

# THE IMPACT OF BIG DATA ON ENTERPRISE RESOURCE PLANNING (ERP) IN JORDANIAN COMMERCIAL BANKS

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## ABSTRACT

*This study is primarily aiming at the Impact of Big Data on Enterprise Resource Planning (ERP) in the Jordanian Commercial Banks. The study relied on the survey questionnaire to collect primary data from a simple random sample that comprised 162 respondents. In addition; the study adopted the descriptive survey design. Descriptive and inferential statistical technique was all used to analyze the primary collected data. The results indicated that Big Data (BDA) has a significant impact (in terms of volume, variety, velocity, veracity, value) on Enterprise Resource Planning (ERP) (Infrastructure, Data Privacy, Data Quality) in Jordanian Commercial Banks.*

**Keywords:** Big Data, Volume, Variety, Velocity, Veracity, Value, Enterprise Resource Planning.

## INTRODUCTION

There have been too many sayings and terms related to the concept of big data or the giants, which became a complete science that has its own aspects and specialties. This domain developed quickly, supported by the evolution of Internet and social media sites, and became as a target for several major companies and governments due to its importance at present and in the future. Scientists argued that it will lead the world to a considerable development that has the potential of changing the future of the world. Big data can be defined as a set of large and complex data that can't be processed and managed using the commonly-used methods and applications (Fosso et al., 2015). The data are collected in databases, where the processes of search, sharing, analysis, comparing and inducing results as well as storing all the information take place, regardless their size or importance. The mechanism includes hundreds of processes that take place and require a large number of devices and people to perform them. This case urges us to address the characteristics, importance and role of the gigantic amount (Kantmar, 2018).

The big data provide the competitive advantage of institutions, in case they benefited these data and analyzed them, since such a process provides a deeper understanding about customers and requirements. This, indeed, contributes to the process of decision-making inside the institution more effectively based on the data derived from customers' databases, and thus increases profitability and reduces loss (Lytras et al., 2015).

Making advantage of the big data is not limited to commercial projects and institutions, but it also extends to include several other domains, including energy, education, health, and major scientific projects, such as the human genome project (studying the genetics of humans).

The role of big data is not limited to the major companies or the technical companies, but there are other traditional and public sectors, customer service companies, as well as supply and manufacturing companies that make advantage of the outcomes of data analysis (Dutta, 2015). The currently available data are rapidly extending and their resources gain more diversity, in that they are available in different shapes and patterns. Undoubtedly, the organized and accurate data have a profoundly prominent role in making the appropriate decisions as well as setting the strategic policies and plans among decision makers. Despite the fact that the rapid availability of information for those demanding is viewed as a distinctive feature in this era, it imposes more challenges on decision makers. The big data are amongst the most important challenges that face the major companies due to the difficulty in processing data and making advantage of them. Babiceanu, et al., (2015) Therefore, studying the topic of big data in planning the resources of institutions is considered as one of the most important topics and needs further investigation and analysis.

### **THE STUDY PROBLEM**

In the light of the accelerating changes and global openness, there have been a considerable amount of data that are produced and stored; these data are also accessible *via* various resources, making them as a source of power to communities. When these data are managed properly, they contribute to economic and social development. Therefore, there is an increasing acknowledgement that the success of sustainable development depends on the ability of governments, companies and institutions in the civil society to employ the available data in the process of decision making by developing the systems of creative data that depend on the updated data for sustainable development (Bernard Marr, 2016). The realization of the developed countries for the importance of big data contributed to their success in accelerating the pace of development. However, in the case of the developing countries in general, and the Arab countries in particular, they did not adopt the system of big data, despite their importance and ability to make the intended positive change inside communities due to the lack of the basic local data; a case that resulted in a delay in achieving sustainable development. Hence, the world recently witnessed an increasing realization for the importance of big data and their role in promoting sustainable development, since they are viewed as a new resource that enhances change inside the community, in case they are used properly (Mayer-Schönberger, 2013). Such data provide a unique range for understanding the community and improving the way of living and doing work. Even though the Arab countries do their efforts in possessing technological equipment and making advantage of that, they are still within the range of good intentions and lack the sufficient investment in the available potentials, in terms of using them in analyzing and processing big data, which can be utilized in promoting developmental policies (Bernard Marr, 2016). Therefore, the current study aimed at demonstrating that it is time to pay considerable attention to the revolution of data in order to employ it as an effective tool to achieve sustainable development. Accordingly, the importance of this study lies in the importance of the role played by big data in promoting sustainable development. It is hoped that the current study would contribute to opening new horizons in front of researchers, decision makers and practioners to the big data in various technological, cultural, social and domains. This study may provide more information about big data and show that data represent a source of power and have the potential to intensively enhance sustainable development, in addition to their impact on adding more prosperity to communities, especially at the present time relating to knowledge community.

