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The Mediating Role of Business Intelligence in Supporting the Relationship between Big Data and Operational Performance Within the Service Sector in Jordan

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Abstract. Current research study aimed at exploring the mediating influence of business intelligence on the relationship between big data and operational performance. 5 Vs. of big data were adopted (Velocity, Volume, Value, Variety, Veracity) and the perspective of operational managers were taken into account. Quantitative approach was adopted and a convenient sample of (249) operational mangers responded to an online questionnaire. SPSS was employed to process the collected primary data and results of study was able to accept the hypothesized ideas arguing that big data has a significant influence on business intelligence and operational performance, and business intelligence has a significant impact on operational performance, which indicated the final result in which *"Business Intelligence mediates the relationship between Big Data and Operational Performance"*. Based on study results, researcher recommended the need to identify the role of taking into account the privacy of some data in the analysis and its impact on the organization from a financial point of view. Further recommendations were presented in the study.

Keywords: Big Data, Velocity, Volume, Value, Variety, Veracity, Operational Performance, Business Intelligence

1. Introduction

It is undeniable that the operational practices of organizations today that depend on technology for their work result in a huge amount of data that needs to be employed in a way that ensures maximum benefit from it (Mariani et al, 2018). Massaro et al (2019) argued in his study that the recent apparent interest in big data has contributed to encouraging many organizations to focusing on developing the ability to analyze data in order to improve the operational performance of the organization.

As for Jayaraj and Abdul Samath (2020) referred to the active role played by (BDAC) Big Data Analysis Capabilities in providing more accurate and appropriate information, which makes the organization more able to discover many new opportunities (Balakrishnan and Rahul, 2018). Lies (2019) and Bhat (2020) agree with this idea, adding that the analysis and processing of big data provides the organization with a valuable source of information to improve marketing operations and activities, which in turn is able to develop and innovate new products and services.

Mohammed (2020) argued in their study that big data analysis has the ability to be positively influential on the performance of organizations, Ameerhem study (2020) agreed on the same idea arguing that big data analysis and analytics have the ability not to only influence operational performance, but it has the ability to be supportive for better financial performance. Also, Alnoukari (2020) concluded that business intelligence is able to drive big data analytics to support operational performance among organizations and Dubey et al (2020) appeared to have the same conclusion stemming that business intelligence-based data analytics is able to support operational performance through positively influencing supply chain management.

Based on above argument, this current research study aimed at exploring the mediating influence of business intelligence on the relationship between big data and operational performance. 5 Vs. of big data were adopted (Velocity, Volume, Value, Variety, Veracity) and the perspective of operational managers were taken into account.

The importance of the current study stems from what the world is witnessing today from a huge explosion in the amount of digital data that the organization retrieves during its work and the digital revolution that affects the operational performance of organizations and consideration of the possibility of the organization benefiting from this data to the maximum degree.

As a contribution of the study, this article seeks to explore the mediating role of business intelligence in supporting the relationship between big data and operational performance within service sector in Jordan. Specifically, the study aims to determine the relationship between big data, business intelligence and operational performance, while exploring how the use of business intelligence tools could possibly act as a mediator for the former two. In addition to this, the article seeks to understand how BI can be effectively leveraged to create an efficient operational performance within service sector in Jordan, as well as how this combination can lead to improved performance due to better customer satisfaction and higher profitability. Overall, the article aims to provide research and insights into how the combination of these three tools can potentially benefit service sector operations in Jordan and how they can be leveraged to enhance operational performance.

2. Literature Review

2.1. Business Intelligence

According to Ain et al (2019) business intelligence is a set of processes, tools, software, infrastructure and devices that enable the organization to analyze data and provide valid information for decision-making process in the organization. In other words, Zhang and Chen (2020) believe that business intelligence is the

"smart" technological programs and services that enable the organization to convert data resulting from its daily activities into useful information in accessing insights that support decision-making.

The concept of business intelligence stems from the idea that knowledge is the product of analyzing organizational data and converting it into useful information for managers and decision-makers (Rikhardsson and Yigitbasioglu, 2018; Hashem, 2016); in other words, BI is capable of processing a huge amount of data and converting it into information capable of providing insights about the performance of the organization in its various departments and production units. In addition, business intelligence provides valuable and coherent information capable of helping stakeholders from investors and partners to make decisions that are in favor of the organization (Božič and Dimovski, 2019; Al-Malahmeh, 2022).

