Chapter 5: Transforming Justice in the Middle East and North Africa through Data

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1. Introduction: The judicial context in the Middle East and North Africa[1]

This chapter summarizes the role of justice in development, the importance of the data revolution in justice, and the opportunities for countries in the Middle East and North Africa to improve judicial effectiveness and unlock the power of justice systems for economic development. Empirical evidence shows that effective justice systems facilitate economic development through multiple mechanisms. A strong justice system enforces contractual agreements, resolves legal disputes, promotes social cohesion, and builds trust between market players and government institutions. However, in the Middle East and North Africa, citizens' trust in public institutions remains low, and the region faces significant challenges in justice and the rule of law in terms of judicial independence, quality, efficiency, and accessibility. As more Middle Eastern and North African countries embark upon efforts to digitize justice and make judicial services more accessible, this chapter discusses how to use the data generated by digital technologies to improve justice institutions. The examples show that data-driven decision-making may reduce adjournments and improve the accountability of justice systems, encouraging economic growth; identify and reduce gender and ethnic biases to improve the quality of justice; and enhance the effectiveness of alternative dispute resolution mechanisms by leveraging algorithms to optimize case assignment, an improvement that can be extended to other types of public services. Notwithstanding the different contexts in the Middle East and North Africa—high income, low income, and fragile and conflict affected— the examples may apply to the common set of justice challenges that Middle Eastern and North African countries face, which include inefficiencies, suboptimal quality, and lack of access by marginalized groups. The chapter concludes by exploring future avenues for research and innovation. Whether by providing citizens with access to courts via WhatsApp, embedding human-centric artificial intelligence in court decisions, applying principles of the share-riding economy in the distribution of cases across courts, or providing personalized training for judges, the data revolution brings ample opportunities for the Middle East and North Africa.

The justice system is a key pillar of governance institutions along four dimensions. First, as a structure, the justice system is a formal institution that provides an essential service to citizens and corporations: the capacity to resolve disputes independently according to the law. This function is especially important for vulnerable populations, who need the justice system to counter informal power asymmetry. Second, as a process, the judiciary is responsible for holding the executive and legislative branches of government accountable, serving as an independent, autonomous branch that ensures impartial, fair resolution of legal conflicts. As this chapter will soon discuss, Middle Eastern and North African countries have challenges in building strong and independent judiciaries. Third, as a mechanism of governance, the judiciary shares the characteristics of any bureaucracy. As such, it functions through a set of formalistic institutional procedures through which matters proceed and decisions follow. Finally, as a strategy, the design of the justice system is a conscious or subconscious policy choice, because procedural aspects of the law can have substantive impacts on citizens. For instance, a marginal increase in the cost of filing—monetarily or doctrinally—disproportionately burdens marginalized people who lack financial resources and legal expertise. In short, designing justice is an art of governance.

Overall, there is a strong association between economic development and rule of law, as cross-country indicators show. For instance, a well-functioning judiciary promotes economic growth by enforcing contracts and securing property rights (Chemin 2009; Lichand and Soares 2014; Ramos-Maqueda and Chen 2021; Shvets 2013). An effective justice system further promotes social cohesion and deters violence that undermines economic productivity (Acemoglu et.al 2018; Blattman, Hartman, and Blair 2014; Mocan, Bielen, and Marneffe 2018).

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1   We are grateful to Klaus Decker, Roberta Gatti, and Ha Nguyen for detailed comments and feedback, and to Xiantao Wang for excellent research assistance.

The Middle East and North Africa faces significant challenges in justice and the rule of law that hinder development. The region's rule of law as measured by Worldwide Governance Indicators outperforms South Asia and Southern Africa but trails Europe and Central Asia, East Asia and the Pacific, and Latin America and the Caribbean (Decker 2022, Kaufman and Kraay 2021). There is an urgent need to improve service delivery in the public sector and rebuild the public's trust in government institutions. Specifically, regarding the justice sector, Middle Eastern and North African countries have substantial room for improvement in judicial independence and constraints on executive power, as well as the quality, efficiency, and accessibility of justice.

Before delving into each of the four areas, it is important to recognize that the Middle East and North Africa consists of a diverse set of countries that may be divided into three categories (Decker and Ebeid 2019). First, fragile and conflict-affected countries, such as Iraq, Libya, and Yemen, lack basic state institutional capacity to deliver justice services, and marginalized communities are especially vulnerable. Second, middle-income countries, such as Egypt and Jordan, although not directly affected by fragility and conflict, face spillover effects from neighboring countries in the region. Finally, in high-income countries, namely, the countries in the Gulf Cooperation Council and Malta, justice challenges remain in the form of weak institutional capacity, low levels of inclusion, and corruption, among others.

