Data as the New Oil:
Economic Implications of Big Data in the Middle East

A whitepaper by **investopia**

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INTRODUCTION

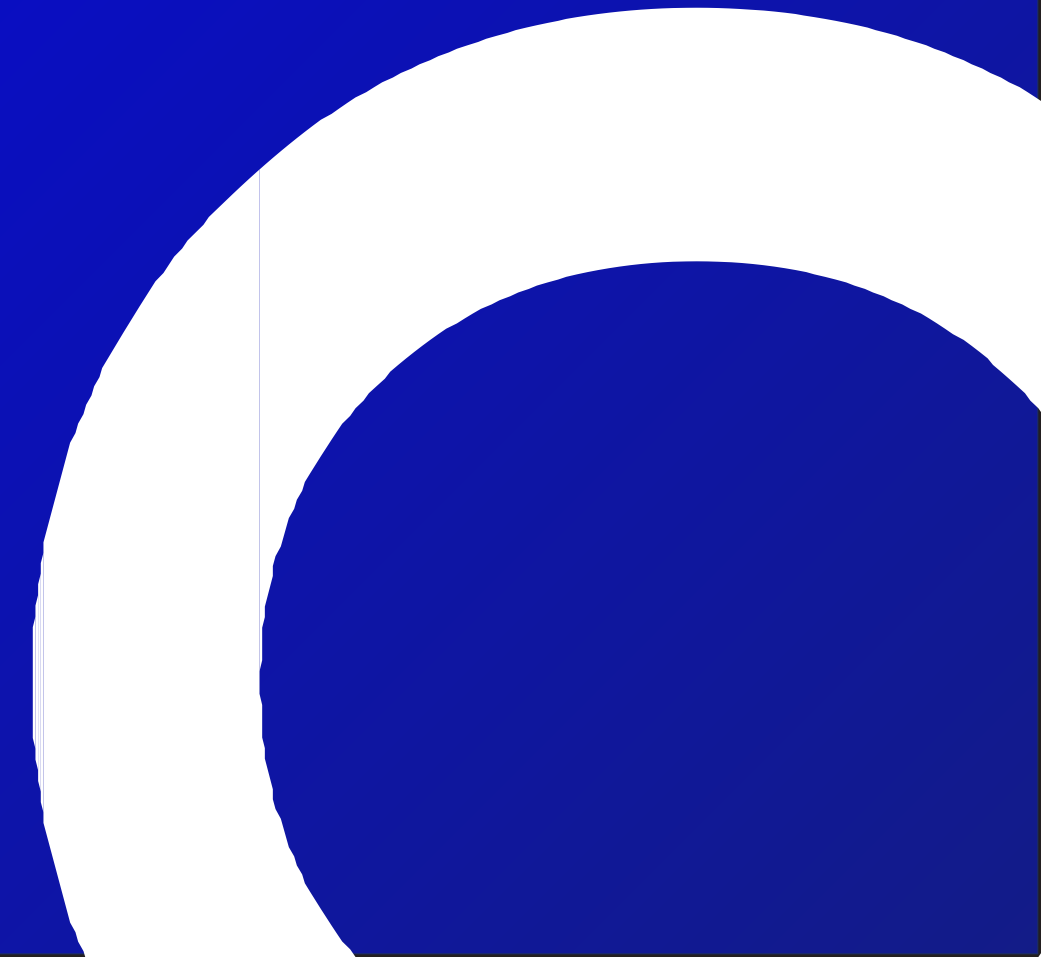In the 21st century, data has emerged as one of the most valuable assets, often called the "new oil" due to its immense potential to drive economic growth and transformation. The emergence of Big Data as a valuable asset has transformed industries worldwide, playing a pivotal role in driving economic growth. By enabling businesses to analyze vast amounts of information, Big Data provides insights that improve decision-making, enhance operational efficiency, and foster innovation. Its application spans multiple sectors, from healthcare and finance to manufacturing and retail, allowing companies to better understand customer behavior, optimize processes, and create personalized experiences. As data becomes increasingly central to the global economy, it is shaping new business models, boosting productivity, and unlocking unprecedented opportunities for competitive advantage.

While Big Data is still an emerging field, its market share has been estimated at 57% in North America, 32% in Europe, the Middle East, and Africa, 8% in the Asia Pacific, and 3% in Latin America.

In the Middle East, where economies have long relied on natural resources, the rise of Big Data presents a significant opportunity to diversify and modernize industries. This can already be witnessed in the rapid development of one of the region's most ambitious projects—a comprehensive initiative to bring data and digital infrastructure to the desert. In major cities such as Abu Dhabi, Riyadh, Jeddah, Dammam, and Kuwait City, vast data center complexes are under construction to support one of the world's most valuable and costly assets: the digital cloud.

