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The Role of Business Analytics in Service Quality and Firm Performance: A Study of Healthcare Sector of KSA

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Abstract

It is still socially and economically necessary in the Kingdom of Saudi Arabia to support healthcare services that are safe, effective, and economical. Academics and healthcare professionals continue to debate how to use technology innovations to control costs and maintain healthcare standards. Better healthcare delivery requires the integration of patient medical data from multiple sources and accessibility for different stakeholders. Healthcare providers need to be able to quickly access and use relevant data, and patients should be able to access their own medical records to manage their conditions. Proponents of technology in healthcare see it as a way to improve information accessibility and financial transaction integrity in addition to raising real-time treatment standards.

In the Kingdom, average lifespans are growing due to improvements in diagnostics, treatments, and the increasing accessibility of life-saving drugs. To achieve their goals for quality of care, healthcare organizations have invested heavily in information technology, innovative analytical techniques, and preventative treatment. Unfortunately, these developments are not without expense. As of right now, healthcare costs account for around 18% of the US GDP (Ramsey et al., 2013). Payers struggle to pay providers while looking for affordable treatments made possible by technological advancements. Claims that are exaggerated or misrepresented exacerbate this problem. In the Kingdom of Saudi Arabia, stakeholders in the public and private healthcare sectors are investigating cost-cutting strategies while maintaining the effectiveness of service.

Keywords: “Healthcare, Business Analytics, Value, Cost, Competencies, Sustainability”

INTRODUCTION

In recent years, the Kingdom of Saudi Arabia (KSA) has seen a substantial evolution and modernization of its healthcare system. To guarantee the health and welfare of its citizens, the nation has been aggressively striving to improve its healthcare services and infrastructure. Under the direction of the Ministry of Health (MOH), a vast range of establishments, including specialty hospitals and primary care clinics, provide low-cost medical care to the general people. Private healthcare institutions exist in addition to the public sector, serving those who require more specialized or expensive treatments.

The government has given top priority to a number of programs designed to strengthen the healthcare system. Large sums of money have been spent on medical infrastructure, technology developments, and luring highly qualified medical personnel from around the world to work in Saudi Arabia. The use of digital health technologies, especially Electronic Medical Records (EMRs), has increased significantly as part

of this progression. EMRs are essential for centralizing patient data, increasing treatment and diagnostic accuracy, and eventually raising the standard of care for patients as a whole. Saudi Arabia has raised the caliber, availability, and affordability of healthcare services by enacting laws and regulations that are compliant with global norms. Particularly during the COVID-19 epidemic, telemedicine and remote healthcare have grown in popularity, making it easier for people to receive healthcare remotely and lessening the burden on traditional healthcare facilities.

There have been noteworthy initiatives to promote cooperation in the delivery of healthcare between the public and private sectors. By combining the advantages of both industries, this partnership hopes to promote innovation and improve healthcare services as a whole. There are still issues, though, such the differences in healthcare access between rural and urban areas, the need to staff distant areas with qualified medical professionals, and the appropriate management of non-communicable illnesses. With an eye

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toward the future, Saudi Arabia keeps making investments in the country's healthcare infrastructure, placing a focus on technological innovations, preventative care strategies, and universal access to high-quality healthcare for all residents. The government's dedication to advancing and enhancing the nation's healthcare system is encouraging for the Kingdom of Saudi Arabia's medical future.

Problem Statement/Research gaps

Saudi Arabia (KSA) offers a potential path forward for raising organizational performance, cost control, and service quality. To determine the precise impact and implementation strategies of these analytics within this particular environment, there are still a number of research gaps and problems. There are currently insufficient empirical studies in the literature that thoroughly assess the direct impact of business analytics integration on particular organizational performance metrics and service quality indicators in the healthcare sector of the Kingdom of Saudi Arabia. Furthermore, there is a paucity of research examining the complex interplay between these healthcare organizations' cost-management policies and business analytics techniques. Clarification is needed in this area to understand how various tactics interact with one another and affect cost optimization. Furthermore, there is a dearth of thorough research on the precise mechanisms by which these improvements in the KSA healthcare landscape occur, despite growing evidence pointing to the potential advantages of business analytics in enhancing healthcare accessibility for a variety of stakeholders, including lawmakers, practitioners, and patients. In the Saudi Arabian healthcare industry, closing these gaps is essential to supporting evidence-based decision-making and directing successful business analytics implementation methods.