Despite the diversity, Middle Eastern and North African countries share many challenges in the four areas outlined above. First, data from the V-Dem Dataset used by Lührmann, Marquardt, and Mechkova (2020) offer some useful insights into judicial independence and constraints on the executive branch. The side-by-side boxplots in Figure 1 suggest that, although there is wide variation, Middle Eastern and North African countries on average underperform countries in other regions on all justice and rule-of-law indicators. The region is on par with Sub-Saharan Africa but lags behind all other regions on indicators of independence, compliance with the judiciary, and judicial constraints on the executive branch.

Second, the quality of justice systems across the region is suboptimal (Decker and Ebeid 2019). In fragile and conflict-affected countries, justice services are fundamentally biased against the opposition and marginalized populations, and there are high levels of judicial corruption. In middle-income countries, historically underfunded justice institutions struggle to obtain financial, human, and technical resources to deliver on 21st-century citizen expectations. High-income countries face similar challenges, including a lack of resources.

Third, the efficiency of legal and judicial systems in settling disputes compiled in the World Economic Forum Global Competitiveness Index (Schwab 2019) sheds some light on the situation across regions. Middle Eastern and North African countries in general perform better than the median country with available data[2] but have ample space for improvement (Figure 2).

Fourth, accessibility is a challenge in all Middle Eastern and North African countries (Decker and Ebeid 2019). In fragile and conflict-affected countries, civil, commercial, and administrative justice services are hardly available. For example, since the Yemeni civil war that started in 2014, Yemen has reached a point of institutional collapse, with successive governments unable to protect private property or basic public security. In middle-income countries, underfunded justice institutions are unable to deliver justice to citizens and businesses, not to mention large swaths of refugees who are excluded and discriminated against. For example, the influx of Syrian refugees into Lebanon has added complexity to this country troubled by weak government and institutional capacity, as well as regional and local polarization. High-

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2   Data are available for only 139 countries. Data are more likely to be missing in Central Africa, West Africa, the Middle East, South America, and Central Asia. Thus, the median country in the data set may not be the median country in the world.

Figure 1. Justice and rule of law across regions: Judicial independence and constraints on the executive

a. High court independence
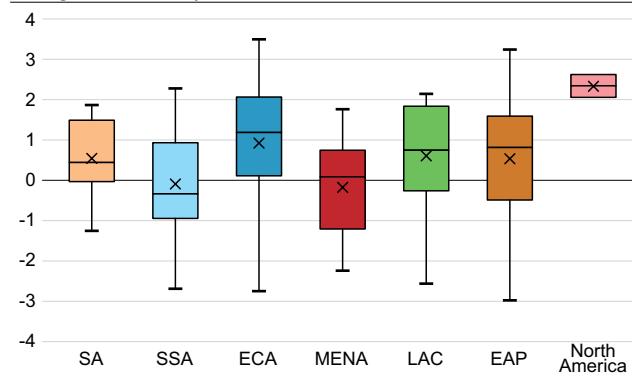
b. Compliance with judiciary
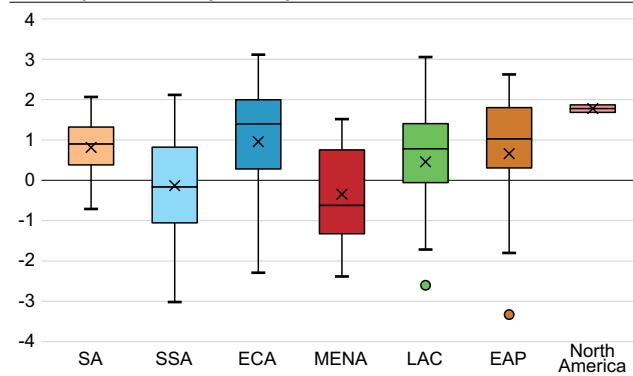
c. Judicial constraints on the executive
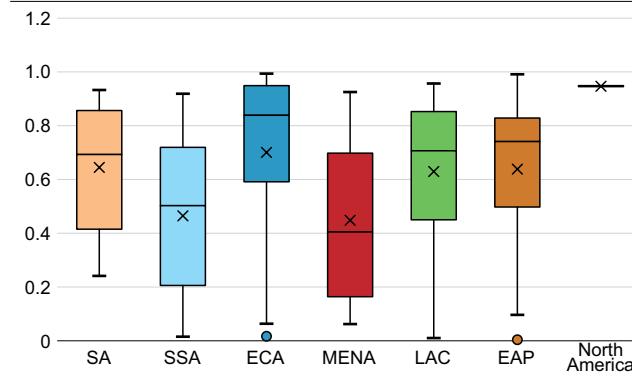
d. Executive respect of constitution
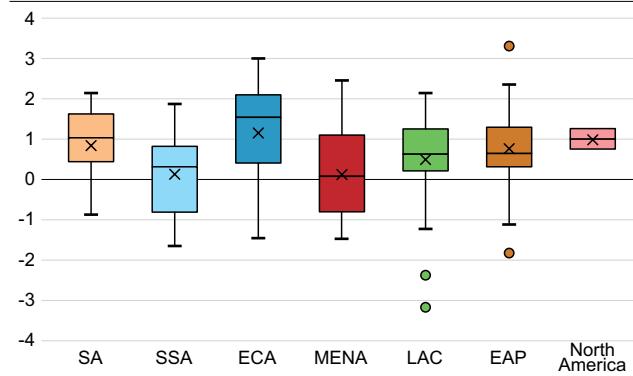
Source: V-Dem Dataset produced by Varieties of Democracy, used in Lührmann, Marquardt, and Mechkova 2020.