Liang and Liu (2018) argued that the reliance on business intelligence to take advantage of big data in the organization is able to provide logical solutions related to organizational performance, financial performance and organizational productivity, and BI is able to indicate the most profitable factors for the organization and identify the factors that increase the percentage of loss or those less profitable factors.

Aydiner et al (2019) and Al-Khowarizmi et al (2020) confirm that in the past, IT employees were the main users of business intelligence applications, but today business intelligence tools and applications have evolved to become more accessible, which allowed other elements of the organization to use these applications, work on them, and interact with them in order to access agile and intuitive information for faster decision-making.

2.2. Big Data

In the first place, data refers to the raw image of information before it enters the stages of sorting, arranging, analyzing, and classifying processes, and it appears on several types that include structured data, unstructured data, and semi-structured data, and in general, it is not possible to benefit from of the data in its raw form (Haoxiang and Smys, 2021).As for big data, it is the sum of data in its raw form, which is difficult to process in the traditional way of databases due to its huge size, and it needs special and different tools and processes in order to deal with this huge amount of information (Hajjaji et al, 2021; Hashem et al., 2022).

Sheng et al (2021) define big data as information assets that are fast flowing, large in size and diverse, and their processing and dealing with them requires special and unconventional techniques. Majeed et al (2021) defined it as data from every digital operation that takes place at any time and moves between devices, individuals, and sensors, and it varies in size, flow, quality, and source.

2.3. Big Data 5 Vs.

In general, big data is nothing but the result of the information explosion, not only in the business environment, but in all areas of daily life, which contribute to the output of a huge amount of data, given that any operation that an individual performs during their day is data, even if it was taken fraction of a second of time (Deepa et a, 2022; Müller et al, 2018). An example of this, what came along by Kushwaha et al (2021) arguing that international statistics confirmed that the engine of one conventional passenger aircraft produces 10 terabytes of data every minute of time.

Given the huge amount of data that are being produced every single fraction of a minute; specialists have presented characteristics for what to be called as huge data which included Cappa et al (2021); Ghasemaghaei and Calic (2019); Thudumu et al (2020) and Mohammadpoor and Torabi (2020); Ristevski and Chen (2018); Gao et al (2020); Anshari et al (2019):

Velocity

That is, the speed of data flow and creation, and the faster the data flow, the more it is in favor of the

competitive advantage of the organization in order to increase its ability to provide actionable insights.

Volume

That is, the size of the data that is extracted from a source, and the size plays an active role in determining the value and importance of this data, and it is measured in petabytes, exabytes, and terabytes.

Value

Value can be thought of as the expected result from big data, or as the top of the graph and value that can be accessed in order to obtain applicable insights such as the ability to predict the number of people who may join an application, or the number of potential customers.

Variety

That is, the difference in data sources that are obtained, and it includes structured, unstructured, and semi-structured data. Previously, the only type of data came in the form of numbers and databases. Today, with the technological explosion, the types of data have become different, and they include images and video clips, audio clips, and various files and comments, which required greater efforts to deal with this data.

Veracity

It is the extent of validity and reliability of the data received by the organization, as it has a significant impact on the information and final outputs of the organization, so clean data is considered more reliable.

2.4. Operational Performance

Performance is considered one of the most important basic axes that constitute the collective efforts of individuals working in the organization and the degree of achievement of the organizational goals set (Chowdhury et al, 2019).Organizations usually tend to evaluate organizational and operational performance in order to reveal the level of effectiveness of performance in achieving organizational goals and to identify and treat weaknesses and strengths and exploit them according to an appropriate strategy that is in line with the various variables in the internal and external environment of the organization (Khan et al, 2020). Kumar et al (2019) defined operational performance as the efforts and motivation of the individual working within the organization in order to achieve its strategic objectives, while Wong et al (2019) viewed operational performance as the ability of the organization to exploit its human, financial and material resources in order to work efficiently and interaction between behavior and achievement.

Setty et al (2018) and Pan et al (2019) indicate that the operational performance in general leads and directs the financial performance of the organization, and in order to evaluate and measure operational performance, it is necessary to look at three dimensions, which are:

Productivity: It represents the ratio between outputs and inputs in organizational processes. Productivity is considered by evaluating labor productivity, which is the ratio of worker output / hour, which is the basic determinant of wages, and capital productivity, which is the ratio between the subject capital and the productivity ratio during a specified period of time.

