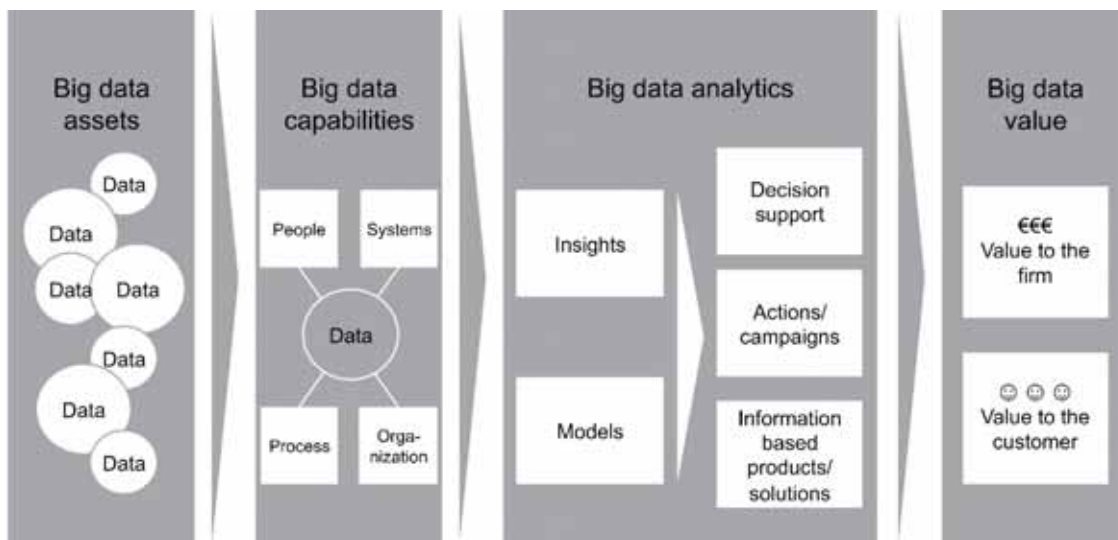


Figure 3 The model for value creation with Big Data [4].

illustrative case study, is suggested for attracting talented individuals into marketing analytics. The authors also provided a useful framework at the heart of it to operate Big Data within the company. A considerable portion of the content emphasizes on the description of the analytic approaches, but with slightly less focus on how this should be managed within an organization for delivering the value and deriving smarter decision making from data.

Elf and Andersson [7] reported that BDA is a moderately unfamiliar area and organizations are about to achieve more insights to apply it in their businesses. The goal of this research is to discover the primary measures the firms have to take for big data-based value creation. As the authors suggested, having in mind their structure, organizations have to decide whether focus merely on Customer Analytics or Process Analytics or both of them, with following an ethics plan (Figure 4). As they argued, this is the first step toward BDA-base value generation for organizations. According to their response to the above-mentioned question, organizations should determine the requirements and value creators. The components of the organizational structure, i.e., management support, cross-functional units, and capabilities, are considered as prerequisites, i.e., they are needed for BDA but inadequate for BDA-based value generation. Customer Analytics and Process Analytics, together with an ethics tactic, are considered to be the value generators as they can bring about either higher income or saving costs. Notably, as BDA plays a significant role in creating fundamental effective changes and achieving competitive advantage, it is likely to turn into a prerequisite for organizations in the near future.

Taking the first stage toward generating value from BD, the organization survival becomes more probable, and the opportunities are also likely to be considerably enhanced. Overall, the experimental results show that data-driven decision-making should be further encouraged in organizations and more individuals should dare to believe the outcomes of data analysis; however, the role of managers and their decision making should not be overlooked. The study not only highlights the role of BDA as a crucial player in the value-generating process but also describes the requirements to meet this goal. The authors

finally concluded that it is BD that sets the restrictions, but organizations can change it into an advantage by using BD efficiently.

Vidgen [8] discovered data-to-value process in organizations and the challenges they face in applying BDA. Vidgen used three case studies implemented on large organizations with a formal business analytics team and a large amount of data that can be considered “big data.” The case studies were analyzed using business analytics –based framework facilitating both data collection and value generation in the organization. Organizations ability to use analytics technique was investigated over a sociotechnical lens of organization/management, process, individuals, and technology. The analyses led to twenty crucial.