Figure 2. Efficiency of legal framework in settling disputes
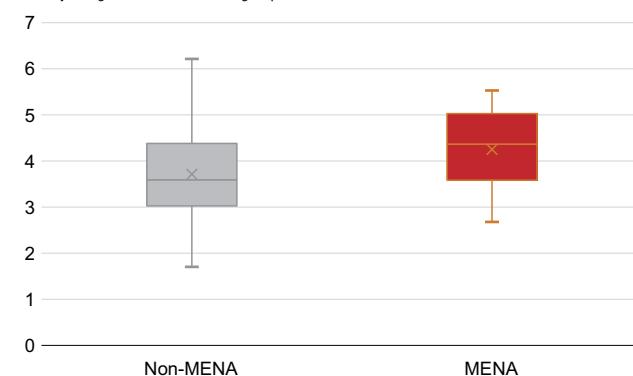
Source: World Economic Forum Global Competitiveness Index 2019.

income countries have high levels of inequality with low levels of voice for vulnerable groups, who face discrimination in the legal system. Overall, access to justice in the Middle East and North Africa has been stagnant for decades, with the region lagging behind all other regions in this dimension by 2021 (Figure 3) (Varieties of Democracy 2022[3]).

Figure 3. Access to justice by region, 1946–2020

Access to justice, average of country-specific values

Source: Varieties of Democracies 2022.
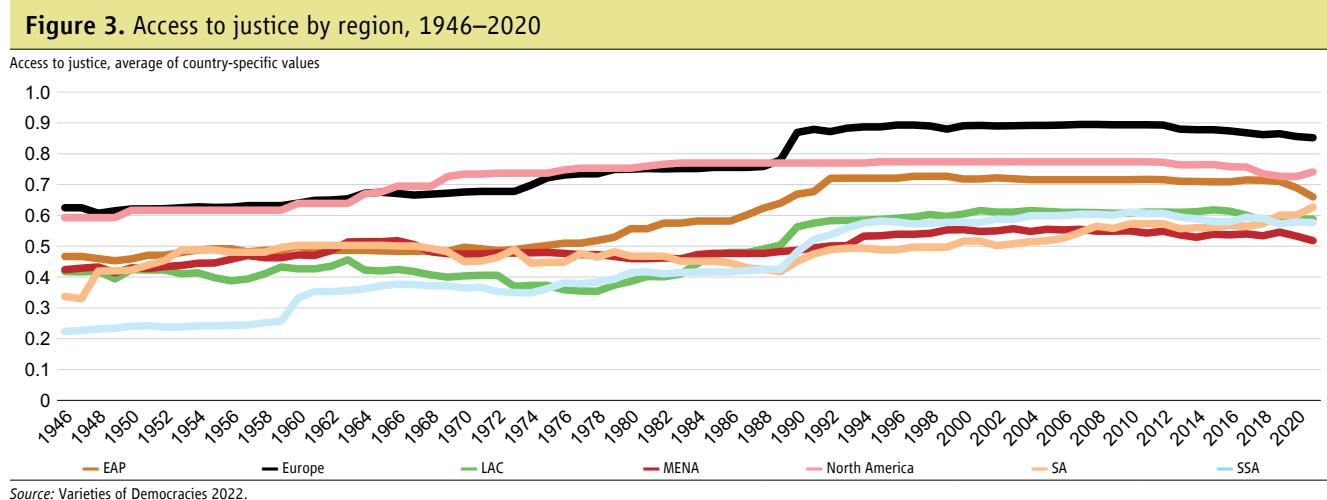
These challenges hurt women disproportionately, with the Middle East and North Africa being the worst-performing region on gender inequality in terms of "going to court" and "protecting women from violence," trailing behind the second worst on both indicators by a large margin (Decker and Ebeid 2019; World Bank 2018).

