The Impact of Big Data on Purchasing and Procurement in Egypt

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Abstract

Purpose: The study sought to analyze the impact of big data on purchasing and procurement in Egypt.

Methodology: The research was conducted entirely on computers. Secondary data, or data that doesn't require actual observation in the field, are the focus of desk research. Because it requires little more than an executive's time, telephone rates, and directories, desk research is generally seen as a low-cost strategy in comparison to field research. As a result, the research used data that had already been collected and reported. This secondary data was readily available via the internet's digital library and scholarly articles.

Findings: The results show that in conclusion, big data has had a significant impact on the way businesses operate, particularly when it comes to purchasing and procurement. It provides businesses with valuable insights into their customers' purchasing patterns and preferences. Big data is having a significant impact on purchasing and procurement in Egypt. It is enabling businesses, organizations and individuals to make more informed decisions, enhance efficiency and reduce costs

Unique Contribution to Theory, Practice and Policy: Future research in the field of purchasing and procurement may be grounded in the behavioral theory and the resource dependency theory. Policymakers, researchers and academics from all across the world will all stand to gain from this study's findings. Executives in charge of national purchasing and procurement initiatives will also use the study's findings to boost the big data performance across the board. The research suggests that the purchasing and procurement sector should implement big data policies to boost the effectiveness of their primary operations and activities.

Keywords: *Impact, Big Data, Purchasing, Procurement, Egypt.*

INTRODUCTION

Big data is defined as a large collection of structured and unstructured data sets that are so complex and voluminous that traditional data processing methods are unable to manage them. It is usually generated by businesses, governments, and individuals, and is used to gain valuable insights into consumer behavior, market trends and other areas of business (Lewis,2013). Big data is a powerful tool for businesses and organizations, as it can be used to gain insights into customer preferences, market trends, and competitor behavior, as well as provide valuable information on the success of marketing campaigns and other activities. The use of big data in purchasing and procurement has numerous benefits for businesses. It helps to streamline the procurement process, resulting in greater operational efficiency and cost savings (Maroufkhan,2023). Additionally, it provides businesses with valuable insights into their customers' purchasing patterns and preferences. This information is used to tailor procurement activities to meet the needs of customers, resulting in improved customer service. Big data is having a significant impact on purchasing and procurement in Egypt (Saleha,2023). This is due to the fact that it is providing businesses, organizations, and individuals with valuable insights into customer preferences, market trends, and competitor behavior. This allows them to make more informed purchasing decisions and increase their efficiency.

Big data is enabling businesses and organizations to make more informed decisions when it comes to purchasing and procurement. By gathering and analyzing data from multiple sources, companies are able to make better decisions about which suppliers to use, when to buy and which products to purchase (Sundarakani,2021). For example, businesses can use big data to identify the most cost-effective suppliers, which can help reduce costs. They also use it to track customer preferences and trends, which can help them identify which products to purchase. This data can also be used to determine which products are in demand and which are not, allowing businesses to make more informed decisions about which products to purchase (Moretto,2017). Big data is also helping businesses and organizations to become more efficient in their purchasing and procurement processes. By collecting and analyzing data from multiple sources, companies can identify the most cost-effective suppliers, which can help reduce costs. They can also track customer preferences and trends, which can help them identify which products to purchase. This data can also be used to determine which products are in demand and which are not, allowing businesses to make more informed decisions about which products to purchase.

In addition, big data can be used to automate and streamline the purchasing and procurement process. For example, businesses can use big data to automate and optimize the order placement process, which can reduce the time and effort required to complete the process (AlNuaimi,2021). This can help to reduce costs and improve efficiency. Big data also helps businesses and organizations to reduce their costs. By collecting and analyzing data from multiple sources, companies can identify the most cost-effective suppliers, which can help reduce costs. They can also track customer preferences and trends, which can help them identify which products to purchase (Gholizadeh,2020). In addition, companies can use big data to automate and optimize the order placement process, which can reduce the time and effort required to complete the process. This can help to reduce costs and improve efficiency.