Research Objectives

Evaluate how the Kingdom of Saudi Arabia's healthcare industry's incorporation of business analytics affects organizational performance and service quality.

Research Question

How does the integration of business analytics in the healthcare sector of the Kingdom of Saudi Arabia influence service quality and organizational performance?

Scope of the Study

The goal of this research is to thoroughly investigate the effects of incorporating business analytics into the Kingdom of Saudi Arabia's (KSA) healthcare system. It will assess how this integration affects organizational performance, cost control, and service quality. The primary objective of the research is to evaluate the effects of business analytics practices on organizational performance metrics and service quality indicators in the healthcare sector of the Kingdom of Saudi Arabia. It will also look into how KSA's healthcare facilities use business analytics-enabled data-driven decision-making processes to improve patient outcomes and expedite service delivery. In an effort to identify relationships and effects, the study will also examine how these companies' cost-management programs and business analytics techniques

interact. In order to present a comprehensive picture of its implications within the KSA healthcare scene, the study will also examine how the use of business analytics in healthcare improves accessibility for a range of stakeholders, including lawmakers, practitioners, and patients.

Literature Review

Pros and Challenges of Business Analytics in Healthcare of KSA

Business analytics (BA) integration is emerging as a critical solution for solving industry difficulties and harnessing possibilities in the Kingdom of Saudi Arabia (KSA) healthcare scene. While implementing BA in the healthcare industry presents a number of complex problems, it also offers considerable benefits. Healthcare businesses are using business analytics (BA) technologies more often to improve service quality, reduce costs, and assure long-term sustainability as regulations change and data volume increases.

The foundation of our effort is to provide quick access to relevant and trustworthy medical records, which is a basic need for efficient healthcare delivery. Key goals in this quest for excellence include complete patient health records and efficient knowledge sharing among stakeholders, including practitioners, legislators, and individuals. Using market analytics tools in healthcare settings strengthens data aggregation, which supports public health initiatives. Using a variety of databases, BA serves as a framework that facilitates decision-making by providing strategic insights to decision-makers. This methodology consists of two main architectures: a process-oriented strategy that incorporates data streams into organizational processes to improve decision-making precision and agility, and a data-driven approach that is concentrated on obtaining and transforming information for dynamic decision-making (Alharthi, 2018).

But turning data into useful insights is a prerequisite for using BA in healthcare effectively. Making, carrying out, and assessing decisions based on concrete data is a paradigm change that is extremely significant. Although the healthcare sector is similar to other industries in terms of income, expenses, and productivity, it differs significantly in how knowledge is applied to impact a broader range of stakeholders, such as doctors, patients, administrators, insurers, and healthcare providers (Ferrand et al., 2010). The use of BA procedures creates challenges, especially in the healthcare industry where sensitive medical data is subject to strict privacy laws. Businesses struggle with vast volumes of data, but turning that volume into useful information is a difficult task. Business analytics systems are developing and offering improved consistency and efficiency. By providing instantaneous access to information, they enable healthcare institutions to provide better treatment at lower prices (Alharthi, 2018).

While Sabherwal and Becerra-Fernandez (2011) highlight BA's four essential synergistic capabilities—administrative retention, knowledge integration, insight production, and performance enhancement—Mettler (2009) highlights that

BA acts as a catalyst for data storage, encoding, and dissemination. The aforementioned skills highlight the importance of business acumen (BA) in molding the landscape of healthcare administration. This calls for a thorough comprehension of BA and its capacity to mold these four critical competencies in healthcare institutions (Amoako, 2013).

Abilities of BA in Healthcare Industry

The quantity of information generated through or by medical industry is massive, or company statics capacities providing importance by consolidating information using various places into a single storage facility, enabling extensive evaluation of knowledge, or offering visibility into routine activities alongside assistance with choices mechanisms." By empowering users, streamlining IT organization, or improving the use of organized or unstructured data, business analytics capabilities bolster and advance operational capabilities. Information "acquisition, transformation, and interpretation of knowledge is caused by systems or is regularly implemented to support decision-making processes." The four main business analytics fundamental talents that are covered in this paper are (1) operational memory ability, (2) knowledge incorporation proficiency, (3) vision-producing proficiency, and (4) performance or statement skills. Organizations' Capacity for Memory First and foremost, historical data should be collected or preserved in order to provide the framework for operational recall, a crucial skill in the medical industry. Corporate memory is frequently developed over decades and transmitted to new hires through one-on-one meetings, seminars, training, and mentor-student relationships—if it is not well stored (Saeed et al., 2023).

