

The impact of using big data on improving the quality of services in Jordanian financing companies

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Abstract: - This study aimed to identify the characteristics of big data in enhancing the quality of services in financing companies in the Hashemite Kingdom of Jordan. To achieve the study's objectives, a descriptive analytical approach was adopted. The study population included all administrative employees in financing companies in the Hashemite Kingdom of Jordan, totaling (350) employees. A total of (250) questionnaires were distributed using a simple random sample to the targeted employees, of which (210) were retrieved. Various statistical methods were used to analyze the data, including descriptive statistics and Cronbach's alpha test. The study reached several results, the most important being the existence of a statistically significant impact of the characteristics of big data in its dimensions (variety, volume, variance) on the quality of services provided by financing companies. The study concluded with several recommendations, the most important being: providing qualified human resources to manage big data and the necessity of relying on big data technology to offer better services.

Key-Words: - big data, variety, volume, variance, service quality, financing companies.

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1 Introduction

The vast and swift technological transformation, which embraces global markets, dismantles barriers, alters regulations, and facilitates the flow of capital, necessitates that the state adapt to the changing landscape. The significant surge in digital data has driven researchers to explore innovative methods for understanding and interpreting the world. This process entails uncovering new dimensions in the capturing, locating, sharing, storing, analyzing, and presenting of data. As a result, big data emerged; it represents a concept for digitally storing an unimaginable quantity of information (Abbasi, Sarker, & Chianig, 2019).

Big data pertains to extensive and varied collections of information that are continually expanding at faster rates. It includes the amount of data, along with the speed or velocity at which it is produced and aggregated. Big data frequently originates from data mining and is presented in various formats. It is defined by a scale that surpasses the limitations of conventional database solutions, as well as the significant flow of sharing

big data, particularly with the growth of artificial intelligence and the Internet of Things (Emily, Simnett, and Walker, 2019). The finance sector is a crucial area that has advanced its processes and systems through smart solutions to deliver exceptional and high-quality services by improving customer service performance and tackling risks faced by the industry with the latest tools and technologies to excel in the services offered. Service quality is regarded as an indicator of how well customer expectations match the actual quality levels, and a key element for the success of financial operations is the prompt adoption of information technology (Hamdi, 2020). In line with the above, this study aims to demonstrate the impact of big data on the quality of services provided by Jordanian finance companies.

2 Research problem

Organizations are experiencing significant transformations where traditional business practices are diminishing, making way for innovative

approaches that prioritize continuous learning as a crucial element for survival and success. If not, the institution may struggle to maintain long-term success and growth. Big data has the capacity to enhance input quality by providing essential support for information processing and enabling effective and accurate decision-making. Nevertheless, if organizations fail to fully leverage big data, the quality of their services might fall short. Hence, the main focus of this study revolves around the following inquiry: What is the effect of business intelligence on service quality Provided in Jordanian financing companies?

3 Research objectives

This research focuses on examining how the characteristics of big data, specifically in terms of dimensions such as variety, variance, and volume, affect the enhancement of service quality offered by financing companies in Jordan, as perceived by their employees. From this primary goal, the following secondary objectives emerge:

1. To investigate how the variety dimension of big data characteristics influences the improvement of service quality rendered by Jordanian financing companies from the viewpoint of employees.
2. To comprehend the influence of big data characteristics, denoted by the dimension of variance, on enhancing the quality of services offered by Jordanian financing companies from the viewpoint of employees.
3. To comprehend the influence of big data characteristics, denoted by the dimension of volume, on enhancing the quality of services offered by Jordanian financing companies from the viewpoint of employees.

4 Research Hypotheses

HO1: The primary hypothesis. There is no statistically significant effect at the level ($\alpha \leq 0.05$) of big data in its dimensions (diversity, variation, size) on enhancing the quality of services of Jordanian financing companies from the viewpoint of employees.

Several sub-hypotheses emerge from the theory as follows:

(H 01-1): The first sub-hypothesis. There is no statistically significant effect at the level ($\alpha \leq 0.05$) of diversity on enhancing the quality of services of Jordanian financing companies from the viewpoint of employees.

(H 01-2): The second sub-hypothesis. There is no statistically significant effect at the level ($\alpha \leq 0.05$) of variation on enhancing the quality of services of Jordanian financing companies from the viewpoint of employees.