The integration of Big Data in digital technologies and emerging economic sectors is contributing to a significant transformation of the Middle East's economic landscape. Within this digital transformation, the Investopia ecosystem emerges as a proactive advocate for using Big Data to support economic growth and diversification.

BIG DATA IN KEY MIDDLE EASTERN SECTORS

The hydrocarbon industry is one of the leading sectors utilizing Big Data in the Middle East. The processes involved in discovering and extracting hydrocarbons produce vast amounts of data, which require advanced technologies to interpret and support decision-making accurately. Big Data analytics is crucial in optimizing hydrocarbon production, discovering new resources, promoting environmental sustainability, and identifying trends to transition toward a low-carbon economy.

Big Data will also be generated and collected through "Smart Cities", which have garnered significant attention from academia, governments, and businesses worldwide, particularly in the Middle East in recent years. Initiatives such as Smart Dubai (UAE), TASMU (Qatar), and Egypt's New Urban Agenda (NUA), and UN-Habitat Strategic Plan 20/25 aim to develop cities monitored by digital devices. The insights generated through Big Data in Smart Cities will guide governance. Big Data will enable real-time analysis of city life, introduce new urban governance models, and lay the foundation for more efficient, sustainable, competitive, productive, open, and transparent cities. Additionally, Big Data and smart city technologies hold great potential in areas like green information and communication technologies, sustainability, energy-efficient systems, urban planning, and enhancing quality of life.

Big Data is also transforming the healthcare sector in the Middle East. Big Data leads to more accurate diagnoses, improved operational efficiency, and the ability to identify evidence-based treatment plans that yield better outcomes with reduced risk. Big Data analytics combine prior knowledge, historical data, and experiential learning to provide intelligent, real-time, actionable solutions. Big Data analytics also allows for early detection of some diseases based on identifying risk factors in patient data, which can significantly improve health outcomes and reduce the cost of healthcare services. For instance, detecting cancer in its early stages can lower treatment costs by up to 10 times and increase survival rates by up to four times.

By 2030, nearly 80 percent of deaths in the region are expected to be caused by NCDs or 'lifestyle' diseases, such as cardiovascular disease (CVD) and cancer. Key contributing factors include unhealthy diets, smoking, and physical inactivity, closely linked to urbanization and rising per capita income. Big Data will likely fuel the growth of AI applications, which require a wealth of data to diagnose and help manage these lifestyle diseases. At the same time, various modern technologies are producing an ever-growing amount of health data. For instance, a wide range of wearable devices, such as portable heart rate and blood pressure monitors, are becoming increasingly popular. These devices can continuously track metrics like heart rate and blood sugar levels. As their costs decrease and the functionality of widely used fitness trackers expands, AI-based diagnostic systems will access even more detailed health data for each patient, allowing doctors to prescribe treatment plans with greater accuracy and efficiency.

Big Data is also increasingly important in risk management, fraud detection, and personalized services in the Middle East's finance and banking sectors. In the Middle East, addressing fraud is comparatively more critical than in many other regions. A recent global benchmark revealed that fraud is more widespread in the Middle East, with the risk continuing to rise—nearly half of the companies in the region reported an increase in fraud in 2022 compared to the previous year.

To reduce the financial and reputational risks associated with fraud, organizations must take proactive measures to detect and prevent it before substantial losses occur. This is where data analytics plays a crucial role. Data analytics is a powerful tool that enables companies to identify potential fraud patterns and anomalies within their data, allowing them to take swift action to prevent fraudulent activities. By utilizing advanced analytics techniques like machine learning and predictive modeling, organizations can gain deeper insights into their data and detect potential fraud in real-time, helping to minimize financial losses and protect their reputation.

Another sector benefiting from Big Data is the logistics industry in the Middle East, which is undergoing a significant transformation driven by advanced technologies that streamline operations and enhance customer experiences throughout the fulfillment process. With e-commerce sales reaching USD 37 billion in 2022 and projected to climb to approximately USD 57 billion by 2026, growing at a compound annual growth rate of 11%, consumer expectations for seamless fulfillment are set to rise. This will push businesses to adopt innovative solutions to optimize their delivery systems.

Data analytics is at the forefront of this technological shift, transforming decision-making across the supply chain. By applying advanced analytics to large datasets, companies uncover valuable insights to improve visibility, address inefficiencies, and implement proactive strategies. One key area is route optimization, where algorithms analyze extensive GPS, traffic, and vehicle data to create highly efficient delivery routes, reducing mileage and operational costs.

THE ROLE OF BIG DATA IN ECONOMIC DIVERSIFICATION

As Middle Eastern economies seek to diversify beyond oil, Big Data can drive innovation in logistics, tourism, retail, and finance by providing insights that improve decision-making and operational efficiency.