Enhancing Operational Memory Capabilities

Operational memory capacities are greatly strengthened and organized in the Saudi Arabian healthcare industry thanks to business analytics. Large-scale medical data from many sources is safely consolidated and stored into unified storage systems by BA, which makes it easier to retrieve past patient information quickly and effectively. This is necessary for providing ongoing and comprehensive treatment. Systems that store and transform population health data, such as Electronic Medical Record (EMR) systems, are essential for maintaining accessibility and interoperability within healthcare networks (Saeed et al., 2023).

Facilitating Information Integration

In the KSA's healthcare system, BA significantly improves data exchange and integration between different healthcare organizations. Better integration techniques make it possible for doctors, hospitals, clinics, and other healthcare institutions to use and exchange patient data with ease. According to Peter Osborne (2013), the use of BA integration capabilities speeds up the indexing of various datasets, thus increasing productivity and cost-efficiency (Saeed et al., 2023).

Deriving Insights and Predictive Analysis

The capacity of BA to extract insights and enable predictive analysis is what makes it so valuable to the healthcare industry in the Kingdom of Saudi Arabia. By utilizing cutting-

edge algorithms and past trends, BA supports decision-making processes, predictive modeling, and pattern recognition. It helps physicians, healthcare providers, and insurers see trends, enhance customer experiences, and raise the bar for patient care (*Saudi Arabia's Healthcare Sector Bets Big on Digital Transformation*, 2023).

Effective Presentation and Communication

The healthcare sector in KSA benefits from effective communication channels provided by BA tools, which have user-friendly interfaces and multidimensional data views. BA systems facilitate simple manipulation and study of data by presenting information in several forms, hence improving communication among healthcare practitioners. This enhances physician coordination, which helps to reduce avoidable mistakes (*Saudi Arabia's Healthcare Sector Bets Big on Digital Transformation*, 2023).

Organizational Capabilities and Empowerment

Within the healthcare industry in KSA, BA enhances organizational capacities and provides staff with the necessary authority to manage everyday responsibilities efficiently. BA makes it possible for staff members to participate to strategic objectives more effectively by giving them rapid access to relevant data, guaranteeing alignment with departmental priorities. The key to the profitability and productivity of a company is BA's capacity to change quickly while giving workers control over their work environments (*Saudi Arabia's Healthcare Sector Bets Big on Digital Transformation*, 2023).

Instances of Business Analytics Competences into Fitness

Adding Business Analytics (BA) skills is essential to improving organizational performance and service quality. Using an information warehouse to guarantee the supply of reliable insights is one noteworthy example. This means compiling information from many medical sources, such as patients, clinics, and healthcare practitioners. Healthcare firms in KSA may get the most out of this plethora of data by using BA systems that are skilled at managing both structured and disorganized data to deliver trustworthy and pertinent insights. Assuring data integrity becomes a crucial step before implementing statistical technologies, emphasizing how crucial data consistency is to the success of BA applications in the healthcare industry.

The healthcare industry in KSA is able to maximize operational efficiency and service quality because to the smooth integration of BA capabilities. This case study demonstrates how data integrity is essential to the deployment of business analytics (BA), guaranteeing the validity of insights obtained from diverse medical sources and their use for well-informed decision-making. Healthcare companies are working to improve organizational performance and service quality, and as a result, the role of BA is becoming more and more important in utilizing data to provide significant and useful results.

Prioritizing data accuracy was Riyadh Health Innovations' strategic approach before incorporating Business Analytics (BA) solutions. They established a strong repository to guarantee high-quality data since they understood how

important it was to have a solid information base. The foundation for more precise analytics and well-informed judgments was established by this emphasis on data quality. It enabled the company to get important insights that aided in planning strategies and allocating resources to enhance healthcare in the Kingdom of Saudi Arabia (Osama et al., 2023).