(H 01-3): The third sub-hypothesis. There is no statistically significant effect at the level ($\alpha \leq 0.05$) of size on enhancing the quality of services of Jordanian financing companies from the viewpoint of employees.

5 Theoretical Framework

Big Data

Big data is regarded as one of the most significant research subjects as it aids in improving the quality of decision-making and shaping knowledge across various domains of life. It signifies a general phase in the evolution of information systems and communication technologies that can assist in alleviating information asymmetry, which positively impacts economic and social development. Undoubtedly, the capability to more effectively utilize existing data within an organization represents a considerable advantage; however, big data processing technologies present challenges related to privacy. Nonetheless, there are numerous domains where big data contributes to development, facilitating the provision of enhanced services in the future, optimizing daily operations, tackling challenges and natural disasters, and generating job opportunities more efficiently (Michael. Nguyen, 2020).

Big data is also characterized as "the examination of extremely large data sets for actionable information, enabling companies to swiftly analyze a significant volume of data and obtain thorough insights by merging integration, storage, and predictive analytics, where data applications are employed."

Big data offers time efficiency and quality in data interpretation (Otava, 2021). The International Organization for Standardization (ISO) describes it as "a collection or collections of data that possess distinct characteristics (such as size, speed, variety, variability, and data accuracy) which cannot be effectively processed using existing and traditional technologies to harness their advantages." Variety pertains to the diversity of extracted data, assisting users, whether they are researchers or analysts, in selecting appropriate data for their research domain. This encompasses structured data in databases and unstructured data due to its unsystematic nature, including images, videos, audio recordings, text

messages, call logs, GPS data, and others; and it necessitates time and effort to prepare it in a suitable format for processing and analysis (Aheshwari, 2015).

Size: big data is distinguished by its enormous size, which can vary from dozens to hundreds or even thousands of terabytes or gigabytes or more. This extensive volume of data demands specialized tools and techniques for storage and processing (Nasir, 2020). Variability: the inconsistency that data may display in certain aspects. At times, this impedes the capacity to effectively manage and handle data (Oviatt, 2019).

6 Service Quality

Service is characterized as an activity aimed at delivering a benefit and utility in exchange for monetary compensation (Michael, Nguyen, 2019). It encompasses a range of benefits and activities that are available for purchase or associated with a particular product (Al shammari, Mai, 2018). Chen, yan sheng & Lin, zhijun (2020) described it as a collection of intangible activities transferred from one entity to another without the transfer of ownership. In the scope of our research, financial services offered by financing companies in Jordan are defined as a series of activities and products that a financing company provides to clients, fulfilling their credit requirements and potentially linked to either tangible or intangible products (Jacob, Bikker, Ouuosteen, beek & Federico, Torracchi, 2010). Service quality serves as a metric for assessing the degree of alignment between the service level provided and customer expectations; thus, delivering high-quality service entails consistently meeting and aligning with customer expectations. The significance of service is intrinsically connected to quality, as it evaluates and determines customer satisfaction levels through a series of interconnected metrics that assess the customer's perception of the service both prior to and following its delivery. It reflects various dimensions such as tangibility, reliability, responsiveness, assurance, and empathy, and serves as a crucial indicator for measuring customer satisfaction levels concerning the service. Furthermore, it is subject to ongoing enhancement through specialized management focused on this objective (Mash aye keh, Talha, Al aidaros, Hashem & Khoj, Haitham, 2023).

7 Research Methodology

The study population comprises employees from Jordanian financing companies, totaling 350 individuals. The study sample was derived from a random selection of employees within these companies, including managers, administrators, collection staff, and loan officers. A total of 250 questionnaires were distributed among employees of Jordanian financing companies, with 210 responses received. The participants in the study sample were categorized into four age groups, with the lowest percentage in the...is categorized in the second group (ages 30 to 40) at 63.1%. These statistics suggest that the majority of employees in the financing sector examined belong to the youth demographic, who are capable of professional and administrative growth in the future.