Statement of the Problem

Big data has become a major factor in the purchasing and procurement of goods and services in Egypt. The ability to manage and analyze large amounts of data has become essential to the success of businesses in the country. In the current market, companies must be able to make informed decisions quickly and accurately in order to remain competitive. Big data provides companies with the insights they need to make informed decisions, as well as the ability to predict future trends and developments. In Egypt, where the population is estimated to be over 98 million, the use of big data can provide companies with a competitive edge. With the growth of the economy, the need for data-driven decisions has become increasingly important. The ability to analyze large datasets can help companies identify opportunities for lower costs, improved efficiency, and better customer experience. Despite the potential of big data, there are a number of challenges that must be addressed in order to successfully use it for purchasing and procurement in Egypt. One of the major challenges of big data in Egypt is the lack of necessary infrastructure.

The country does not have the necessary technical infrastructure to store and analyze large amounts of data. According to a survey conducted by the International Data Corporation (IDC) in 2017, only 5% of businesses in Egypt have the necessary infrastructure to store and analyze data. This is below the global average of 12%. Furthermore, the lack of infrastructure is also due to the lack of investment in the IT sector. The Egyptian government has not allocated sufficient funds to invest in IT infrastructure, which has hindered the development of big data in the purchasing and procurement sector. Another major challenge of big data in Egypt is the lack of data literacy. Data literacy refers to the ability to understand and analyze data. Data literacy is essential for businesses to be able to make informed decisions about purchasing and procurement. However, in Egypt, data literacy is still low. According to the IDC survey mentioned above, only 4% of businesses in Egypt have data literacy skills. This is far below the global average of 20%. The lack of expertise is another challenge of big data in Egypt. There is a lack of professionals with the necessary skills and knowledge to effectively use big data. There is a lack of data scientists and analysts who have the necessary skills to analyze and interpret data. Furthermore, there is a lack of training and education programs to help professionals acquire the necessary skills.

Theoretical Review

This study will benefit from behavioral theory which was proposed John B. Watson (1913) and resource dependency theory by Pfeiffer and Salancik (1978)

Behavioral Theory

This theory suggests that people's decisions and behaviors are driven by their internal motives, beliefs, and attitudes. In the context of Big data and purchasing and procurement, this theory suggests that individuals will be more likely to make purchasing decisions based on their own motivations, beliefs, and attitudes towards the product or service, rather than external factors such as price or availability. For example, a consumer may be motivated to purchase a product because of its features, benefits, or brand reputation (Yang,2019). This consumer may be more likely to purchase that product, even if it is more expensive than an alternative product, as long as the consumer believes that the product will provide them with the desired outcome. This is based on the idea that people are driven by their own personal preferences, rather than external factors such

as price or availability. For instance, Big data can be used to identify consumer segments that are more likely to purchase a certain product or service, or to understand the motivations behind a consumer's decision to purchase a certain product (Brewer,2014). By understanding consumer preferences and motivations, companies can tailor their purchasing and procurement decisions to meet the needs of their target market. For example, a company may be able to identify a segment of consumers who are more likely to purchase a product than the general population, and target those consumers with tailored offers. This not only increases the likelihood of them purchasing the product, but also provides the company with an opportunity to increase their profit margins.

Resource Dependency Theory

This theory suggests that organizations are dependent on their external environment for resources in order to survive and thrive. In the context of Big data and purchasing and procurement, this theory suggests that companies are dependent on reliable and accurate data in order to make informed decisions (Mwai,2014). Big data can provide companies with access to large amounts of data, which can be used to inform their purchasing and procurement decisions. This data can be used to identify trends in the market, identify potential suppliers, and evaluate the quality of a product or service. By using Big data to make informed decisions, companies can reduce the risk associated with purchasing and procurement, as well as increase their efficiency and profitability. Big data can also be used to identify potential suppliers and evaluate the quality of their products and services (Radhakrishnan,2018). By collecting and analyzing data on supplier performance, companies can identify potential suppliers that can provide the best quality products and services at the best price. This not only reduces the risk of purchasing and procurement decisions, but also allows companies to reduce costs, increase efficiency, and improve their competitive advantage.