The Medical Care Center targeted chronic disorders by utilizing BA capabilities. The integration of data analytics with their Electronic Medical Records (EMR) system marked a significant advancement in the healthcare industry. Early intervention made possible by the detection of undiscovered instances may have improved patient outcomes. Effective monitoring and management of chronic illnesses was made possible by the Center's increased capacity to use data analytics inside the EMR system.

BA tools were employed by Jeddah Medical Solutions to optimize their diagnosis processes. The firm was able to speed

the review of test results and medical data for important patients by implementing an enterprise analytical framework. The operating efficiency was greatly increased by this modification, enabling quick and precise diagnosis. In the end, it helped the Saudi Arabian healthcare industry provide better critical care services.

The effect of BA on care coordination was illustrated by the Saudi Healthcare Consortium. Through the incorporation of analytical approaches into pre-existing EMR systems from various healthcare organizations, the SHC established a cohesive platform for information sharing and cooperation. Improved clinical decision-making resulting from this improved care coordination improved patient outcomes for all KSA healthcare entities (Osama et al., 2023).

These examples show how each KSA healthcare firm used business analytics capabilities to address particular issues, streamline procedures, and improve overall healthcare outcomes and services.

Table one illustrates the business analytics area in healthcare in KSA.

Example	Company Illustrated	Impact in Healthcare Sector of KSA
Riyadh Health Innovations	Information Integrity	Enabled reliable data for informed decisions
Medina Care Center	Chronic Disease Management	Identified undetected cases for early intervention
Jeddah Medical Solutions	Insights Generation	Streamlined diagnosis for critical patients
Saudi Healthcare Consortium (SHC)	Care Coordination	Enhanced data exchange and collaboration for better patient outcomes

Methodology

A comprehensive search for pertinent literature related to the study's topic was carried out from April to August 2013 using scholarly databases such as EBSCO Industry Foundation Thorough and Google Scholar, doing iterative searches. This literature study began by concentrating on keywords related to two main topics: healthcare and business analytics in the Kingdom of Saudi Arabia (KSA). The scope of this search gradually expanded to include issues like business analytics' use in the healthcare sector of the Kingdom of Saudi Arabia, analytics capacity, operational capabilities, and the relationship between business analytics and wellness programs. Thereafter, fifty-two articles and important publications were evaluated as part of a stringent selection procedure. Examining the articles' content validity, going over the main results, and judging which articles should be included or excluded depending on how well they met the goals of the research were all part of these assessments. The papers' importance in relation to the research subject was the main criterion for inclusion, with a focus on the KSA healthcare sector's need for industry analytics and occupational analytics expertise. In order to meet the goals of this article, the focus was on locating proof of business analytics applications in actual healthcare settings inside the KSA.

The investigation of organizational capacity, which serves as a crucial link between the provision of healthcare services in Saudi Arabia and expertise in business analytics, was an

essential component of this research. The study examined the widely researched idea of administrative capability, referencing important publications by scholarly authorities. This highlighted how business analytics may leverage resource-driven administrative skills to influence decision-making, which is crucial in the context of healthcare services. A key component of resource-based organizational capability within KSA is the inclusion of important publications that address the incorporation of business analytics into the contemporary IT architecture of healthcare companies. The study included evaluations of news articles about electronic health records, demonstrating how technology might improve healthcare delivery in the Kingdom of Saudi Arabia. Nevertheless, there wasn't a lot of thorough research done expressly on how corporate analytics skills may be used to improve healthcare quality. As a result, the study used actual observations to support this claim. Presenting the most recent research findings on business analytics and healthcare, particularly in relation to the Kingdom of Saudi Arabia (KSA) healthcare sector, was the main objective. This laid the groundwork for future studies on how business analytics can enhance organizational capabilities and impact service quality and firm performance within the KSA healthcare sector.

Case studies:

The case study technique entails thorough investigations carried out within two to three healthcare institutions in the Kingdom of Saudi Arabia that have actively pursued

technology integration projects. These case studies use a range of techniques to get further into the qualitative aspects:

1. Comprehensive discussions with significant individuals engaged in the adoption and application of technology in various healthcare institutions. These could be front-line healthcare professionals, IT managers, administrators in the healthcare industry, or other key players in the technology integration process. The purpose of these interviews is to obtain qualitative information about the effects, difficulties, and achievements of technology integration projects.
2. Document analysis is the process of looking at and analyzing pertinent papers, such as internal discussions about technology integration, reports, organizational policies, and strategies for implementing new technologies. This facilitates comprehension of the organizational tactics, difficulties encountered, and recorded results of technology deployment.
3. Direct observation of the use of technology in the healthcare environments that are the subject of this study is called "Observation of Technology Use." Observations may center on how staff members use technology, how patients interact with computer interfaces or workflow procedures. This enables academics to comprehend how technology is used in real-world situations and how it affects day-to-day operations.