Recognizing these challenges, the World Bank identifies four justice and rule-of-law priorities in the region: addressing challenges to private sector development by promoting a level playing field for all market actors in the courts; improving justice service delivery in terms of efficiency, quality, and access; enhancing transparency, accountability, and inclusion; and strengthening justice and the rule of law in the context of fragility, conflict, and violence (Decker 2022). As the literature review and the case study of Kenya later in this chapter suggest, accountable, scalable technological solutions powered by data help further these priorities.

What can countries do to improve the justice system? Why does improving justice systems matter for economic development? The following section reviews the evidence from the academic literature on how judiciaries affect development outcomes. The third section examines the power of administrative data in governments and presents the justice system as a unique example of untapped potential to improve the rule of law in the Middle East and North Africa. The fourth section presents an illustrative case study in Kenya, focusing on how data can be leveraged to increase the efficiency, quality, and accessibility of justice. Finally, the concluding section discusses potential areas for research and policymaking.

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3   The V-Dem Dataset produced by Varieties of Democracy has a slightly different definition of the Middle East and Northern Africa than the World Bank. V-Dem definition: Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine-Gaza, Palestine-West Bank, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen. World Bank definition: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, West Bank and Gaza, Yemen.

2. Role of justice in development

This section discusses the evidence of the role of justice in development, with a focus on impacts on economic growth, conflict and violence, and governance. This section's discussion on the role of justice in development suggests new policy and research opportunities.

There is a strong association across the world between the economic development of a country and its rule of law. Judiciaries matter not only for their intrinsic value but also for development outcomes. The macroeconomic literature documents that institutions, rather than geography or openness to trade, are key drivers of economic growth and development (Rodrik 2000), although systematic reviews also find weak empirical evidence of the impact of contract enforcement on investment (Aboal, Noya, and Rius 2014). Is the relationship between better judiciaries and economic outcomes causal? If so, why?

Quasi-experimental evidence using microdata has highlighted the potential mechanisms through which judiciaries affect economic outcomes. One mechanism is firm-to-firm trade, because trust in contract enforcement is necessary for trade (Chemin 2012). Another mechanism is the increase in investment and making production decisions that rely on contracts (Chakraborty et al. 2018; Crawford, Klein, and Alchian 1978). A final mechanism is lending, facilitated by the formal enforcement of loans (Shvets 2013). Furthermore, entrepreneurship and firm size can also increase with stronger justice systems and greater access to justice (Laeven and Woodruff 2004; Lichand and Soares 2014).

The empirical literature has found that (1) better contract enforcement reduces risk in contracting and enhances firms' productivity and business creation (Ahsan 2013; Sequeira 2016); (2) judicial institutions increase credit availability and spur development of credit markets by reducing risk and moral hazard (Chemin 2009); (3) and access to justice increases productivity and protects citizens at risk of conflict or when laws are biased against them (Aberra and Chemin 2021; Blattman, Hartman, and Blair 2014; Sandefur and Siddiqi 2013). (4) A more limited but growing area of research has found that a strong justice system can lower corruption (Litschig and Zamboni 2018). These four claims are based on quasi-experimental studies and provide a basis for future research into how the justice system affects economic outcomes. A review of the literature revealed that mechanisms (3) and (4), related to the need for stronger judiciaries to address corruption and increase access to justice, may be particularly relevant for the Middle East and North Africa. Likewise, a more reliable and accountable judiciary may also increase firm-to-firm trade and foreign direct investment.

The following studies represent examples of some of the methods and findings that support the four relationships. First, the creation of special tribunals in Brazil—simple, agile, safe, and effective—increased the geographic presence of the justice system and access to justice (Lichand and Soares 2014), which increased entrepreneurship and new business formation, in particular for individuals with higher levels of education. Second, an earlier study found that a judicial reform that provided judges with training in case management techniques in Pakistan led to greater case resolution and higher entry rates for new firms (Chemin 2009). Surveyed individuals were more confident in their ability to obtain credit, which increased entrepreneurship. The author's estimates suggest that this reform increased Pakistan's gross domestic product by 0.5 percent (Chemin 2009). A third study in Senegal found that a policy reform requiring judges to complete pre-trials within four months increased the speed of justice (Kondylis and Stein 2018). It halved the negative financial impact of case delay, and surveyed firms valued this reform.