Empirical Review

Rawad (2022) investigated the extent in which the SCM make use of Big Data Analytical Tools. A literature review covering topics such as Big Data, supply chain management (SCM), and the effect of BD analytical tools on SCM was conducted. Literature is described and discussed from a theoretical or contextual perspective using data collected and interpreted in an ad hoc manner. With the right analysis, big data may have a significant impact on individual supply chain units and increase the value of supply chain operations as a whole. In the past few years, big data analytics have become a crucial competitive advantage for any business that can afford to implement them.

Shokouh (2021) demonstrated that there is room for improvement in the global sourcing process when management is equipped with big data analytics capabilities. Using an online questionnaire, researchers evaluated the opinions of 158 managers at 13 Iranian businesses that engage in global sourcing. The study found that both direct and indirect effects of integration on global sourcing and company performance were positively influenced by the ability to manage big data analytics.

Ahmed (2021) analyzed how PO and ISP relate to supply chain operations in Saudi Arabian industrial companies. Descriptive and analytic research methods were used for this investigation. Big data analysis (planning, sourcing, manufacturing, and distribution) was found to have a substantial mediating influence on process orientation and information systems programming (ISP) and (PO), respectively, for the benefit of supply chain process and organizational efficacy.

Jukka (2020) determined how data analytics contribute to the digitization of procurement and how digitalization might improve supply chain performance. Data was gathered using the gathered survey data from the industry and the structural equation approach. Findings showed that digital procurement, data analytics and supply chain performance were favorable and substantial connections, as was supply chain performance. The positive correlation between external data analytics capabilities and supply chain performance is mediated by digital procurement skills.

Florian (2018) analyzed the role of procurement in supply chain management and how digitalization has affected that process. The core data for this study was gathered using a quantitative strategy and an online survey. A total of 414 people from a wide range of organizations and sectors provided usable data about procurement and related business functions. The study found out that digitalizing the procurement process can help in a number of ways. For example, it can help with day-to-day business and administrative tasks, it can help with complex decision-making processes, it can help procurement become more focused on strategic decisions and activities, it can help procurement become a strategic interface to help organizations increase their efficiency, effectiveness and profitability.

Robert (2016) extrapolated a number of key ideas for the development of future supply chain relationship strategies and operational efficiencies. Design/methodology/approach. Each CEO respondent is able to supply detailed information because to a qualitative approach called "native categories," which is frequently used in sociology. This method examines 27 businesses in six developed and developing countries without introducing any bias from the interviewers. The paper outlined ten crucial success factors/issues, as well as extensive prospects for future research, and defines Big data by providing four supporting dimensions that guide and underpin future SCMLs research.

Ochieng (2015) assessed the current state of big data analytics (BDA) in Kenyan businesses, with a focus on Kisumu County supermarkets. The data was collected using a cross-sectional study design and quantitative methods. Primary data was gathered by administering a closed-ended questionnaire to the top and middle managers as well as the front-line employees at the five largest grocery chains and the three largest independent supermarkets in Kisumu County. The results of the study found out that there was high rate of computer usage in all the supermarkets and many supermarkets had not put in place the software for managing unstructured data.

Keana (2015) compared the efficiency of automated purchasing systems to that of conventional grocery stores. The participants in this study were the 52 supermarkets located in the Nairobi area of Kenya. A census was conducted due to the tiny population size. Descriptive statistics were the main method of analysis employed by the researcher. The study found that e-mail and automated identification bar-coding systems were the most frequently used by supermarkets for procurement transactions. For instance, most supermarkets communicated orders to suppliers' sales representatives via email, which shortened the time it took to receive the goods and verify whether or not they were in stock.