To investigate the measures required to be taken by organizations for value creation, the authors improve the framework utilized by Nerur et al. [9], who examined the organizational shift from old-style software to agile software improvement. The model shows the effects of such an alteration via four parameters (namely, organization/management, people, process, and technology). The model is a notable attribution of Leavitt’s diamond organization model and sociotechnical systems. The author utilized this model to investigate the effects of a shift to a data-driven organization. The business analytics ability can be supposed as a moderator between data collected and the value created (internally and externally) from that data over better decision-making by the organization (Figure 5).

Table 1 shows the comparison of related works based on four main issues in value creation with big data analytics.

3. RESEARCH METHOD

In this research we used exploratory mixed method. Based on this, using the qualitative approach identified dimensions, components, and indicators of value creation with big data analytics factors and the initial model of research is designed, in the next step, on the basis of the information obtained from the previous stage, the model was evaluated in three organizations:

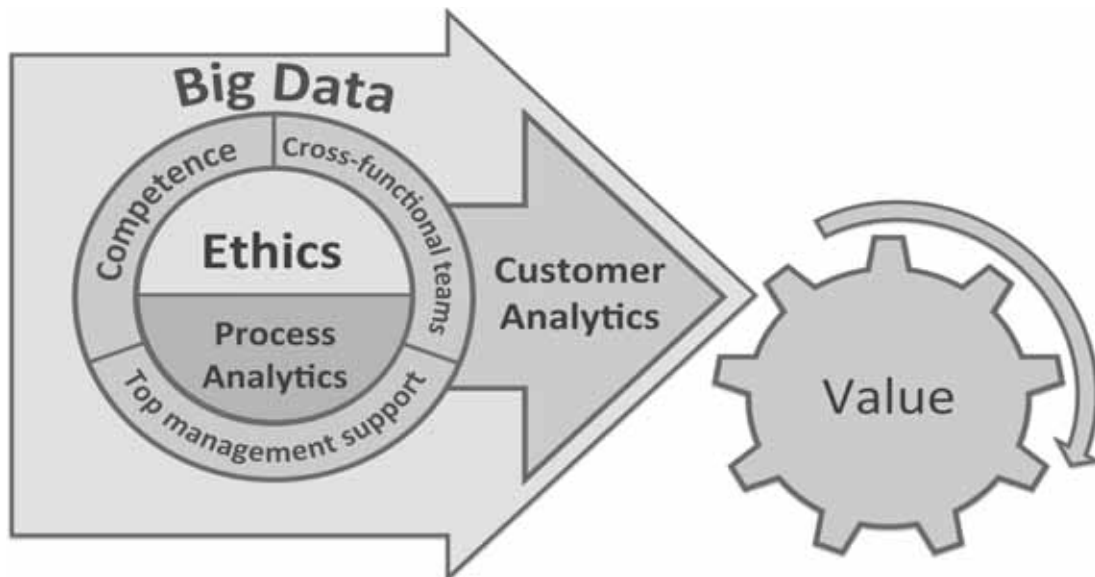


Figure 4 The components of a BD-to-value solution [7].



Figure 5 Research framework [8].

Table 1 Related work comparison based on research structure.

Author(s)	Big Data Analytics Infrastructure	Big Data Analytics Capabilities	Organization Capabilities	Big Data Analytics
Grover et al. [5]	✓	✓	×	✓
Zeng and Glaister [6]	✓	×	×	✓
Verhoef, Kooge, and Walk [4]	✓	✓	×	✓
Elf and Andersson [7]	×	×	✓	✓
Vidgen [8]	×	✓	✓	✓

Telecommunication Infrastructure Company, Islamic Seminary Management Center and Djikhala (as case studies) (Quantitative Approach).

The four main activities carried out for this research are: 1- Defining the Big Data Analytics 2- Defining the organizational value creation 3- Link 2 to the definition of Big Data Analytics and forming hypotheses 4- Examining different cases for testing hypotheses.

3.1 Research Objectives

1. Provide a model for creating value in the organization using Big Data Analytics.

2. Identify the factors affecting the creation of value in the organization using Big Data Analytics.
3. Identify the relationships among the factors affecting the creation of value in the organization using Big Data Analytics.