Mediation and conciliation also play an important role in providing effective, accessible dispute resolution mechanisms in developing countries, especially by resolving violent disputes and protecting vulnerable populations (Blattman, Hartman, and Blair 2014). In one randomized controlled trial, targeted communities participated in eight days of training in alternative dispute resolution. In one year, dispute resolutions increased. In three years, treated communities witnessed substantial drops in threats and violence associated with disputes. Survey data suggest that part of the mechanism was promoting norms and skills related to managing emotions and avoiding violence. In a study in Peru, the introduction of Women Justice Centers (WJCs)—specialized institutions that provide police, medical, and legal aid services for vulnerable women who experience gender-based violence—curbed violence, improved children's educational outcomes, and reduced child labor (Sviatschi and Trako 2021). Furthermore, the presence of a WJC in a district is associated with 7 percent fewer female deaths due to aggression and 10 percent fewer mental health hospitalizations, suggesting that conciliation, mediation, and legal aid are important support mechanisms for protecting women at risk and effectuating justice and rule of law.

Effective justice systems may ultimately reduce corruption and cultivate trust in governments. In one study of Brazilian local governments, the physical presence of state judicial institutions reduces rent extraction, measured as irregularities related to waste or corruption, by about 10 percent (Litschig and Zamboni 2015). In another randomized study, simply providing information about the faster speed of justice in rural Punjab in Pakistan led to greater citizen willingness to use state courts and allocate funds to the state and enhanced overall trust in formal institutions (Acemoglu et al. 2018).

In short, the literature provides ample evidence that effective rule of law facilitates economic development through multiple mechanisms. A stronger justice system enforces contractual agreements, resolves legal disputes, promotes social cohesion, and builds trust among market players and in government institutions.

3. Data revolution in justice systems

Having demonstrated why justice matters for economic development, this chapter now shifts gears and turns to how data and technology can improve governance and justice. Digital technologies are transforming the work of governments worldwide, and COVID-19 has accelerated this transformation. Digital systems generate a wealth of microdata— including in the areas of taxation, justice, procurement, and public administration—that is often underused. These digital technologies enable data collection that creates invaluable opportunities to measure and improve the performance of governments and justice systems.

How can the power of these rich administrative data be leveraged to improve justice institutions? What is the downstream impact of improved institutions on economic growth and poverty reduction? Judiciaries collect vast amounts of data, but even though fair administration of justice relies on tracking what happens at each instance of a case, judiciaries have rarely used these data to improve decision-making. Thus, judiciaries are data rich but information poor.

Using cutting-edge research and analytical techniques, judiciaries can leverage big data to increase the efficiency, quality, and accessibility of justice (Ramos-Maqueda and Chen 2021). E-filing and case management systems in judiciaries around the world have generated a vast amount of administrative data and expanded data availability. Recent research demonstrates that simply sharing and seeing data can improve decision-making and court performance. For instance,

Carrillo et al. (2022) demonstrate that data dashboards providing simplified information to court managers increase the overall productivity of courts, particularly for more senior officers who are less skillful with data and technology. Beyond court officials, information on expected outcomes may help litigants make better decisions about their cases. In the context of Mexican labor courts, Sadka, Seira, and Woodruff (2020) show that personalized outcome predictions for litigants doubled their settlement rates in mediation, and improved the overall welfare of workers.

Beyond data itself, simple technological solutions powered by data can improve justice institutions and participants' well-being. For example, Cooke et al. (2018) noticed that text message reminders decreased failure to appear in courts in New York City by up to 26 percent, avoiding 3,700 arrest warrants. Machine learning applications may also improve the decisions of court actors. Kleinberg et al. (2017) found that applying predictive machine learning in bail decisions has the potential to reduce crime by 25 percent without increasing the number of people in jail, highlighting in a simulated scenario how data may support decision-making and address important challenges in the justice sector.

Three stages underlie the effective use of data. The first stage has to do with the data itself: improving case management systems and data quality, creating structured data from unstructured text that allows for new opportunities to improve justice systems, and investing in platforms for data collection. The second stage concerns data analysis: identifying core problems in justice systems, measuring and documenting the impacts of justice reforms, and leveraging machine learning to identify and reduce biases. The third stage involves testing new innovations and approaches through experimentation and developing a policy feedback mechanism to inform decisions by governments and judiciaries in real-time. The effective implementation of these stages, nonetheless, requires governments' willingness to use the data and make it accessible. Without data availability and transparency, the opportunities for data revolution to improve justice systems are severely undermined. As discussed later in this chapter, this component represents a key barrier to unleashing this potential across Middle Eastern and North African countries.

Opportunities to transform the justice system are particularly relevant in the midst of the global justice gap. According to the World Justice Project (2019), some 5.1 billion people lack meaningful access to justice, and an estimated 1.5 billion people cannot resolve their administrative claims, criminal or civil justice needs, and disputes. As explained in the introduction, this gap in access to justice is particularly acute in the Middle East and North Africa. What if the power of high-frequency data can be harnessed to identify precisely which sectors of the population lack access to justice and provide dispute resolution mechanisms to resolve their grievances? Can these data even be used to evaluate the impact of a new law on citizens and businesses and then create knowledge for sharing good practices of regulations across countries? The advent of big data and machine learning in governments opens a wide range of opportunities.