Kinyajui (2014) examined how outsourcing procurement processes affects supply chain efficiency for Kenyan manufacturers. In order to get the data ready for coding, it was reviewed for accuracy and consistency. After the data was coded, it was entered into SPSS for statistical analysis. Means and standard deviations were utilized for descriptive analysis. The study's variables and aims were

put through a regression analysis to see if they were related. The study found that the majority of manufacturing companies in Kenya outsource their procurement practices, which has a positive impact on the supply chain performance of Kenyan manufacturing companies by boosting productivity, reducing costs, increasing profits, enhancing operational efficiency, and delighting customers. There was some degree of difficulty.

Wasta (2014) analyzed factors that influence the effectiveness of Kenya's bid review processes, and what effect the Bid challenge system has on the country's procurement procedures. Primary and secondary data were gathered using a descriptive survey. The participants in this research were PPARB case decisions that were made public regarding bid challenges. In this study, questionnaires played the role of research tools. According to the research, challenging bids is crucial to maintaining trust in the purchasing system. Bidders are afforded a degree of agency through the review processes in public procurement. In order to keep the procurement process running smoothly, the study suggests that it would be helpful to further refine this study.

METHODOLOGY

The study adopted a desktop methodology. Desk research refers to secondary data or that which can be collected without fieldwork. Desk research is basically involved in collecting data from existing resources hence it is often considered a low cost technique as compared to field research, as the main cost is involved in executive's time, telephone charges and directories. Thus, the study relied on already published studies, reports and statistics. This secondary data was easily accessed through the online journals and library

RESULTS

The results were grouped into various research gap categories namely as conceptual, geographical and methodological gap

Conceptual Gaps

Studies by Rawad, Shokouh and Ahmed (2021), Jukka (2020), Florian (2018), Robert (2016), Ochieng and Keana (2015), Kinyajui and Wasta (2014) had conceptual framework gap in addition, all the mentioned studies did not establish the challenges of big data on purchasing and procurement. The studies did not outline the challenges in a clear manner. Therefore, the current study seeks to address these conceptual gaps.

Geographical Gap

Studies by Rawad, Shokouh and Ahmed (2021), Jukka (2020), Robert (2016), Ochieng and Keana (2015), Kinyajui and Wasta (2014) had geographical gap because they were not conducted in Egypt. This implies that the results may be inapplicable in Egypt since the social economic environment of Egypt and other countries differ. The current study seeks to address this gap.

Methodological Gap

A methodological gap presents itself in this study, Ochieng (2015) assessed the current state of big data analytics (BDA) in Kenyan businesses, with a focus on Kisumu County supermarkets. The data was collected using a cross-sectional study design and quantitative methods. Primary data was gathered by administering a closed-ended questionnaire to the top and middle managers to analyze data while our study will use a desk study literature review methodology.

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Big data is having a significant impact on purchasing and procurement in Egypt. It is enabling businesses, organizations, and individuals to make more informed decisions, enhance efficiency and reduce costs. By collecting and analyzing data from multiple sources, companies can identify the most cost-effective suppliers, track customer preferences and trends, and automate and optimize the order placement process. This can help to reduce costs and improve efficiency. Big Data has the potential to provide organizations with an advantage in the purchasing and procurement sector. However, there are a number of challenges that must be addressed in order to effectively use Big Data in the sector.

Recommendations

This paper will discuss the recommendations to curb the challenges of Big Data on Purchasing and Procurement in Egypt. In order to address the challenges posed by Big Data in the purchasing and procurement sector in Egypt, organizations must develop and implement effective strategies for using the data. Organizations must develop a comprehensive data strategy that outlines how the data will be collected, stored, and analyzed. The strategy should also include a plan for how the data will be used to inform purchasing and procurement decisions. Organizations must leverage technology to ensure that the data is collected, stored, and analyzed in a manner that is consistent with the legal and regulatory requirements of the sector. Organizations must ensure that they have the right systems in place to store and manage the data. These systems must be secure and reliable in order to ensure the protection of the data.

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