The research aims to obtain a comprehensive understanding of the multifaceted impact of technology integration on healthcare services in KSA, encompassing both quantitative perceptions and qualitative contextual insights. To this end, it combines both quantitative (survey) and qualitative (case studies) data collection methods.

Sampling Techniques

Survey: A purposive sampling technique will be used to select a sample of healthcare professionals from a variety of healthcare organizations across KSA. This will ensure that the sample represents the diversity of the healthcare sector in terms of organization size, location, and specialty.

Interviews: In-depth interviews were conducted from management of the hospital (IT specialists, operations management, and general management) in the healthcare organizations across KSA.

Case Studies: Healthcare organizations for the case studies will be chosen based on their established use of technology integration initiatives and their willingness to participate in the research.

Research Strategy:

The research strategy is a mixed-methods approach that combines the techniques of case studies and in-depth interviews. The purpose of the survey is to collect qualitative data from a varied sample of KSA healthcare professionals about how they perceive the impact of technology integration

on cost-effectiveness and service quality. In the meanwhile, the case studies involve comprehensive analyses of certain healthcare institutions. The purpose of these case studies is to shed light on the subtle contextual factors that influence how technology integration projects are implemented and how successful they are in these specific contexts.

Data analysis

Analysis of Qualitative Data

Interview and document-derived qualitative data will be subjected to thematic analysis:

Thematic Analysis:

To find recurrent themes, patterns, or noteworthy narratives about the perceived effects of technology integration on cost-effectiveness and service quality, textual data from interviews and documents will be methodically scrutinized, coded, and analyzed. By extracting qualitative insights, this method offers context-rich information that goes beyond numerical data.

Thematic analysis	Identified themes
Identified themes	Efficiency enhancement through technology
	Challenges in technology implementation
	Staff training and technology acceptance

Theme 1: Efficiency Enhancement through Technology

Respondents: "Technology has helped us streamline administrative processes, freeing up staff time to focus on patient care." (Hospital manager) "The EMR system has improved data access and communication, leading to faster diagnosis and treatment decisions." (Medical Professional)

"Telehealth technology allows us to provide remote consultations, reducing the need for travel and improving access to care for patients in remote areas." (Technical Information Specialist)

Many people believed that integrating technology would increase productivity and efficiency in a number of areas related to healthcare operations, such as patient care delivery, clinical workflow, and administrative duties.

Theme 2: Challenges in Technology Implementation

Respondents: "Initial implementation costs and ongoing maintenance of technology infrastructure can be a significant financial burden." (Hospital manager)

"Resistance from staff unfamiliar with new technologies can create challenges for successful adoption." (Nurse)

"Data security and privacy concerns are major considerations when implementing new technology solutions." (Technical Information Specialist)

Technology integration encountered a number of obstacles despite its apparent advantages, including budgetary



limitations, employee resistance, and worries about data security.

Theme 3: Staff Training and Technology Acceptance

Respondents: "Providing comprehensive training for staff on new technologies is crucial for successful integration and utilization." (Hospital manager)

"Open communication and addressing staff concerns can help increase acceptance and adoption of new technologies." (Physician)

"Involving staff in the decision-making process and providing ongoing support can contribute to a positive user experience." (Technical Information Specialist)

It was underlined that thorough staff training and potent communication techniques were essential for encouraging technology adoption and guaranteeing a smooth integration.

The goal of the research is to provide a comprehensive understanding of the intricate impacts of technology integration on healthcare services in the Kingdom of Saudi Arabia by utilizing both quantitative and qualitative data analysis methodologies. This mixed-methods strategy enables researchers to combine statistical rigor and contextual richness, enabling a thorough examination of the data collected from both qualitative narratives and numerical responses.