Profitability: It is the relationship between the output of the organization in relation to the working capital during a specific period of time, and it is calculated either according to the time period, according to the job, or according to the production unit.

Efficiency: It is the ability of the organization to use the minimum amount of resources in order to reach the desired production volume of outputs.

3. Hypotheses Development

Mohammed (2020) study aimed to identify the role of big data analysis in developing and improving the operational performance of organizations through a field study on a sample of (98) executive directors of information technology departments, operational managers, and data analysts in telecommunications organizations operating in Egypt. The variables of the study represented the dimensions of big data analysis, which included (the ability of big data analysis management, the technological capabilities of big data analysis, and the ability of analytical skills to analyze big data). After the analysis, the study concluded that there is an impact of big data analysis on the operational performance of organizations, and it has been proven that there is a statistically significant positive effect of big data analysis capabilities on the operational performance of the organization.

Ameerhem study (2020) tried to identify the impact of big data analysis on the financial and operational performance of organizations listed in the Egyptian stock market by (53) organizations, and the study tool was distributed to a sample of (260) individuals that included financial management officials / information technology / financial analysts. The study concluded that there is a statistically significant effect of big data analysis on the financial and operational performance of the organizations under study through the ability of big data analysis to give a comprehensive view of the operational and financial situation of the organization, understand its activities, improve financial performance, and develop operational performance.

Alnoukari (2020) study aimed to demonstrate the impact of business intelligence and big data and its analysis on the organizational performance of organizations through a review of a group of previous literature. In order to achieve the aim of the study, the researcher analyzed (33) previous studies that dealt with business intelligence, big data analysis, and linked it with the organizational and operational performance of various organizations. The study concluded that business intelligence positively affects the analysis of big data and the mechanism for benefiting from it, which would positively affect the operational and organizational performance, in addition to the positive impact of business intelligence in terms of improving the outputs of big data analysis, which would have a positive impact on organizations level of innovation, agility, business development and supply chain performance.

The study of Sun et al (2018) attempted to identify the mechanism of employing big data and the outputs of its analysis in order to improve business intelligence. The previous literature was relied upon to achieve the objective of the study, and the study concluded that the analysis of big data serves business intelligence in enhancing the practices and activities of business intelligence and information systems in the organization, in addition to developing many characteristics of business intelligence such as relativism and decision-making And the mechanism of developing products and services, which gives a greater opportunity to computerize big data and contribute to deepening its positive impact on organizations.

Dubey et al (2020) attempted to demonstrate the role of big data supported by business intelligence in positively affecting the operational performance of organizations. The quantitative approach was adopted in distributing (256) questionnaires to industrial organizations in India, and through analysis it was proven that there is an impact of big data supported by business intelligence on the operational performance of these organizations through the impact on machine learning and supply chain management. The study also found that there is an impact of the analysis of big data improves the operational performance of organizations by helping the organization improve its capabilities and explore opportunities available to it.
The study of Liang and Liu (2018) reviewed previous literature between the years 1990-2017 related to the employment of business intelligence in the service of big data in order to develop the performance of organizations and their decision-making processes. By reviewing the previous literature, the study concluded that there is a significant impact of business intelligence in big data analytics represented in the

opportunities offered by business intelligence in relation to data such as (data mining, social media, and the most influential of which is cloud computing), in addition to that , It was proven through the study that there is an impact of business intelligence on the analysis of big data by referring to the opportunities for data storage and knowledge management related to data analysis, which positively affects the operational and financial performance of organizations.

Zraqat (2020) aimed at exploring the moderating influence of business intelligence big data analytics dimensions (Velocity, Volume, Value, Variety, Veracity) and its moderating role in influencing the quality of financial reports in terms of (online analytical processing (OLAP), data extraction, and data warehouse) in Jordanian telecom companies. Depending on the quantitative method, (139) questionnaires were distributed to a sample of employees of Jordanian telecommunications companies, and using multiple linear regression, the study reached the conclusion that business intelligence moderated the relationship between big data analysis and the quality of financial reports, which supports decision-making processes in this field.

