

How data science can transform Lebanon's public sector

- Data science can transform public sector policy-making and service delivery with evidence-based analysis and decision-making.
- Lebanon lacks the data infrastructure and governance rules needed to support public sector data analysis.
- Professor Lama Moussawi and Raghda Kawass at the Suliman S. Olayan School of Business, American University of Beirut, examine how Lebanon can promote data analytics to improve policy-making and service delivery.
- The team also reveal how open data and AI can help Lebanon become a more informed and equitable society.

We live in an increasingly digital world where information can be readily gathered and analysed to enhance understanding and improve action. Data science is a broad term that covers the various ways of extracting valuable insights from digital information. It's a multidisciplinary field that embraces statistics, mathematics, computer science, and coding. Data modelling, visualisation, and predictive analytics can reveal patterns in disparate information to help policy-makers make accurate, evidence-based decisions.

Professor Lama Moussawi and Raghda Kawass from the Suliman S. Olayan School of Business, American University of Beirut (AUB), have produced a wide-ranging report that examines how data science can transform public sector service delivery and governance in Lebanon. Their policy brief combines case studies from the Middle East and North Africa (MENA). Key points from their brief have been raised by speakers at the 2023 Women in Data Science (WiDS) conference at AUB, the region's largest learning event for data science research.

The power of public data

Moussawi and Kawass cite a 2021 study by KPMG and Microsoft that confirms the positive contribution of data science on public service delivery across the MENA region. They also highlight the 'Smart Dubai' project that uses publicly shared 'open data' to inform analytics that improve the Emirate's public transportation and healthcare systems. A similar Saudi government initiative, the National Open Data Portal, promotes transparency and accountability in government by providing open access to data libraries from various departments.

Artificial Intelligence (AI) developers can also use these public datasets to train their models. AI plays a crucial role in public sector transformation across the Emirates and Saudi Arabia. Moussawi and Kawass emphasise how analytics enriched by open data can 'enhance decision-making, optimise resource allocation, and promote innovation for the benefit of the nation's citizens.'

Toward a data-driven culture

The researchers draw attention to the various difficulties in applying advanced data analytics. A society may have skills shortages and no comprehensive data infrastructure to draw upon. Public data

provision can only exist when supported by effective, trustworthy public institutions. These challenges are particularly clear in Lebanon, a country whose public services and civil society are severely strained by economic crises and political instability.

Moussawi and Kawass recommend that Lebanon establish a Data Science Hub for Public Policy to address skills shortages, support research, and encourage collaboration between data scientists and policy-makers. They also suggest partnerships between academics, the private sector, and the state to develop data-driven decision-making. The government can encourage information sharing by adopting 'open data' practices. Moussawi and Kawass also identify the need to invest in data literacy programmes for public sector employees.

Supporting civil society

Data-driven policies can transform public sector delivery in ways that also strengthen civil society. This was the focus of Dr Carole Al Sharabati's talk at the 2023 WiDS conference. She firmly believes that data modelling has benefited the policing, governance, and media sectors in Lebanon. As a stand-out example, the recent application of data analytics in police control centres has reduced crime by 30%. She also pointed to the ability of AI to identify fraud in aid distribution and to detect misinformation in media output.

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Moussawi and Kawass add social justice as another key area that data science can improve. They suggest that social welfare policy delivery can benefit from data science's

ability to identify deprived groups, allowing the state to accurately target scarce resources.

The need for infrastructure and governance

Using data science to formulate public policy is at the introductory stage in Lebanon. The research team stress the importance of building a data governance and legal framework. The Access to Information Law (ATI) has been a good start. The Lebanese public sector is applying ATI to access data across the economy and society, such as healthcare records, education, and urban planning data.

Ms Brigitte Khair-Mountain, United Nations Senior Women Talent Group, spoke at the 2023 WiDS conference indicating that Lebanon still needed to build a data infrastructure. Some



The annual Women in Data Science (WiDS) conference is the region's largest learning event for data science research.

current laws support digital transformation, such as the e-transaction and personal data law, but these need clarity and a wider context. A data governance framework is required, including data sharing agreements.

Moussawi and Kawass recommend that Lebanon improve data infrastructure via investment needed for successful implementation. There also needs to be governance initiatives such as data sharing agreements. Legislation is also required to achieve this shift to a digital culture, particularly in data protection. Regulation to protect personal information can encourage greater data provision by encouraging public trust.