Creating a Data Ecosystem

To understand how to leverage the power of data systems, this chapter defines a rich judicial data ecosystem as follows. First, there should be an integrated justice system, which means that case-level data should be associated with each milestone in the process, from filing to appeal. The text of court rulings, sentences, and human resources data should also be integrated to facilitate text analysis. The benefits are multifold. For instance, if analysts want to evaluate changes in recruitment and training policies, they can follow these integrated data to evaluate how such policies affect actual judicial decision-making. Automation of indicators as part of a results framework while tracking court-level reforms and

innovations augments the capacity to learn from best practices. A rich data ecosystem also enables the implementation of A/B testing[4] and exploration of how small changes can have meaningful impacts on the delivery of justice.

Second, if policymakers and researchers want to understand how the justice system affects people's lives, they can combine judicial data with data from related agencies. Ideally, the case data can be linked to those of firms and users through national identification or tax data. If possible, the case data should also be combined with data from the police, prosecutors, and prisons so that the court administration can follow the entire justice process from when a crime is committed to the resolution of the case.

Finally, it is important to assess the experience not only of users but also of non-users—that is, those who do not access justice. This involves combining court user surveys with legal needs questionnaires administered to the general population to understand who is not accessing justice and why.

The Challenge for the Data Revolution in the Middle East and North Africa: Lack of Data and Transparency

Despite the opportunity that the data revolution provides presented in this chapter, it is crucial to understand the unpalatable truth on the ground: administrative data tend to be lacking in Middle Eastern and North African countries. Sometimes existing workflows based on paper and manual filing—which the case management system and data ecosystem discussed above can replace—lack the capacity to organize data in a structured, automated, and scalable manner. Other times, the unitary top-down political structure favors data opacity over transparency. The result is that the Middle East and North Africa often appears as a data desert in cross-country administrative data sets, and academic literature on justice in the region is mostly norm-based and written by lawyers. Thus, one important step in leveraging the potential of the data revolution is for Middle Eastern and North African countries to ensure sustained institutional resources, infrastructure, and data transparency. As discussed throughout this chapter, this will open invaluable opportunities to improve the functioning of the justice system and foster economic prosperity and inclusion.

4. Case study: Kenya

The following case study in Kenya showcases how data-driven interventions increase the efficiency, quality, and accessibility of justice. In terms of efficiency, it exemplifies how data-driven, useable information can improve court performance. In terms of quality, the case study examines gender and ethnic biases in judicial decisions. Finally, in terms of accessibility, the case study addresses how technological innovations can increase access to and the quality of justice for vulnerable populations by providing good alternative dispute resolution mechanisms.

As summarized in the introduction, Middle Eastern and North African countries—high-income, low-income, and fragile and conflict-affected—share a broad set of justice challenges, including inefficiencies, suboptimal quality, and lack of access by marginalized groups, albeit in different contexts. The case study in Kenya, a developing country in the Global South, highlights how data and technology can help address these challenges. As of 2020, Kenya's rule of law, as measured by Worldwide Governance Indicators (Kaufman and Kraay 2021) was below the average and median of Middle

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4   An A/B test refers to a randomized experiment that compares two or more versions of a product, process, etc. A major benefit of A/B testing is that randomization evens out external factors and supports strong causal inference.

Eastern and North African countries, below Egypt and West Bank and Gaza but above Algeria and Iran (Figure 4). Thus, examples from Kenya may be useful to countries in the Middle East and North Africa that are interested in transitioning to digital technologies and data-driven decision-making.

The following case study provides examples of how to use rigorous data-driven innovations to guide judicial reforms. It started off during a World Bank lending operation with the Kenyan judiciary, the Judicial Performance Improvement Project,[5] one of the components of which consisted of financing the development of a digital case management system, creating a performance management division to make productive use of these data, and standardizing the data system throughout the judiciary. This shift toward a data-driven culture within the judiciary brought improvements in monitoring and performance. For instance, objectives could be measured in real time, incentives could be provided for the best-performing courts, and promotion decisions could be based on performance metrics derived from the data.

Figure 4. Rule of law in worldwide governance indicators in Kenya and other Middle Eastern and North African countries

Percentile rank on rule of law, 0–100 (best)

Source: Kaufman and Kraay 2021.