4. Model and Hypotheses

Given the previously presented literature review, in addition to the development of hypotheses; researcher was able to build a model that was able to highlight the relationship between study variables and from which hypotheses were extracted:

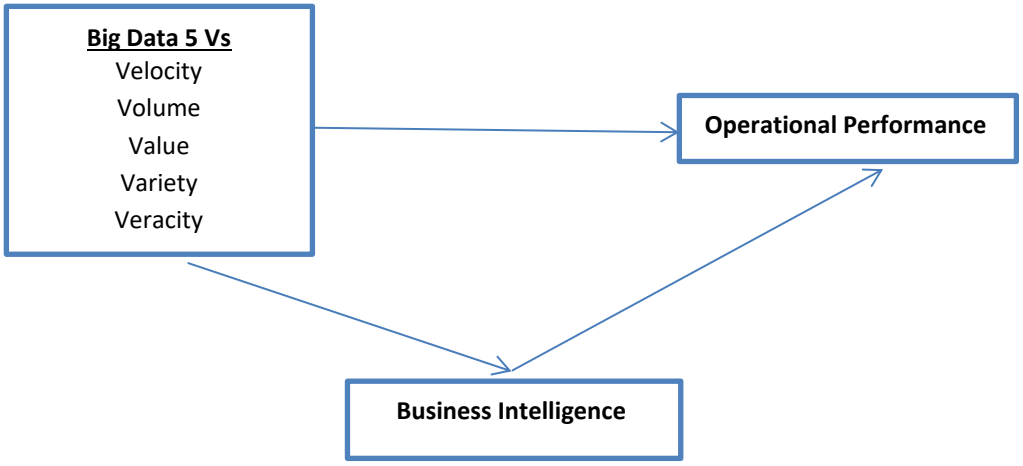

Fig. 1. Study Model (Cappa et al, 2021; Ghasemaghaei, 2021)

From the model above, following set of hypotheses were extracted:

H1: Big Data has a Significantly Impact on Business Intelligence.

H 2: Big Data has a Significantly Impact on Operational Performance.

H 3: Business Intelligence has a Significantly Impact on Operational Performance.

H 4: Business Intelligence mediates the relationship between Big Data and Operational Performance.

5. Methods

5.1. Methodological Approach

The current study stemmed from the employment of quantitative approach in order to manage primary data. The numerical results of quantitative approach were used in order to explain the phenomenon and generalize the results on the population of the study hence accept all the presented hypotheses. Based on that, it is of

logic to say that this current study is deductive in its philosophy, meaning that it employs logic or reason in order to form a specific result or conclusion about a phenomenon, that is, it is deductive logic (Brandt and Timmermans, 2021).

5.2. Tool of Study

Researcher developed a questionnaire in order to be utilized as the main tool of study, through the questionnaire primary data was collected in order to process it and be able to retrieve results that are able to explain the phenomenon. The questionnaire was built on liker 5 scale (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree and contained two main sections; the first took into perspective demographics of study population (gender, qualification, experience), while the other section presented statements related to study variables (Big Data 5 Vs; Velocity, Volume, Value, Variety, Veracity as independent variable, Operational Performance as dependent variables, and Business Intelligence as the mediating variable). Building the questionnaire was done depending on previous studies; researcher presented the questionnaire before a group of specialized academics in the field for the sake of arbitration. After arbitration process the questionnaire was modified according to academic's opinions and in its final version it consisted of (35) statements as according to the following table 1.

Table 1. Statements Distribution on Variables

Variable	Number of Statements
Big Data 5 Vs	
Velocity	5
Volume	5
Value	5
Variety	5
Veracity	5
Operational Efficiency	5
Business Intelligence	5

In accordance with defense laws that required social distancing, the questionnaire was uploaded online through Google Forms platforms and the link was distributed on the study sample.

5.3. Population and Sampling

Population of study consisted of operational managers within service sector organizations in Jordan. A convenient sample of (280) was chosen to represent the study population. After application process, the researcher was able to retrieve (249) questionnaires valid for statistical processing which indicated a response rate of (88.9%) as statistically accepted.

5.4. Data Processing and Analysis

SPSS was used in order to classify process and analyze the collected data; Cronbach's Alpha was used in order to determine the reliability and consistency of study tool which was indicated in table 2 below. The reliability of the scale is evaluated using Cronbach's alpha, and the accompanying table demonstrates that the alpha values suggest a trustworthy scale because they are higher than the 0.70 threshold that is generally recognized.