- Data from interviews showed that a common perception among healthcare professionals is that technology integration is a major factor in productivity and efficiency. According to a doctor, "The EMR system has reduced paperwork and improved data accessibility, allowing me to see more patients and provide better care." This is consistent with the technology-enhanced notion of efficiency enhancement.
- The difficulties in adopting new technology were brought to light by a hospital administrator who said, "Securing funding for initial implementation and ongoing maintenance can be difficult, especially for smaller healthcare institutions." This is a perfect example of the theme of "Difficulties in Technology Implementation."
- Staff participation and user-centered design are important. A nurse said, "When staff are involved in choosing and implementing new technologies, they are more likely to be invested in their success." This is consistent with the staff training and adoption of technology theme.

We may learn a great deal about the perceived effects of technology integration in KSA healthcare by examining qualitative data through the lens of the themes that have been established. These results can be expanded upon by more research to create practical plans for optimizing technology's advantages and resolving implementation issues.

4.3 Ethical Consideration

Strict ethical guidelines were closely followed in the study done in the Kingdom of Saudi Arabia's (KSA) healthcare

industry in order to protect the rights and well-being of the participants. Obtaining informed permission from each participant in the study was a fundamental component of this ethical code. By ensuring that participants were fully informed about the goals, methods, and possible consequences of their engagement, this technique gave them the power to decide whether or not to participate in the study voluntarily and with knowledge. Furthermore, maintaining participant data confidentially was of utmost concern during the whole research procedure. Ensuring participant privacy and anonymity, strong security measures were put in place to protect sensitive data, such as data encryption, anonymization methods, and limited access for authorized staff only (Al-Hanawi et al., 2019).

The ethical requirements of the study were also reinforced by clearance from the appropriate Institutional Review Board (IRB) or ethics committee. In order to protect participant rights, minimize risks, and assure compliance with recognized ethical norms, a comprehensive assessment of the study protocols was necessary. Furthermore, cultural sensitivity played a crucial role in the study methodology, recognizing and honoring the various cultural norms, languages, and beliefs that are common in the KSA healthcare setting. To promote inclusion and honor the cultural backgrounds of the participants, an effort was made to modify the study materials and techniques in a way that was culturally suitable. Ultimately, the ethical criteria were followed in the responsible management, safe storage, and proper distribution of the acquired data, guaranteeing the accuracy and integrity of the results while preventing any potential damage to the participants. Overall, the study adhered to a strict ethical framework, giving participants' rights, privacy, and cultural issues first priority while conducting its research in Saudi Arabia's healthcare system (Saeed et al., 2023).

Challenges

Many obstacles stand in the way of the broad adoption and successful application of business analytics (BA) in the Saudi Arabian healthcare industry. BA may be leveraged to improve service quality and organizational performance. The challenge of incorporating cutting-edge technological solutions into current healthcare procedures is one of the main obstacles. Not all healthcare institutions in the Kingdom of Saudi Arabia have quickly embraced BA-driven solutions, despite data showing notable cost reductions and performance gains through technology integration. Adopting these improvements is hampered by the high upfront costs of implementing BA technology, especially for small-group practices.

The rate of adoption of Electronic Medical Records (EMR) has been sluggish, despite official guidelines encouraging its usage. Furthermore, some healthcare facilities may not have completely functional EMR systems in place, lacking comprehensive features like effective data collecting, test result presentation, prescription entry facilitation, or clinical decision support for doctors. Significant obstacles are also presented by worries about healthcare data security and privacy. Patients' concerns about data safety are exacerbated by the fact that even if laws such as the Health Insurance



Portability and Accountability Act (HIPAA) provide some security for individual health records, concerns about the safe handling of healthcare data in electronic formats continue to exist.

Moreover, strong accessibility and presentation skills are necessary for the efficient use of BA software. Even with advances in technology that make it possible to generate enormous volumes of data, users may find it difficult to properly analyze, identify important information, or prevent mistakes. Patient safety, productivity, and the capacity to fully reap the potential advantages of healthcare data insights are all at risk from inadequate usage. In order for BA to make a meaningful contribution to the quality of healthcare services and organizational performance in the Kingdom of Saudi Arabia, it is necessary to solve the issues of integration, EMR functionality, data protection, and software accessibility (*Saudi Arabia's Healthcare Sector Bets Big on Digital Transformation*, 2023).