3.2 Research Questions

1. What is the model of organizational value creation using Big Data Analytics?
2. What are the factors affecting the creation of value in the organization using Big Data Analytics?

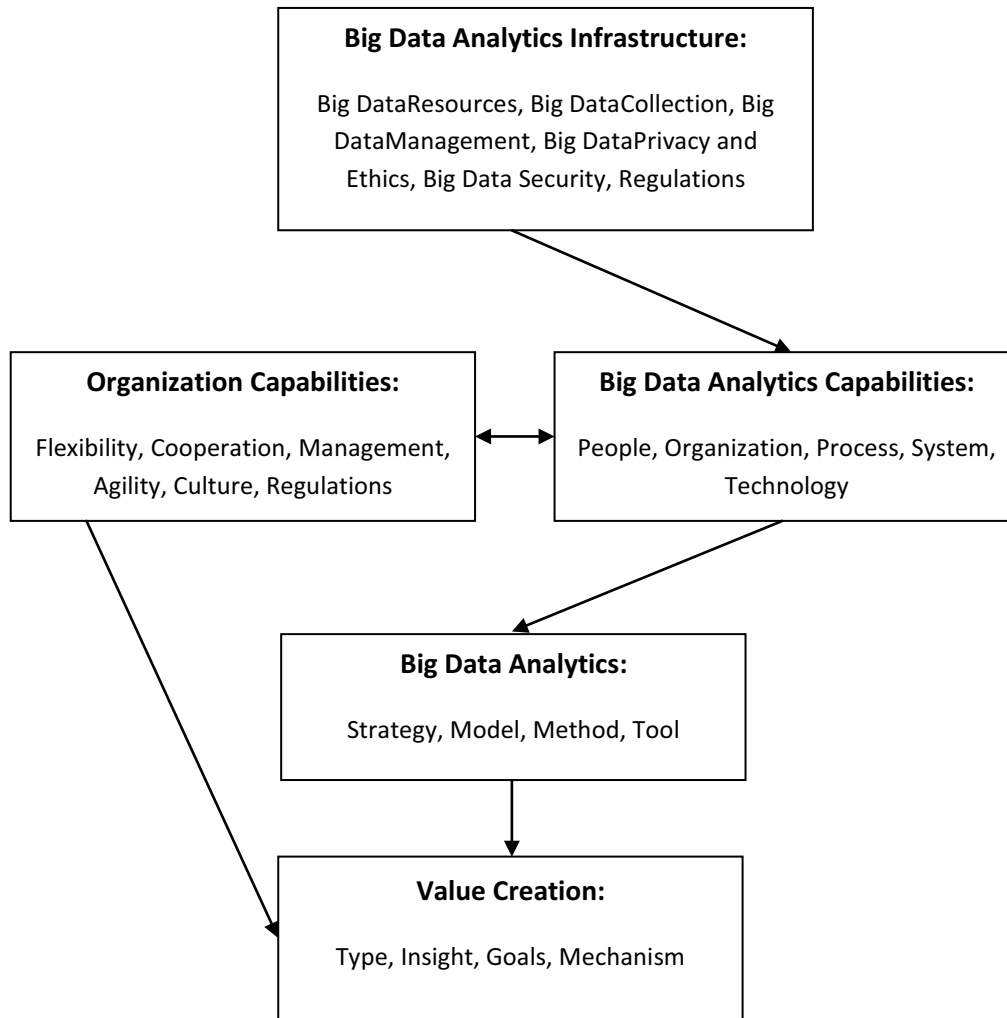


Figure 6 The initial research model for creating business value using Big Data Analytics.

3. What are the relationships among the factors affecting the creation of value in the organization using Big Data Analytics?

3.3 The Initial Research Model

Considering the literature review and other studies dealing with value creation through Big Data Analytics and also the results yielded from the content analysis of the qualitative interviews by the study participants, the initial research model for creating value using BDA is presented, as shown in Fig. 6.

3.4 Research Hypotheses

According to Fig. 6, research hypotheses are formulated as follows:

Hypothesis (1): There is a positive and significant correlation between the Big Data Analytics infrastructure and Big Data Analytics capabilities in the process of BDA-based value creation.

Hypothesis (2): There is a positive and significant correlation between the Big Data Analytics capabilities and organization

capabilities in the process of BDA-based value creation.