Table 2. Alpha Value

variable	Alpha value
Velocity	0.76
Volume	0.769
Value	0.865
Variety	0.821
Veracity	0.799
Business Intelligence	0.852
Operational Performance	0.867

Other statistical tests used included:

- Frequency and percentage
- Mean and standard deviation
- Multicolleniarity test

6. Results and Discussion

6.1. Demographic Results

Frequency and percentages were calculated in order to identify the sample description analysis. As it appeared in table 3 below, majority of sample were males forming 65.6% of the total sample compared to females who formed 34.4%. In terms of education, it appeared that majority of the sample held MA degree forming 74.5% of total sample and an experience of 5-7 years in the field forming 41.3% of total sample.

Table 3. Descriptive Statistics

		f	%
Gender			
	Male	162	65.6
	Female	85	34.4
Education			
	BA	13	5.3
	MA	184	74.5
	PhD	50	20.2
Experience			
	2-4	28	11.3
	5-7	102	41.3
	8-10	86	34.8
	+11	31	12.6
	Total	**247**	**100.0**

6.2. Questionnaire Results

Mean and standard deviation were calculated in order to identify the response rate to questionnaire statements. As it appeared in table 4 below; the questionnaire along with its statements scored a positive attitude given that all means scored higher than mean of scale 3.00. Among the study variable, it was seen that (Value) scored the highest mean 4.05/5.00 compared to the least mean scoring 3.86/5.00 which was (Velocity). Going deeper into analysis, it was seen that the statement articulated "the organization has the

freedom to use the collected data according to its wish" scored the highest mean 4.26/5.00 compared to the least – but still positive – statements which was "IoTs, mobile data and social media are used to collect as much data as possible " scoring 3.11/5.00.

Table 4. Statement Analysis

Statement	Mean	Std. Deviation
data is accumulated in a fast mode	3.83	.78
IoTs, mobile data and social media are used to collect as much data as possible	3.11	1.17
the organization collects, receives, and analyzes data speedily	4.09	.77
data is collected from different portals hourly	4.09	.86
the organization is able to control the unit of time in which data is collected, analyzed and stored	4.17	.86
Velocity	**3.86**	**.54**
data base is huge and sufficient	3.60	1.01
the amount of data collected expresses reality of the organization	4.16	.81
the computing power is able to retrieve all sizes of data needed	4.00	.77
data is collected from every department of the organization	4.20	.76
volume of the data existing rapidly increases	4.00	.77
Volume	**3.99**	**.55**
data collected can provide the organization with value	4.13	.85
the organization has the freedom to use the collected data according to its wish	4.26	1.06
the organization has the ability to retain value from collected big data	3.93	.89
value of big data collected is beneficial for the organization	4.15	.85
insights can be gained from the big data collected	3.78	.79
Value	**4.05**	**.53**
data received is varied	3.61	.74
the organization collects data from different portals	3.85	.82
the value of the data collected differs according to their source	3.85	.69
all data received are distributed evenly on storing units	4.14	.70
Collected data can be unstructured, semi-structured or structured in nature	4.09	.67
Variety	**3.91**	**.49**
all collected data are accurate	3.97	.92
the organization makes sure that the collected data is of great value	3.97	.85
collected data is trustworthy	4.09	.84
sometimes, collected data are messy and hard to use	4.08	.82
the quality of the data is defined and considered high	4.10	.89
Veracity	**4.04**	**.52**
BI supports the organization with tools to manage big data	3.82	.73
BI can use the collected big data for analytical purposes	3.75	.82
BI provide the organization with actionable information from big data	4.05	.87
BI utilizes big data for more informed business decisions	4.00	.84
BI makes use of both structured and unstructured big data	3.87	1.03
BI	**3.90**	**.63**
Big data and BI are of great importance for business productivity	3.87	.97
operational performance is better managed with BI-based big data	3.99	.97

the tools provided by BI can transform big data into operational benefits	4.01	.93
BI-based big data brings better analytical tools and opportunities for the organization	4.01	1.02
BI makes the organization more data-driven	3.72	.85
Operational Performance	**3.92**	**.69**

6.3. Multicolleniarity test

In order to assess whether or not there is multicollinearity between the variables, VIF and Tolerance were computed for each of the independent variables. The results that were discovered are as follows table 5; The data shown in the table above reveals that the VIF values were lower than 10, but the Tolerance values were higher than 0.10.