The Middle East data center market is expected to grow to USD 9.61 billion by 2029, nearly doubling in value from 2023, underscoring the Gulf's strategic initiatives to establish itself as a regional technology hub. At the same time, access to large datasets and analytics tools enables startups and entrepreneurs to develop innovative solutions across various industries, including fintech, health tech, and e-commerce. This helps create new business opportunities, attract foreign investment, and foster an ecosystem of innovation in the region.

Big Data insights are helping to identify future workforce needs and the skills required for emerging industries. By addressing the demand for data-driven expertise, the region can better prepare its workforce for high-growth sectors, supporting long-term economic diversification.

Data-driven insights into market trends, consumer behavior, and regional opportunities make the Middle East more attractive to foreign investors. The availability of detailed analytics reduces uncertainty, encouraging investment in diversified sectors such as tech, retail, and finance.

By leveraging Big Data, governments can optimize public services like transportation, energy, and urban planning. Projects like smart cities in the UAE and Saudi Arabia utilize data analytics to improve infrastructure, sustainability, and quality of life, contributing to diversified and resilient economies.

Saudi Arabia's Vision 2030 strategy is pivotal in advancing regional AI technology integration. The kingdom has taken proactive steps by establishing research centers and government agencies dedicated to AI, showcasing its strong commitment to fostering technological innovation.

By 2029, Saudi Arabia aims to achieve 855 MW of data center capacity, doubling its current capacity of around 429 MW, including ongoing projects. In addition to Riyadh, Jeddah, and Dammam, significant investments are also being funneled into NEOM, the kingdom's upcoming smart city.

Similarly, the UAE has launched an AI strategy to drive its development and position the country as a regional and global leader in the AI sector. Like Saudi Arabia, the UAE is projected to double its data center capacity, increasing from 346 MW to 841 MW by 2029.

Equinix, a U.S.-based data center operator, is building its fourth facility in Dubai, with plans to expand into other regions. In 2023, Equinix unveiled its third data center in the Emirates, DX3, which is fully powered by 100% renewable energy.

Notably, Abu Dhabi unveiled an AI investment fund in early March, with the potential to grow to USD 100 billion in the coming years. At present, the UAE is home to 52 data centers, and more developments are underway.

The UAE, Saudi Arabia, Qatar, Turkey, and Bahrain have actively promoted the adoption of renewable energy in data center facilities, highlighting a shared commitment to building a sustainable future in technology.

CHALLENGES AND OPPORTUNITIES IN HARNESSING BIG DATA

There is a need for more data scientists and skilled professionals in the region capable of managing and analyzing Big Data, creating a skills gap that could slow progress in this area. Organizations in every industry need access to data and analytics to remain competitive, yet the demand for data skills in the Middle East significantly exceeds the available supply. A recent PwC Middle East survey revealed that 46% of UAE and 58% of Saudi respondents reported a skills gap, ranging from basic Microsoft skills to cloud computing expertise. Similarly, participants in a global McKinsey survey on future workforce needs identified addressing the data analytics skills shortage as a top priority.

Many Middle Eastern countries have inconsistent or underdeveloped data protection laws, raising concerns about personal and business data security and privacy. This can hinder the full adoption of Big Data analytics. For instance, as more companies incorporate Big Data and emerging technologies like AI and robotics into healthcare, security and patient privacy concerns are growing. There are several approaches to securing patient data. For example, the UAE's ICT law, introduced in January 2019, mandates that patient data must be stored within the country, where stringent data protection regulations are in place.

The availability of large sets of open data remains a challenge in the Middle East. Expanding the use of data has the potential to significantly transform the region's economies and societies and is a crucial component of its digital transformation. Central to this effort is opening and sharing data, which can enhance efficiency, boost transparency, and introduce new services for the region's over 400 million citizens and businesses.

Open data initiatives in the Middle East face several challenges that hinder their widespread adoption and impact. Key challenges include a lack of data transparency, limited data infrastructure, and regulatory and legal barriers. Governments and institutions in the region often have a culture of limited data sharing, restricting open access to valuable datasets. At the same time, while some countries in the region have invested in digital transformation, many still face gaps in the infrastructure required to support open data platforms, such as robust cloud systems, data storage, and high-speed internet access.

International benchmarks, including the 2022 Global Data Barometer and the Open Data Barometer, indicate that the region is still in the early stages of its open data journey. For instance, in the Global Data Barometer, Saudi Arabia achieved the highest score at 29%, followed by the United Arab Emirates at 27%, with Qatar and Bahrain scoring 22%. Oman had the lowest score, at 14%. However, this should not diminish the progress already made—most countries have made data and digital technologies a central pillar of their future strategies and visions, implementing regulations and standards to promote data sharing. The potential benefits are immense; for instance, increasing digital maturity across Gulf economies alone presents a USD 255 billion market opportunity.