Hypothesis (3): There is a positive and significant correlation between the Big Data Analytics capabilities and Big Data Analytics in the process of BDA-based value creation.

Hypothesis (4): There is a positive and significant correlation between the organization capabilities and Big Data Analytics in the process of BDA-based value creation.

Hypothesis (5): There is a positive and significant correlation between Big Data Analytics and value creation in the process of BDA-based value creation.

4. RESULTS AND ANALYSIS

The Structural Equation Modeling (SEM), as a highly robust multivariate analysis technique belonging to the multivariate regression family, was used to analyze the research data. This method allows the researcher to simultaneously test a set of regression equations. The SEM is a comprehensive approach to test hypotheses associated with the relationships among latent variables, sometimes referred to as analysis of covariance structures, causal modeling, and LISREL [10].

The SEM is divided into two general phases of confirmatory factor analysis (CFA) and path analysis. The measurement

model specifies the relationship between indicators (i.e., the questionnaire questions) and constructs (correlations between the latent and observed variables), and the structural model determines the relationship among the factors under scrutiny (correlations between the latent and observed variables) to test the research hypotheses [11].

4.1 Statistical Population and Sample

The statistical population of the study includes managers (including managers of departments and deputy general managers) and IT experts (particularly data analysis managers and experts) of the Infrastructure Communication Company, Islamic Seminary Management Center, and Digikala. The population size (circa 240) was determined based on the statistics obtained before the research begins. In the present study, 148 people were selected as the sample via Morgan's Table [12]. Initially, the questionnaires were distributed three times both face-to-face and electronically, and then 121 questionnaires were collected as the basis to test research hypotheses.

4.2 Reliability and Validity

The research validity confirms the high compatibility of the given questionnaire with the research objectives. After designing the initial model based on the background of the research and analysis of the qualitative interviews, the model dimensions, indicators, and indices were sent to 50 experts in the relevant field, and then 19 experts returned their questionnaires. Then, the validity of each question under scrutiny was measured. Also, after applying some of the suggestions made by the experts in the final design of the questionnaire, the final questionnaire was presented to the supervisor, advisor, and some other related professors to be confirmed. According to their approval, the final questionnaire was designed and distributed among the statistical sample of the research.

Reliability refers to the consistency of a measurement instrument in yielding the same results under a similar condition. To determine the reliability of the questionnaire, 30 questionnaires were distributed among the sample members. Afterward, 26 out of 30 questionnaires were returned and considered as the basis to measure the reliability. The Cronbach's alpha value of the questionnaire was measured to be 0.90. As the Cronbach's alpha value is greater than 0.7, it can be claimed that the selected questionnaire holds acceptable reliability. Table 2 presents the reliability of the present study in details.

4.3 The Confirmatory Factor Analysis or Measurement Model

The researcher formulates the measurement model to define the correlation between the latent and observed variables. In the SEM methodology, it is required first to assess the construct validity to determine whether the selected indicators are adequately precise to measure the targeted constructs. To this end, the confirmatory factor analysis is used. In this method, if

the factor load of each indicator with its construct is greater than 0.5, it simply implies that the indicator at issue is precise enough to measure that construct or latent variable [13]. Table 3 presents the results associated with the CFA of the constructs affecting the creation of organizational value using Big Data Analytics along with its measurement indicators. As shown in this table, the factor load of most indicators is more than 0.8, indicating that the respective indicators hold adequate precision to measure the related constructs.

5. STRUCTURAL MODEL (PATH ANALYSIS)

Structural equation model shows how latent variables are correlated. The researcher develops the SEM to illustrate the specific relationships among latent variables through the direction of the arrows [13]. Indeed, SEM is used to test the study hypotheses.

After approving the measurement models as well as estimation of diagnostic and constructive validities, the relationships between the research constructs can be investigated. To this end, the model has been implemented in LISREL software. Figure 7 shows the general research model (path analysis) based on the standard coefficients, and the general research model (path analysis) based on the significance level has shown in Figure 8.

Table 4 shows the fitness indices of the research model. It is observed that the model is relatively fit.

6. TESTING THE RESEARCH HYPOTHESES

Table 5 summarily presents the results of testing the research hypotheses.