## OBJECTIVES OF THE STUDY

The aim of this study is to identify the effect of Big Data on Enterprise Resource Planning. In addition, this study aims to achieve the following specific objectives:

1. To examine the nexus between volume and Enterprise Resource Planning.
2. To examine the nexus between variety and Enterprise Resource Planning.
3. To examine the nexus between velocity and Enterprise Resource Planning.
4. To examine the nexus between veracity and Enterprise Resource Planning.
5. To examine the nexus between value and Enterprise Resource Planning.

## Research Hypotheses

The following null hypotheses are formulated for the present study to make hypothetical answers to its questions;

*Ho1: There is no statistical significant effect of volume in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

*Ho2: There is no statistical significant effect of variety in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

*Ho3: There is no statistical significant effect of velocity in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

*Ho4: There is no statistical significant effect of veracity in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

*Ho5: There is no statistical significant effect of value in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

## LITERATURE REVIEW

Recent developments in big data research and business analytics will foster a new generation of information systems capable of managing the collective wisdom in human decision making and smart machines (Lytras et al., 2017). Big data research is aligned with the evolution in emerging information technologies research. New information processing paradigms further promote the significance of big data, and have a great, impact on its volume and coverage. A number of application domains and industries already adopt big data research with significant success (Arnaboldi, 2018). Big data and the added value related to analyzing them: Big data have a great importance due to the competitive advantage that they provide to institutions in case they are well analyzed and utilized. These data make organizations more effective based on the employed information taken from the customers' database, and thus they increase efficiency and profit and reduce loss and risks. In this vein, Wall Market, which is an American shopping center and one of the biggest companies in the world in terms of revenues, was able to improve research results for its products *via* the internet with a percentage of (15%). Furthermore, McKinsey's report- which is an entrepreneur company in the domain of consultation business—suggested that if the health sector in the USA used the techniques of analyzing big data effectively, it would gain revenues that exceed (300) million \$ as an annual surplus in the budget of the American Health sector. This was confirmed by Georde, et al., (2018).

Zhaohao, et al., (2018) The results revealed that the most important domains which organization scan use in storing big data is related to the management of the organization's

assets: By analyzing big data, organizations can manage their assets in a new way, where weakness can be determined in assets. Analyzing those data would also detect deficit or the surplus in assets, in that the decision-maker would have the opportunity to evaluate assets from more than one side. Additionally, data analysis contributes to re-division and integration of the groups of organization's assets, so that decision-makers can limit the frequency of assets.

Databases that are specific to beneficiaries: It is well-known that organizations have several data about beneficiaries. The study of beneficiaries behaviors towards the organization's groups, either in the conventional environment or the digital networking one, is considered as valuable in relation to innovative developments about the way of displaying and providing information in accordance with the method desired by beneficiaries.

Human resources development: There are various specialized and non-specialized human resources organizations. When there is a single unified database that includes all the data of employees to find out strong relationships among employees and induce information and cognitive patterns among them, decision makers will be able to identify the available human resources in a new and innovative way that helps them to redistribute them across the various departments of the organization.

The information systems available in the organization: By re-dividing and integrating assets as well as developing and distributing the available human resources in the organization and investigating the behavior of beneficiaries, decision makers will have a clear view about the way of evaluating the feasibility of provided services and their relationship with the right planning of providing new services. From the academic side, Related studies Into big data has enticed attention at the level of widely read scientific outlets such as Science and Proceedings of the National Academy of Sciences because because of the generic nature and of the inquiries it Agarwal & Dhar (2014).