Several sectors and government organizations have already demonstrated a willingness to share data. Saudi Arabia's King Abdullah Petroleum Studies and Research Center (KAPSARC) is actively fostering a data-driven culture beyond its organization. Initially, it provided energy-related data exclusively to its 80 internal researchers, but it has since expanded access globally. Today, KAPSARC offers the public nearly 1,400 datasets covering a broad spectrum of energy topics. Similarly, the Qatar Open Data Portal releases a weekly newsletter detailing real estate transactions across the country, with the option to filter by municipality.

In the Middle East, increasing data sharing is about more than just introducing user-friendly technology that requires no specialized skills. It's about cultivating data-driven cultures where individuals feel confident sharing and utilizing data in their daily work. This cultural shift is essential for breaking down departmental silos and achieving true data democratization.

These challenges present opportunities for the government to provide clear data governance and privacy laws while simultaneously addressing the data literacy and skills gap. Government-led digital transformation programs, such as Saudi Arabia's Vision 2030 and the UAE's AI Strategy, provide a strong foundation for integrating Big Data into various sectors like healthcare, education, and smart cities. The increasing integration of AI with Big Data offers opportunities for automation, enhanced decision-making, and predictive analytics across industries, helping businesses and governments optimize processes and resources.

Big Data's Impact on Regional Policy and Economic Strategy and Future Outlook

Big Data is increasingly influencing regional policy-making by providing governments with real-time insights into economic performance, market trends, and public sentiment. This data-driven approach allows for more precise and targeted policies in healthcare, education, transportation, and urban development.

Data analytics is transforming how governments manage public services, from healthcare and education to transportation and energy. By collecting and analyzing large datasets, governments can improve the efficiency and quality of services, reduce costs, and ensure resources are allocated effectively. For example, data-driven insights are helping optimize energy consumption in Saudi Arabia's Vision 2030 initiative, contributing to sustainability goals.

Big Data can also enhance governance by increasing transparency and accountability. Governments across the region are beginning to adopt open data initiatives, allowing businesses, researchers, and citizens to access information that can drive innovation, monitor public spending, and promote good governance.

The Middle East's data center market is projected to double by 2030. The demand for cloud services, digital transformation, Internet of Things (IoT), and artificial intelligence (AI) technologies is fueling growth in the region's data center markets. Initiatives like New Kuwait 2035 and Digital Oman 2030 also play a key role in this expansion.

Saudi Arabia and the UAE lead the market, with 46 co-location facilities currently operating. Demand for multi-tenant data centers is rising, and modular construction is becoming a viable solution to meet these growing needs. However, challenges remain in data center design and planning, particularly concerning scalability limitations and a shortage of skilled professionals.

The UAE's high data consumption and innovative use of AI place it at the forefront of data center development within the Gulf Cooperation Council (GCC). With active data center projects valued at USD 1.2 billion and a future project pipeline of USD 433 million, its data center industry is among the fastest growing in the Middle East.

Saudi Arabia also boasts a substantial domestic market, with a population nearing 35 million and stringent data protection laws that strengthen its data center industry. The country is a major player in data center investments, with 22 operational co-location facilities and over 40 more under construction. Riyadh, Jeddah, and Dammam are the primary investment hubs, while the emerging smart city of Neom is enhancing its infrastructure to become a key ICT hub, focusing on attracting investment for reliable services and connectivity within the national and GCC markets.

Rising construction costs pose a challenge for data centers in the region. Inflation and an increase in the price of metals and energy may continue to push these costs. Big Data analytics is also expected to record strong growth in the healthcare sector. According to a report by Triton Market Research, the healthcare Big Data analytics market in the Middle East was expected to grow at a compound annual growth rate (CAGR) of 23.79% over the forecast period from 2019 to 2028.

CONCLUSION

As the Middle East transitions from an oil-reliant economy to a data-driven future, the role of Big Data is becoming increasingly pivotal. As oil once fueled the region's rapid development, data is now emerging as the new driver of economic diversification, innovation, and growth. Big Data's transformative potential spans multiple sectors, from healthcare and finance to smart cities and public services, offering governments and businesses the insights needed to make informed, strategic decisions.

Countries like the UAE and Saudi Arabia continue to invest heavily in data infrastructure, AI, and cloud technologies to solidify their roles as regional tech hubs. These efforts are creating new economic opportunities and positioning the region to compete in the global digital economy. However, to fully harness Big Data's potential, the Middle East must overcome challenges related to data privacy, regulatory frameworks, and a shortage of skilled professionals.

In conclusion, as Big Data reshapes economies, societies, and industries across the Middle East, its role will be crucial in driving sustainable economic diversification, improving public services, and enhancing the region's competitiveness on the global stage. Data, much like oil, is set to be the cornerstone of the region's next phase of economic transformation. For investors in the UAE and broader region, focusing on Big Data signifies a financial opportunity and a contribution to economic prosperity and diversification.

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