Hypothesis (1): There is a positive and significant correlation between Big Data Analytics infrastructure and Big Data Analytics.

Considering the fact that the significance value between Big Data Analytics infrastructure and Big Data Analytics capabilities equals 8.12, from the points of view of the study participants, Big Data Analytics infrastructure has a direct and positive effect upon the Big Data Analytics capabilities in the process of creating organizational value using Big Data Analytics.

The standard coefficient between Big Data Analytics infrastructure and Big Data Analytics capabilities was measured to be 0.79, meaning that 79% of the changes in the Big Data Analytics capabilities in the process of creating organizational value via BDA results from the Big Data Analytics infrastructure. Accordingly, the variables of Big Data Analytics infrastructure (i.e., Big Data resources, Big Data collection, Big Data management, privacy and ethics, Big Data security, and regulations) are the fundamental prerequisites for any change in creating organizational value through BDA. On the other hand, given that organizations have different sectors with different functions, and there is a cooperative interaction both within and between the sectors- clients may sometimes request a service that entails the simultaneous coordination of several sectors- the availability of BDA infrastructure appears to be a crucial requirement for

Table 2 Reliability of different variables of the questionnaire.

Variable	Cronbach's alpha value	Number of questions
Factors of Big Data Analytics infrastructure	0.92	20
Factors of Big Data Analytics capabilities	0.95	12
Total Factors of organization capabilities	0.91	19
Total factors of Big Data Analytics	0.83	9
The factors of value creation using Big Data Analytics	0.91	10
Questionnaire	0.90	70

Table 3 The outputs of the measurement model for Big Data Analytics Infrastructure.

Research constructs	Indicators	Load factor	t-value
Big Data Analytics infrastructure (BDAI)	Big Data Resources (BDAIRE)	0.84	9.51
	Big Data Collection (BDAIC)	0.88	10.79
	Big Data Management (BDAIM)	0.86	9.55
	Big Data Privacy and Ethics (BDAIPE)	0.90	8.83
	Big Data Security (BDAIS)	0.04	11.13
	Regulations (BDAIR)	0.73	7.19
Big Data Analytics capabilities (BDAC)	People (PE)	0.64	6.78
	Organization (OR)	0.94	8.06
	Process (PR)	0.92	8.56
	System (SYS)	0.83	8.05
	Technology (TECH)	0.84	8.24
Organization capabilities (ORGC)	Flexibility (FLE)	0.88	9.81
	Cooperation (COO)	0.83	9.53
	Management (MAN)	1	8.36
	Agility (AGI)	0.88	11.59
	Culture (CUL)	0.92	9.53
Big Data Analytics (BDA)	Regulations (REG)	0.87	8.87
	Strategy (STR)	0.82	5.76
	Model (MOD)	0.84	5.97
	Method (METH)	0.80	4.90
	Tool (TOOL)	0.82	5.76

Table 4 Fitness indices of the research model.

IFI	CFI	AGFI	GFI	P-Value	RMSEA	X ² /df	df	X ²
0.97	0.97	0.79	0.79	0.000	0.09	2.06	138	285.26

the organization to create value through BDA. For example, the government must support these systems or provide the infrastructure required for Information and communications technology in the community.

Hypothesis (2): There is a positive and significant correlation between the Big Data Analytics capabilities and organization capabilities in the process of BDA-based value creation.

Considering the fact that the significance value between Big Data Analytics capabilities and organization capabilities was estimated to be 5.01, from the points of view of the study participants, Big Data Analytics capabilities have a direct and positive effect upon the organization capabilities in the process of creating organizational value using Big Data Analytics.

The standard coefficient between the Big Data Analytics capabilities and organization capabilities was measured to be 0.41, indicating that 41% of the changes in the organization capabilities in the process of creating organizational value via

BDA results from the Big Data Analytics capabilities.

This hypothesis can be interpreted in the same way as the first hypothesis because as long as Big Data Analytics capabilities (e.g., the development of data analysis skills, the variability of the Big Data systems in tandem with the organizational changes, and the application of the state-of-the-art technologies in Big Data Analytics) fail to be available, the organization's capabilities cannot be flourished.

Hypothesis (3): There is a positive and significant correlation between the Big Data Analytics capabilities (BDAC) and Big Data Analytics in the process of BDA-based value creation.