Related opportunities with data and analysis in organizations have helped interest significant interest in BDO, which is often referred to as the techniques, systems, methodologies, applications, and that analyze great variety of critical data to help a firm's better understand and make timely decisions (Gandomi & Haider, 2015; McAfee & Brynjolfsson, 2012). Study (Arnaboldi, 2018) about the real impact of big data research has been initiated sets the significance of the human decision maker and big data information processing cycle. There is an assent between die rent academics that big data can make a big impact. Ajit Kumar (2016) discusses Impact of Big Data Analytics on Healthcare and Society. The results of the study showed: Big Data Analytics impact health care and Society and great importance of big data, many analytical companies are engaged in finding hidden information in big data. Miltiades & Anna Visvizi (2019), study titled Big Data and Their Social Impact: Preliminary Study. The ultimate contribution of this research work is the agreement of participants that the added value of big data towards responsive social aware services to critical social problems is just the beginning of the journey and not its end. Acharjya & Ahmed (2016). This study aimed to Identify the potential impact of big data challenges, open research issues, and various tools associated with it. As a result, this paper provides to explore big data at numerous stages. Additionally, it opens a new horizon for researchers to find the solutions, based on the challenges and open research issues (Rodrige, 2018). Importance of Big Data in contemporary ERP Systems. In order for business to benefit the most out of implemented ERP systems, they have to incorporate Big Data techniques and practices to handle and synthesize the large structured, semi-structured and unstructured data. Ahmed elragal (2014) this paper suggested a future research agenda to bring together big data and ERP. While almost everyone is talking about big data at the product level, relationship with social media, and relationship with Internet of things. This paper tried to integrate big data and ERP. A research agenda is discussed and introduced in

this paper (Mark & Sophie, 2018). The importance of big data and knowing the gaps in the accounting literature, the study presented research opportunities to use the data Information and information exchange, In the field of accounting and finance and information. The results of the study showed: Big data is characterized by, Safety, Visualize the data, Predictive analytics, Data management, and data quality.

## **RESEARCH METHODOLOGY**

This study is regarded as a descriptive and analytical research. The goal of descriptive research is to describe a phenomenon and its characteristics (Nassaji, 2015). In this study, a quantitative approach was employed to collect data, where this was applied by distributing a questionnaire. Quantitative research is searching for quantities in something and to establish research numerically. Quantitative researchers view the world as reality that can be objectively determined, through the process of data collection and analysis (Sukamolson, 2007).

### **Population and Sampling**

The population size of this study consists of (13) commercial banks, with totality of (360) managers from the top management level, based on (Central Bank of Jordan's Annual Report, 2019). Three commercial banks, declined participating in the survey due to privacy policies of the banks, and they are subsequently removed from the population size. The population size that was further worked with was (280). The appropriate sample size for a population size of 280 is 162. According the recommended recommended. Krejcie & Morgan (1970), as suggested by Sekaran & Bougie (2010). Therefore, the sample size of this study had become by (162 ). Hence, 162 questionnaires distributed to the targeted.

## **DATA ANALYSIS**

Data collected was analyzed using descriptive statistics Descriptive analytical tools included frequencies, percentages, mean and standard deviations. The analysis of these objectives was also improved by conducting T-tests on, Big Data and Enterprise Resource Planning towards this end, statistical tests were conducted at three levels of significance, 0.05, 0.01 and 0.001 respectively. Second, Inferential analysis, a multiple linear regression analyses were used to establish the influence of Big Data in Enterprise Resource Planning.

### **Reliability of the Instrument**

Reliability test results Cronbach's alpha is a test of internal consistency for the instrument. That overall Cronbach's alpha coefficient score for the instrument of the study was good (0.87). In specific, all the subscales in the instrument had a good Cronbach's alpha score (>0.7), with exception to velocity (0.69), and value (0.70), however, they are still acceptable scores according to some citations (Sekaran & Bougie, 2010).

## **RESULTS AND DISCUSSION**

The study collected 320 filled questionnaires. Data cleaning process was taken in order to prepare the data for analysis. Data cleaning was done to eliminate outliers. The questionnaires were edited to determine any irregularity, oversight and ambiguity before coding. The study used descriptive statistical techniques to code the collected data in the codebook using SPSS in order

to screen for any code discrepancies. All the questions were entered and the results from data screening showed that the data met the required edge.