As part of this process, the project engaged with various actors in the Judiciary to implement and evaluate the impact of data-driven innovations. In the first example, the World Bank's Data and Evidence for Justice Reform (DE JURE) program partnered with the Kenyan Judiciary's Directorate of Planning and Operational Performance and McGill University to evaluate whether existing judicial data could be used to increase the efficiency of the justice system. In this context, adjournments were causing large backlogs in courts. The partnership decided to leverage existing data systems to diagnose the key metrics of the performance of each court and identify the top three reasons for adjournments affecting each court. Typical reasons for adjournments included the parties or witnesses not being ready or not showing up to court. Because this information was captured in the administrative data, the judiciary could use it to design an intervention that would reduce adjournments.

Chemin et al. (2022) developed a personalized, one-page feedback report including the top reasons for adjournments and making this information useable by predicting the overall efficiency gain if the top reasons for adjournments were reduced to zero. The project evaluated the impact of this intervention in a randomized controlled trial with two treatment arms in all 124 courts in Kenya. The feedback report was shared only with judges in some courts and with judges and court user committees, which consist of prosecutors, police, lawyers, and civil society organizations, in other courts—thus creating an accountability mechanism. The project tested whether this intervention affected the efficiency of justice.

Preliminary results show that providing useable information with accountability can significantly increase efficiency. When this feedback report highlighting the reasons for court delays was shared with judges and court user committees, adjournments decreased by 20 percent. In addition, wages in contract-intensive industries that the judiciary most affects increased in the regions where the information and accountability intervention took place. Thus, this intervention reveals an empirical link between a more efficient judicial system and citizens' economic outcomes.

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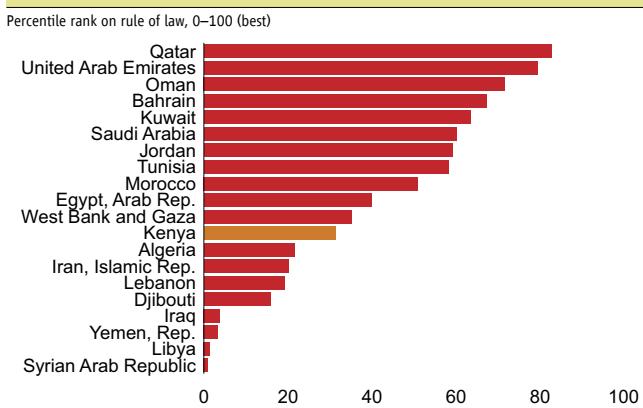
5   See Judicial Performance Improvement. World Bank, Washington, DC. https://projects.worldbank.org/en/projects-operations/project-detail/P105269.

Another example of digital transformation in the Kenyan judiciary consists of a collaboration between a research team at World Bank's Development Economics Vice Presidency and the Court-Annexed Mediation program in the Kenyan Judiciary. This partnership has developed a data management platform that provides court officers with analytical insights, streamlining administrative workflows. By creating this data-driven platform, new opportunities to improve the quality of mediation arise. For instance, the team aims to test, conditional on funding, a Machine Learning tool that assigns cases to mediators based on their prior (relative) performance. The goal of this assignment system is to improve current mediation systems, which mostly assign cases to mediators based on their availability or random assignment. Existing systems rarely consider the previous performance of mediators when assigning a case, which might affect whether the parties reach an agreement in mediation and whether they do so efficiently. Thus, by leveraging existing data systems and algorithmic tools, new opportunities may arise to improve the allocation of cases to mediators, increase access to justice, and reduce the backlog of cases through mediation.

In a final example of the Kenya case study, Chen et al. (2022) evaluate, using publicly available data on more than 130,000 published judgments on the Kenya Law website, whether there are gender and ethnic biases in judicial decisions. They find that judges are more favorable to defendants of the same gender and ethnicity, an example of in-group bias. Leveraging the text of the written decisions by the judges using natural language processing techniques, the project found an association between judges' stereotypical gender biases in writings and adverse rulings against female defendants. The team is exploring whether technological tools can also help reduce such biases.

Thus, the case study of Kenya demonstrates that the data revolution in justice can bring important benefits to the efficiency, quality, and accessibility of justice. Such improvements can transform how judiciaries work, catalyzing a cycle of change that contributes to more effective institutions that promote economic growth and protect the well-being of citizens. This transition may reduce some of the challenges Middle Eastern and North African countries face in their justice systems.

The Kenyan experience cannot be applied mechanically to Middle Eastern and North African countries, and there is no one-size-fits-all solution for justice reform, which is inextricably tied to a nation's history, tradition, and social environment. As alluded to earlier, lack of data infrastructure and transparency is a severe challenge in many Middle Eastern and North African countries. Beyond data, there is much progress to be made in strengthening legal institutions and making them more inclusive. For example, it was not until 2021 that Egypt appointed female judges (Malekian and Maher 2021).