Considering the fact that the significance value between Big Data Analytics capabilities and Big Data Analytics was estimated to be 6.88, from the points of view of the study participants, Big Data Analytics capabilities have a direct and positive effect upon the Big Data Analytics in the process of creating organizational value using Big Data Analytics.

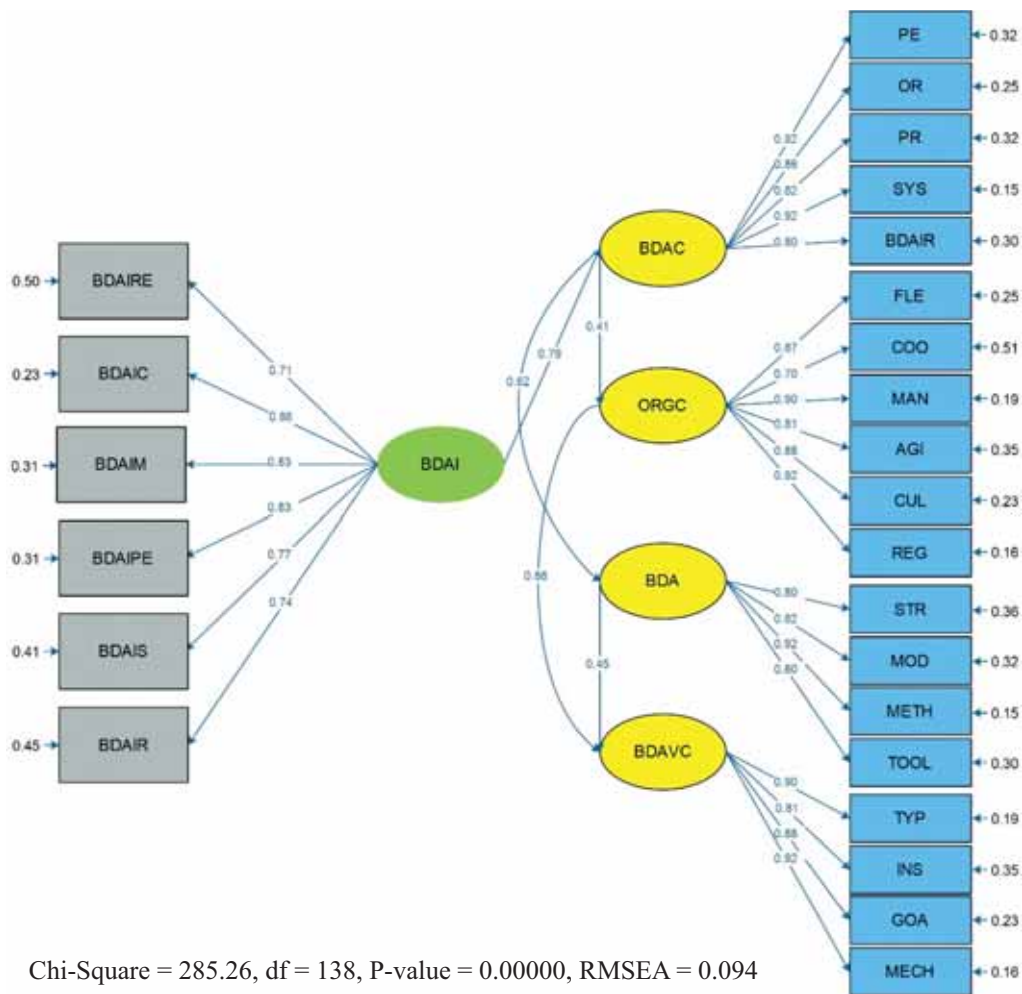


Figure 7 The general research model (path analysis) based on the standard coefficients.

Table 5 The results of testing the research hypotheses.