Table 5. Tolerance and VIF

variable	Tolerance	VIF
Velocity	.437	2.286
Volume	.292	3.430
Value	.342	2.926
Variety	.608	1.645
Veracity	.559	1.790

6.4. Hypotheses Testing

Table 6. Fit model

Indicator	AGFI	$\frac{X^2}{df}$	GFI	RMSEA	CFI	NFI
Value Recommended	**> 0.8**	**< 5**	**> 0.90**	**≤0.10**	**> 0.9**	**> 0.9**
References	(Miles and Shevlin, 1998).	(Tabachnick and Fidell, 2007)	(Miles and Shevlin, 1998).	(MacCallum et al, 1996)	(Hu and Bentler, 1999).	(Hu and Bentler, 1999).
Value of Model	0.87	3.59	0.956	0.081	0.933	0.942

As can be seen in Table 6, all of the aforementioned indicators were within acceptable ranges, as advised by the cited studies and references; this ensures that the researcher may confidently use the study model's output and properly distribute the study's findings.

Table 7. Impact

	Direct impact	Indirect impact	Total Impact	C.R.	P	result
BI <--- Big Data	0.314		0.314	4.447	***	accept
OP <--- Big Data	0.107	0.238	0.345	2.429	.015	accept
OP <--- BI	0.756		0.756	18.493	***	accept

H (1): Big Data has a Significantly Impact on Business Intelligence.

This hypothesis was accepted (C.R. = 4.447; P < 0.05; = 0.000). This meant that Big Data has a Significantly Impact on Business Intelligence

H (2): Big Data has a Significantly Impact on Operational Performance.

This hypothesis was accepted (C.R. = 2.429; P < 0.05; = 0.015). This meant that Big Data has a Significantly Impact on Operational Performance

H (3): Business Intelligence **has a Significantly Impact on Operational Performance.**

This hypothesis was accepted (C.R. = 18.493; P < 0.05; = 0.000). This meant that Business Intelligence has a Significantly Impact on Operational Performance

H (4): Business Intelligence **mediates the relationship between Big Data and Operational Performance.**

This hypothesis was accepted (Indirect impact= 0.238; P < 0.05; = 0.015). This meant that Business Intelligence has a Significantly Impact on Operational Performance

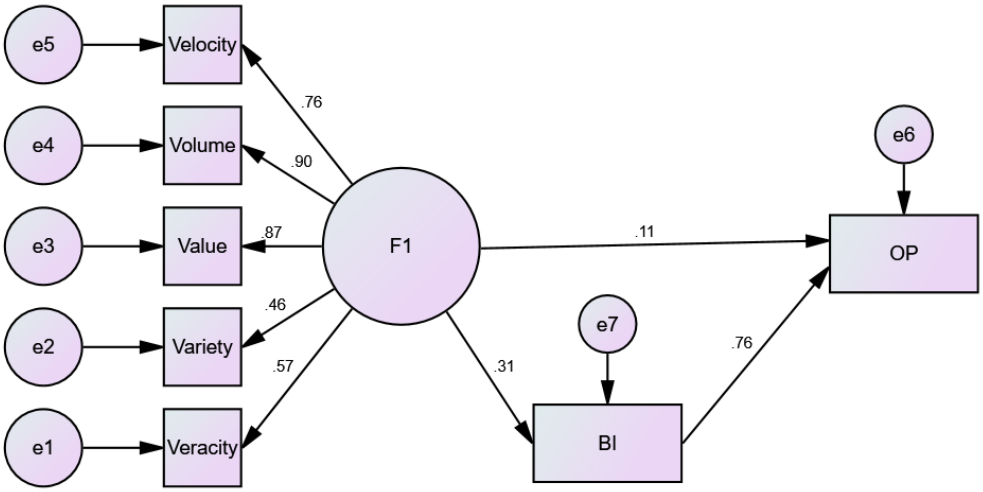

Fig.2:

6.5. Discussion

The current study aimed at exploring the mediating influence of business intelligence on the relationship between big data and operational performance. 5 Vs. of big data were adopted (Velocity, Volume, Value, Variety, Veracity) and the perspective of operational managers were taken into account. Quantitative approach was utilized and a questionnaire was distributed on a convenient sample of (249) operational managers within service sector in Jordan. SPSS was used in order to tackle the gathered primary data, results of study indicated the following:

- Respondents showed a high level of awareness regarding variables of study as they were able to respond to the questionnaire with minimal help
- It appeared that big data has a significant influence on both operational performance and business intelligence
- Business intelligence appeared to have the ability to influence operational performance
- This reached the final point of business intelligence being able to mediate the relationship between big data and operational performance.