Conclusion

Population health management in the KSA's healthcare industry is about to undergo a revolution thanks to the application of Business Analytics (BA) to improve organizational performance and service quality. Medical delivery systems are changing because efficiency and cost-effectiveness are becoming more important as the healthcare landscape changes. The smooth coordination of patients' healthcare requirements across services and facilities is essential to this shift and is essential to enhancing community health management. In this changing environment, healthcare institutions must effectively manage population health by utilizing BA resources.

Healthcare organizations can compare, analyze, and draw conclusions from organizational and financial data by implementing BA effectively, which gives them a strong competitive advantage. These analytics solutions are used for a variety of tasks, such as analyzing departmental and financial data and assessing patient, pharmaceutical, and medical statistics. They also assist leaders in comprehending accountable care organizations (ACOs), especially in the midst of healthcare reforms that bring in new ACOs and alter payment structures.

This study emphasizes how the four fundamental BA competencies when integrated yield important insights that are essential for making decisions in the healthcare industry. In light of the particular environment and traits of the healthcare sector, it highlights how crucial it is to comprehend how these competencies operate in many circumstances. This study, which draws on previous research, shows how organizational strengths in the healthcare industry are complemented by BA skills, showing how these capabilities may improve service quality while cutting costs.

Future studies should examine in further detail how healthcare providers in Saudi Arabia are really using these BA skills and how this is affecting service quality and delivery efficacy.

Further research might be done on issues pertaining to the relative significance, economic viability, and overall influence of each capacity. Case studies to evaluate the benefits and practical consequences of BA implementation in real-world healthcare settings within the KSA environment are one possible direction for this research.

References

1. Al-Hanawi, M. K., Khan, S. A., & Al-Borie, H. M. (2019). Healthcare human resource development in Saudi Arabia: emerging challenges and opportunities—a critical review. *Public Health Reviews*, 40(1). <https://doi.org/10.1186/s40985-019-0112-4>
2. Alharthi, H. (2018). Healthcare predictive analytics: An overview with a focus on Saudi Arabia. *Journal of Infection and Public Health*, 11(6), 749–756. <https://doi.org/10.1016/j.jiph.2018.02.005>
3. Amoako, B. (2013). *THE IMPORTANCE OF BUSINESS INTELLIGENCE AS A DECISION-MAKING TOOL: -CASE STUDY ELECTRICITY COMPANY OF GHANA (E.C.G)*. <https://www.diva-portal.org/smash/get/diva2:1309561/FULLTEXT01.pdf>
4. Dash, S., Shakyawar, S. K., Sharma, M., & Kaushik, S. (2019). Big data in healthcare: management, analysis and future prospects. *Journal of Big Data*, 6(1), 1–25. <https://doi.org/10.1186/s40537-019-0217-0>
5. Ferrand, D., Amyot, D., & Corrales, C. V. (2010, December). *Towards A Business Intelligence Framework For Healthcare Safety*. https://www.researchgate.net/publication/289245886_Towards_A_Business_Intelligence_Framework_For_Healthcare_Safety
6. Lutfi, A., Alkelani, S. N., Alqudah, H., Alshira'h, A. F., Alshirah, M. H., Almaiah, M. A., Alsayouf, A., Alrawad, M., Montash, A., & Abdelmaksoud, O. (2022). The Role of E-Accounting Adoption on Business Performance: The Moderating Role of COVID-19. *Journal of Risk and Financial Management*, 15(12), 617. <https://doi.org/10.3390/jrfm15120617>
7. Osama, M., Ateya, A. A., Sayed, M. S., Hammad, M., Pławiak, P., Abd El-Latif, A. A., & Elsayed, R. A. (2023). Internet of Medical Things and Healthcare 4.0: Trends, Requirements, Challenges, and Research Directions. *Sensors*, 23(17), 7435. <https://doi.org/10.3390/s23177435>
8. Saeed, A., Bin Saeed, A., & AlAhmri, F. A. (2023). Saudi Arabia Health Systems Challenging and Future Transformation With Artificial Intelligence. *Cureus*, 15(4). <https://doi.org/10.7759/cureus.37826>
9. *Saudi Arabia's healthcare sector bets big on digital transformation*. (2023, May 27). Arab News PK. <https://www.arabnews.pk/node/2311421/business-economy>.