Hypothesis	Standard coefficient	T-Value	Hypothesis testing result
Hypothesis (1): There is a positive and significant correlation between the Big Data Analytics infrastructure and Big Data Analytics capabilities in the process of BDA-based value creation.	0.79	8.11	Confirmed
Hypothesis (2): There is a positive and significant correlation between Big Data Analytics capabilities and organization capabilities in the process of BDA-based value creation.	0.41	5.01	Confirmed
Hypothesis (3): There is a positive and significant correlation between the Big Data Analytics capabilities and Big Data Analytics in the process of BDA-based value creation.	0.62	6.88	Confirmed
Hypothesis (4): There is a positive and significant correlation between organization capabilities and value creation in the process of BDA-based value creation.	0.88	11.22	Confirmed
Hypothesis (5): There is a positive and significant correlation between Big Data Analytics and value creation in the process of BDA-based value creation.	0.45	7.40	Confirmed

The standard coefficient between the Big Data Analytics capabilities and Big Data Analytics was measured to be 0.62, indicating that 62% of the changes in the Big Data Analytics in the process of creating organizational value via BDA results

from the Big Data Analytics capabilities. Therefore, it can be interpreted that fine-tuning the condition and enhancing the capabilities of Big Data Analytics (e.g., taking advantage of BDA experts, providing a timetable and a general overview of the

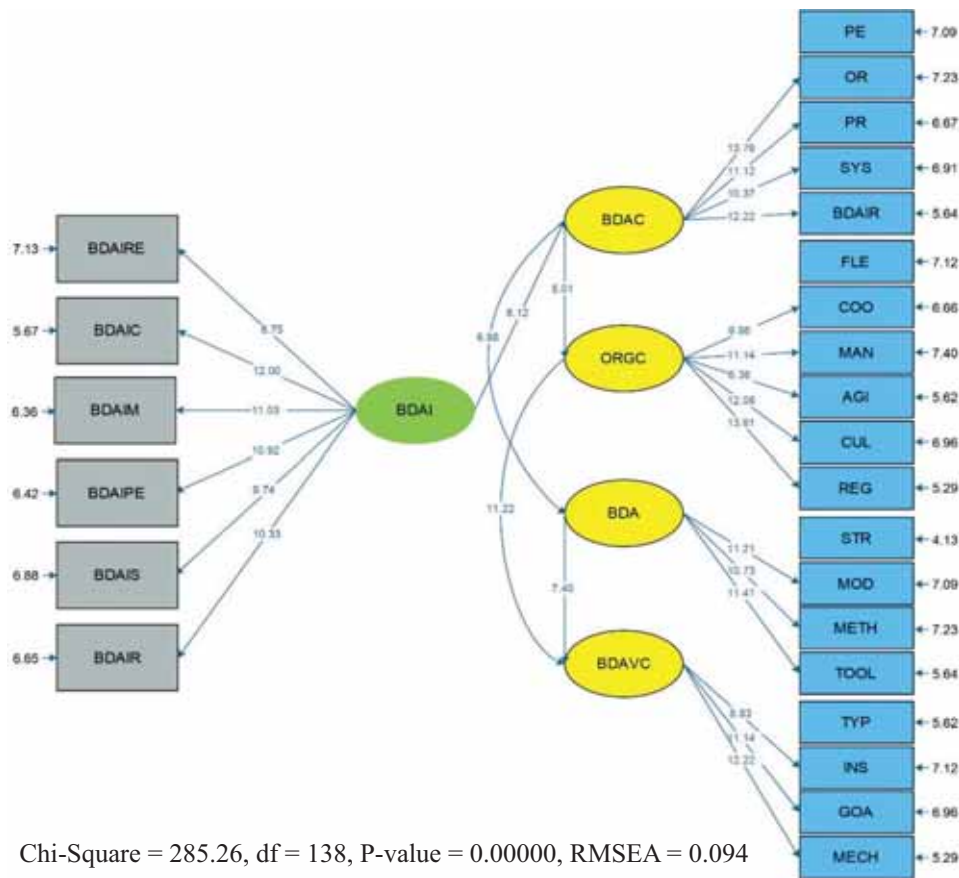


Figure 8 The general research model (path analysis) based on the significance level.

stages of data analysis process, promoting the flexibility of the BDA systems) can open up avenues for organizations to create organizational value using Big Data Analytics.

Hypothesis (4): There is a positive and significant correlation between organization capabilities and organizational value creation.

Considering the fact that the significance value between the organization capabilities and organizational value creation was estimated to be 11.22, from the points of view of the study participants, organization capabilities have a direct and positive effect upon the organizational value creation in the process of creating organizational value using Big Data Analytics.