## Descriptive Statistical Analysis

### Big Data

The study sought to investigate the effect of Big Data in Enterprise Resource Planning. Table 1. Presents the findings Descriptive Statistical Analysis of Big Data.

<b>Big Data</b>	<b>Mean</b>	<b>Std. Deviation</b>
Volume	3.88	1.26
Variety	4.2	0.838
Velocity	3.9	1.61
Veracity	4.03	1.108
Value	3.95	1.435
Grand Mean	3.992	1.25

Table (1) below, shows that the means of Big Data variables range from 3.88 to 4.20 with a standard deviation between .838 and 1.610. This indicates that respondents agree on the medium implementation of Big Data variables that. The average mean is 3.992. With a standard deviation of 1.250, indicates that the respondents are highly aware and concern about Big Data.

### Enterprise Resource Planning

<b>Enterprise Resource Planning ERP</b>	<b>Mean</b>	<b>Std. Deviation</b>
Infrastructure	3.83	1.11
Data Quality	4.1	1.008
Data Quality	3.77	1.231
Grand Mean	3.9	1.116

Table (2) below, shows that of Enterprise Resource Planning items range from 3.77 to 4.10 with a standard deviation between 0.97 and 1.14. This indicates that respondents agree on the high implementation of Enterprise Resource Planning. The average mean is 3.9 with a standard deviation of 0.78, indicates that the respondents are highly aware and concern about of Enterprise Resource Planning.

### Study Hypotheses Test

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	1.144	0.235		8.638	0
Volume	0.278	0.055	0.389	3.746	0
Variety	0.258	0.067	0.383	7.846	0
Velocity	0.114	0.069	0.444	4.31	0
Veracity	0.358	0.054	0.413	5.625	0
Value	0.189	0.049	0.399	6.852	0

### Dependent Variable: Service Quality

*Ho1: There is no statistical significant effect of volume in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy). Table (3) shows that there is significant effect of effect of volume in Enterprise Resource Planning (Infrastructure, Data Quality, Data Privacy), since (Beta=0.389, t=3.746, sig.=0.000, p>0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that there is effect of volume in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

*Ho2: There is no statistical significant effect of variety in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy). Table (3) shows that there is significant effect of effect of volume in Enterprise Resource Planning (Infrastructure, Data Quality, Data Privacy), since (Beta=0.383, t=7.846, sig.=0.000, p>0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that there is effect of variety in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

*Ho3: There is no statistical significant effect of velocity in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy). Table (3) shows that there is significant effect of effect of volume in Enterprise Resource Planning (Infrastructure, Data Quality, Data Privacy), since (Beta=0.444, t=4.310, sig.=0.000, p>0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that there is effect of velocity in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

*Ho4: There is no statistical significant effect of veracity in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy). Table (3) shows that there is significant effect of effect of volume in Enterprise Resource Planning (Infrastructure, Data Quality, Data Privacy), since (Beta=0.413, t=5.625, sig.=0.000, p>0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that there is effect of veracity in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

*Ho5: There is no statistical significant effect of value in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy). Table (3) shows that there is significant effect of effect of volume in Enterprise Resource Planning (Infrastructure, Data Quality, Data Privacy), since (Beta=0.399, t=6.852, sig.=0.000, p>0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that there is effect of value in Enterprise Resource Planning (Infrastructure, Data Quality, and Data Privacy).*

## CONCLUSION

In this study, we had investigations invocation of the subject of big data, which has recently gained lots of interest due to its opportunities and benefits. In recent period data are generated at a dramatic pace. Analyzing data is challenging a general. To this end in this study, we survey the various Some Variables of big data. Accordingly, the literature was reviewed in order to provide an analysis of the big data analytics concepts which are being researched, as well as their importance to decision making. Our paper this will inspire future Studies to understanding of the complexities apparent in Big Data utilization towards the commendable objectives of a 'Better World' through productive economic changes.

## RECOMMENDATIONS

In the light of the results, the researchers recommend the following:

Holding training workshops and courses for researchers and academics and educating them about the importance of big data analysis as well as the way of processing, storing, managing and using them in all the domains.

This study is considered as an open intellectual invitation about the necessity of conducting further studies in the domain of big data and their impact on planning institutional resources in business organizations.

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