Heading-off disasters

Ms Khair-Mountain also used the 2023 WiDS conference to examine the contribution of data science to the management of disasters, a current concern for Lebanon with an ongoing Syrian refugee challenge. Airborne data from drones can feed computer analytics that report, model, and predict the course of stress events – allowing the potential to anticipate and mitigate problems. The analysis of people movement in real time is a powerful tool for policy-makers and responders.

Moussawi and Kawass added content from the United Nations ESCWA (2020) report. This shows that data analysis related to

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refugee populations, such as demographics, health records, and social media activity, can provide valuable insights into Lebanon's Syrian refugee crisis. For example, data analysis can identify particular regions that will come under stress with the increased flow of refugees. Their policy brief highly recommends these use cases to improve Lebanon's disaster management, preparedness, and response.

Pre-empting financial crises

Dr Rima Turk Ariss, a Senior Economist at the International Monetary Fund (IMF), told participants at the 2023 WiDS conference how the IMF uses data to assess a country's economy and identify trends to inform policy-making. She suggests governments should engage in regular 'Article 4 consultations' with the IMF, particularly a risk evaluation that can anticipate a crisis event. This could provide an opportunity for policy-makers to take mitigating measures. Moussawi and Kawass strongly endorse this advice in their policy brief.

Information sharing, open data, and data protection law lie at the heart of the successful application of data science across the public sector. Informed by the use cases highlighted in Moussawi and Kawass's paper, Lebanon's public sector and civil society can be significantly strengthened by its wide-scale adoption.



Personal response

Your brief highlights various benefits of 'open data' practices. Are there any associated risks?

Open data, defined as the provision of accessible information by public entities for unrestricted use, represents a cornerstone in modern data practices. Its fundamental principle lies in the unrestricted availability and accessibility of data to individuals, businesses, academia, nonprofits, and other entities. The benefits of open data are adaptable and substantial, encompassing enhanced transparency, improved governance, and catalysing economic growth. Transparency, a key characteristic of open data, fosters public trust in governmental institutions and civil servants, thus enabling better management of public policy and increased citizen participation. Moreover, open data prompts innovation and economic development by facilitating the creation of new products, enhancing productivity, and generating employment opportunities. Furthermore, it extends its positive influence to culture and the environment.

However, amidst these benefits, open-data initiatives entail certain risks that warrant attention. Chief among these is the substantial cost associated with implementing and maintaining open-data infrastructure, necessitating careful consideration of resource allocation. Additionally, the uncritical sharing of data may compromise individual privacy

rights, raising concerns regarding data ownership, consent, and potential misuse. Legal ambiguities surrounding data usage and privacy further underscore the need for comprehensive frameworks to address these challenges. Moreover, while open data can empower citizens and foster accountability, it also poses risks of discrimination and social sorting if not managed ethically. Therefore, while embracing open-data practices, it is imperative to adopt robust mechanisms for evaluating, safeguarding, and responsibly sharing data to maximise its benefits while mitigating associated risks. By addressing these challenges effectively, open data can continue to serve as a powerful tool for driving transparency, innovation, and societal progress in the digital age.

Are there any examples of data protection legislation across the region that may serve as a template for adoption by Lebanon?

When considering examples of data protection legislation across the region that could potentially serve as a template for adoption by Lebanon, several significant models appear. The United Arab Emirates (UAE) presents a comprehensive framework through its Data Protection Law of 2021, which addresses various issues but notably excludes government entities. Similarly, the Abu Dhabi Global Market (ADGM) and Dubai International Financial Centre (DIFC) have enacted laws

with elements akin to the EU's General Data Protection Regulation (GDPR), providing valuable insights for Lebanon's adoption. Bahrain's Personal Data Protection Law (PDPL) of 2019 and Qatar's Protecting Personal Data Privacy Law (PPDP) of 2016 also mirror GDPR definitions and principles, serving as robust references. Additionally, Saudi Arabia's recent enactment of a Personal Data Protection Law (PDPL) reflects international data protection principles, including elements of GDPR, thus offering a comprehensive model for Lebanon's consideration. Meanwhile, Lebanon's existing Electronic Transactions and Personal Data Law of 2018 lacks an independent data protection regulator, highlighting a potential area for improvement. Egypt's Protection of Personal Data legislation in 2020 and Jordan's ongoing efforts with a draft data protection law further contribute to the regional landscape. However, it's essential to note that several countries in the region, such as Iraq, Iran, Kuwait, Syria, and Yemen, lack comprehensive data protection laws, emphasising the importance of developing robust regulatory frameworks to safeguard personal data effectively. Drawing from these regional examples, Lebanon could strategically tailor its data protection legislation to align with international best practices and address its specific socio-economic context, ultimately fostering trust, innovation, and digital growth.

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Bio

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Further reading

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