The standard coefficient between the organization capabilities and organizational value creation was measured to be 0.88, indicating that 88% of the changes in the organizational value creation in the process of creating organizational value via BDA results from the organization capabilities. This issue is consistent with all management theories associated with planning because, in management, it is emphasized that in order to achieve the planned objectives, the organization capabilities must be initially investigated and then planned. Generally, the organization should identify and analyze the management strategy, goals, culture, and regulations required to create organizational value.

Hypothesis (5): There is a positive and significant correlation between Big Data Analytics and value creation.

Considering the fact that the significance value between the Big Data Analytics and organizational value creation was estimated to be 7.40, from the points of view of the study participants, Big Data Analytics has a direct and positive

effect upon the organizational value creation. The standard coefficient between the Big Data Analytics and organizational value creation was measured to be 0.45, indicating that 45% of the changes in the organizational value creation depends on Big Data Analytics.

7. CONCLUSION

Due to the increasing growth of data as well as the popularity of Big Data and Big Data Analytics to create organizational value, organizations should deal with a wide range of issues related to operational and financial data, market conditions, business, type of insight, customer analysis, product and service innovation, performance and supply chain management, risk management, the type of analysis, Big Data Analytics strategy, privacy, and data integrity, to name a few. As mentioned in the literature review, value creation using Big Data Analytics has its rootin a variety of factors. Relying upon the research model, in addition to the effects of the BDA infrastructure, BDA capabilities, and organization capabilities, the impact of the mentioned factors on the Big Data Analytics was also scrutinized in the present study. Finally, the overall direct and indirect impact of the stated factors upon the value creation using Big Data Analytics was investigated.

The present study intended to provide a model for creating organizational value using Big Data Analytics. To this end, the dimensions, components, and indicators were identified, and then, the conceptual model of organizational value creation

using Big Data Analytics was presented. Following the quantitative approach, the respective model was tested via a questionnaire distributed among the managers and IT experts in Infrastructure Communication Company, Islamic Seminary Management Center, and Digikala. The results show that creating organizational value using Big Data Analytics is a process that begins by analyzing the Big Data Analytics infrastructure and identifying the capabilities of the organization and those of Big Data Analytics. Eventually, the organization Big Data Analytics process is planned, followed by the value creation process.

REFERENCES

1. Favaro, K., *Put value creation first (if you want to grow your way to greatness)*. Marakon Commentary, 1998.
2. Nowling, R.J. and J. Vyas. *A Domain-Driven, Generative Data Model for Big Pet Store*. in *2014 IEEE Fourth International Conference on Big Data and Cloud Computing*. 2014.
3. Wu, C., R. Buyya, and K. Ramamohanarao, *Big Data Analytics = Machine Learning + Cloud Computing*. CoRR, 2016. [abs/1601.03115](#).
4. Verhoef, P.C., E. Kooge, and N. Walk, *Creating Value with Big Data Analytics: Making Smarter Marketing Decisions*. 2016: Routledge. 338.
5. Grover, V., et al., *Creating Strategic Business Value from Big Data Analytics: A Research Framework*. *Journal of Management Information Systems*, 2018. **35**(2): p. 388–423.
6. Zeng, J. and K.W. Glaister, *Value creation from big data: Looking inside the black box*. *Strategic Organization*, 2018. **16**(2): p. 105–140.
7. Elf, J. and K. Andersson, *One Step Towards Creating Value From Big Data-A Case Study on E. ON Elnät*. 2015.
8. Vidgen, R., *Creating business value from Big Data and business analytics: organizational, managerial and human resource implications*. 2014: Hull University Business School.
9. Nerur, S., R. Mahapatra, and G. Mangalaraj, *Challenges of migrating to agile methodologies %J Commun. ACM*. 2005. **48**(5): p. 72–78.
10. Hooman, H.A., *Structural equation modeling with Lisrel application*. 2005, Tehran: Samt.
11. Kalantari, K., *Structural Equation modeling in socio - economic research (with lisrel and simplis software)*. 2009, Tehran: Farhange Saba.
12. Krejcie, R.V., D.W.J.E. Morgan, and p. measurement, *Determining sample size for research activities*. 1970. **30**(3): p. 607–610.
13. Ghasemi, V., *Structural equation modeling in social research using Amos Graphics*. 2010, Tehran: Jame'e Shenasan.