Regarding educational attainment, the highest proportion of individuals holding a bachelor's degree reached 70%, which accounts for nearly two-thirds of the sample. This is followed by those with master's degrees at 21.5%, and then diploma holders. This trend indicates that financing companies are keen on attracting highly educated talent, which has a positive impact on the quality of service provided. The study sample revealed that 34.2%, or one-third of the participants, are employed in the collection department, representing the largest percentage, followed by administrators, lending officers, and a total of 16 managers at a rate of 10.7%. The experience category shows that 57% of employees have between 5-10 years of experience, making up half of the sample, while 24.8% have less than 5 years of experience, and 18.1% possess more than 10 years of experience, indicating a significant accumulation of practical experience among the individuals in the sample.

8 Hypothesis Testing

Multiple linear regression analysis was used to examine the impact of big data dimensions (variety, variance, volume) on the quality of services provided by Jordanian financing companies, in order to verify the validity of the main hypothesis.

Multiple linear regression analysis of the impact of big data dimensions (variety, variance, volume) on the quality of services provided by Jordanian financing companies.

Coefficient						ANOVA			Model summary		D V
Sig.	t	B	Std. Error	Beta		Sig.	DF	F	R Square	Adjusted R Square	
.000	3.9984	.1147	.0287	.417	IV	.000	3	91.073	.581	.752	Service quality
.000	7.587	.104	.0137	.402	diversity						
.002	2.938	.0468	.0162	.284	variance						
.003	1.652	.0129	.0078	.162	size						

The findings indicate a statistically significant impact of utilizing big data across its dimensions (diversity, variance, size) on the quality of services offered by financing companies in Jordan. The correlation coefficient was determined to be ($R=0.752$), which signifies a statistically significant relationship between the combined independent variables (diversity, variance, size) and the dependent variable (quality of services). Additionally, the coefficient of determination ($R^2=0.581$) reveals that the application of big data in its dimensions (diversity, variance, size) accounted for 58.1% of the variance in (quality of services).

The findings further demonstrate a statistically significant effect of diversity on the quality of services, with a correlation coefficient of ($R=0.728$), indicating a statistically significant relationship between the independent variable (diversity) and the dependent variable (quality of services). The coefficient of determination ($R^2=0.527$) shows that (diversity) accounted for 52.7% of the variance in (quality of services). A value of ($F=213.609$) was recorded at a confidence level of ($\text{sig}=0.000$), affirming the significance of the regression at a significance level of 0.05.

The findings indicate a statistically significant impact of business intelligence in its dimension (variance) on the quality of services offered by Jordanian financing companies, with a correlation coefficient of ($R=0.642$) demonstrating a statistically significant correlational relationship between the independent variable (variance) and the dependent variable (quality of services).

The coefficient of determination ($R^2=0.524$) reveals that (variance) accounts for 52.4% of the variation in (quality of services), while the value of ($F=163.794$) at a confidence level of ($\text{sig}=0.000$) affirms the significance of regression at a significance level of 0.05 (α).

Additionally, the results indicate a statistically significant effect of size on the quality of services in Jordanian financing companies, with a correlation coefficient of ($R=0.576$), which signifies a statistically significant correlational relationship between the independent variable (size) and the dependent variable (quality of services). The coefficient of determination ($R^2=0.468$) shows that (size) accounts for 46.8% of the variation in (quality of services), and the value of ($F=112.215$) at a confidence level of ($\text{sig}=0.000$) confirms the significance of regression at a significance level of ($\alpha=0.05$).

The findings from the statistical analysis revealed a significant positive influence of big data characteristics on the service quality offered by financing companies. This influence was notably strong and positively oriented, albeit not entirely comprehensive. The results, which encapsulate this study, highlight the critical role that big data characteristics play in enhancing service quality within financing companies. They underscore the growing significance of big data attributes such as volume, variety, and variability, which effectively enhance service quality in financing companies through precise and thorough data. This suggests that these big data characteristics systems facilitate the interpretation of big data and convert it into actionable insights.

9 Recommendations:

- Ensure the availability of skilled personnel for big data management.

1. It is essential to focus on big data, as it offers a substantial competitive edge to organizations when analyzed and utilized effectively.
2. There is a necessity to provide quality services through big data technology and to

improve the skills of staff in these services concerning big data and artificial intelligence.

- 3.- Encourage organizations to adopt big data technology, as it aids in gaining a better understanding of customer or market needs.

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Conflict of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

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