The study proved the acceptance of the main hypothesis, which stems from the idea that business intelligence mediated the relationship between big data and operational performance through the ability of BI to employ big data, process it, analyze it, and present it as information capable of making the decision-making process easier and more effective. The organization takes various decisions based on the current conditions of the organization and tries to identify the most beneficial resources or methods for the organization and the success of the business. In addition, the study was able to show that the relationship between big data and operational performance is determined by the impact of BI on increasing productivity by identifying profit and loss factors in organizational practices, identifying weaknesses and working on developing them, and optimizing strengths agreeing with Alnoukari (2020) and Ameerhem study (2020).

On the other hand, the impact of BI has appeared on the relationship between big data and the operational performance of organizations by demonstrating the significant impact of BI in giving the organization opportunities to reduce costs by relying on the employment of business intelligence tools and software in carrying out many tasks that require large manpower in number And the cost, and it takes a lot of time, therefore, the BI performs these works without the need for manpower in a large number and accomplishes the required tasks in a time that is relatively shorter than what is required and with a very small percentage of errors, that is, it is more accurate and realistic. This result came in agreement with Dubey et al (2020); Liang and Liu (2018) and Mohammed (2020).

In view of the results of the study and in agreement with Sun et al (2018) and Zraqat (2020), and with reference to the impact of big data specifications based on business intelligence, it can be said that business organizations achieve many advantages when analyzing big data, including contributing to giving a comprehensive view of the organization, increasing understanding of its activities, developing its strategies and business model, and achieving A high competitive advantage for organizations, improves the quality of accounting information, and provides appropriate information that helps rationalize decisions within the organization.

In addition, the study found that there are several challenges facing business organizations when analyzing big data, perhaps the most important of which is the lack of staff specialized in analyzing big data, the high costs of hiring professionals with experience in analyzing big data and business intelligence, and the speed of flow of big data affects the rationalization of decision making.

What distinguished results of current study is the fact that this current study was able to indicated that the mediating role of business intelligence in supporting the relationship between Big Data and operational performance is to provide the insights needed to effectively leverage Big Data to improve the performance of operations. Business intelligence provides a visual representation and analysis of Big Data, enabling users to identify trends and insights that can be used to drive performance improvements. Additionally, business intelligence can enable organizations to recognize and manage their data assets more effectively, by identifying which data sources and data streams are providing the most valuable insights. Finally, business intelligence provides valuable feedback loops, enabling organizations to tune their data, analytics and processes to further optimize operational performance.

7. Conclusive Remarks

In general, it can be said that big data analysis is a technology that, when combined with business intelligence, is able to re-engineer data handling in organizations in a way that ensures that the organization benefits from the data that results from its daily activities and practices. In addition, it has been proven through the study that there is an organizational impact of business intelligence and data analysis on operational and organizational performance based on enhancing the importance of understanding the utilization of big data, and its management in decision-making processes.

Business intelligence (BI) plays an important role in big data analytics by helping companies extract useful insights from their data and make informed, strategic decisions. BI enables companies to identify patterns in their data, summarize, and analyze the information to better understand their business. This helps them make smarter decisions, generate actionable recommendations, and guide their strategies. Additionally, BI tools help organizations recognize trends and correlations, track performance metrics, and gain useful insights into customer behavior.

The practical implications and contribution of the article are that organizations in the service sector in Jordan can make use of business intelligence to ensure that big data is used in order to improve operational performance. This involves leveraging big data to make informed decisions about operations, personnel, processes and customer relations. The article also highlights the need for organizations to have appropriate processes, practices and techniques in place in order to effectively use business intelligence. The article encourages companies to deploy advanced analytics tools such as predictive analytics and machine learning to maximize the insights from big data. Most importantly, the article reiterates the need for organizations to have a firm understanding of the relationship between big data, business intelligence and operational performance in order to effectively make use of big data to improve operations.

However, this current study was limited to the following:

- Service sector in Jordan
- Operational managers
- Fiscal year 2021-2022

Based on the results, discussion and conclusion previously presented, the current study recommends the following:

- Conducting research on the impact of big data analysis on the outputs of AIS
- Reviewing financial reports and linking them with the outputs of big data analysis
- An attempt to identify the role of taking into account the privacy of some data in the analysis and its impact on the organization from a financial point of view

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