5. Avenues for future research and policy

As this chapter has tried to convey, justice matters for development. It is a key pillar of governance, and it promotes economic development by enforcing contracts, resolving legal disputes, and promoting social cohesion and trust. Middle Eastern and North African countries face various shortfalls—lack of quality, accountability, and accessibility—in the justice system. The data revolution provides an opportunity to address some of these shortfalls. The case study of Kenya demonstrates that the shift toward a data-driven culture within the judiciary has leveraged previously underused administrative data to increase the efficiency and accountability of the justice system, as well as the overall performance of mediators. Moreover, regions where courts received the intervention saw wages increase in contract-intensive industries, confirming the link between justice and the economic well-being of citizens.

The COVID-19 pandemic has exacerbated the global challenge of unmet justice. In the wake of the pandemic, technology-based innovations are no longer just auxiliary instruments but have become increasingly necessary avenues to seeking justice, as new social norms aimed at preventing further the spread of the virus become the new normal.

Some Middle Eastern and North African countries have embarked upon efforts to make judicial services more accessible as part of their broader initiatives to digitize government data. For example, in Egypt, on the user-facing front end, the government has launched the "Digital Egypt" platform that is designed to provide automated services for justice affairs (World Bank 2021). Egypt is working toward a whole-of-government approach, which entails expanding digital solutions to various core government functions. So far, the results as measured by GovTech have been modest, indicating that Egypt's digitization efforts have yet to materialize fully (World Bank 2020; 2021). Another example is the UAE, which has been pushing for digital justice (UAE, n.d.). For instance, the Case Management System enables litigants to file documents electronically and reduces delay. Since the COVID-19 pandemic, remote litigation has become the mainstream in public court sessions.

Studies and examples highlighted in this chapter are but a handful of important studies that suggest the need for policies to increase access to justice and further randomized control trials for more rigorous evidence.

There are three prominent areas where data and technology, if coupled with sufficient infrastructure automating data flow, institutional support, and political will, can be particularly useful for improving the rule of law in upcoming years: increasing access to justice for citizens; improving court performance by providing support tools for court actors; and enhancing legal knowledge for judges and legal professionals, citizens, and firms (Ramos-Maqueda and Chen 2021).

First, e-justice tools for increasing access to justice can make it easier for citizens to access the courts. For instance, in response to the COVID-19 pandemic, the Chilean Administrative Corporation of the Judiciary opened a virtual platform for communication, Conecta, on which litigants could access courts through various channels, such as WhatsApp, videoconferences, and internal chat. By integrating various remote means of communication, Conecta enabled citizens to access family courts and resolve cases related to, among others, family disputes, child support, and domestic violence. The data generated in this platform on the number of inquiries, waiting time, and user satisfaction can be used to improve the service. Thus, Conecta not only provided a lifeline for families at risk during the pandemic but also can play an essential role in enhancing access to justice well beyond pandemic times.

Another possible way to increase access to justice is through digital phenotyping. Public health researchers have validated smartphone use as a proxy for mental health and used the possibility of sending information on services to support vulnerable populations. The DE JURE program is supporting Bangladeshi academics working with the Ministry of Women to address missing cases—i.e., cases that were never filed but should have—and reduce gender-based violence.

Second, access to justice can synergize with unbiased court services. The phenomenon of refugee roulette—by which results of asylum decisions depend on the hearing order—is an empirical example of judicial bias, which undermines the notion of equal treatment before the law. Research on how human-centric artificial intelligence can reduce biases while respecting judges' autonomy and discretion provides a framework that can be applied in data-driven apps to provide decision support for judges (Babic et.al 2020; Chen n.d.). The human-centric approach begins by showing judges their predicted selves, which they are free to deviate from in their decision-making. Decisions predicted to lead to error get a nudge to pay attention or spend more time. Judges can even see the predictions of others to learn how others decide.

This decision support can also help speed justice because judges may be able to better allocate their attention and bandwidth. This framework can be evaluated through decision support apps and randomized trials.

Another way to speed justice is to use principles of the ride-sharing economy. In many countries, some courts are extremely congested, whereas others are not busy. Can Uber-like algorithms address court backlog and increase welfare in the public sector? Unlike the usual ride-sharing platform, where a driver takes one rider at a time, this matching problem has judges who can take multiple cases simultaneously. Algorithms embedded in decision-support apps like this can include randomized controlled trials to help efficiently allocate cases. This is an area that should be examined to showcase the opportunities for machine learning to boost judicial efficiency.

Third, enhancing knowledge of laws and regulations can support economic growth. In South Africa, Bertrand and Crépon (2021) evaluate whether imperfect knowledge of labor regulation hinders job creation at small and medium-sized enterprises. In a context in which there was a misunderstanding of labor laws, the researchers partnered with a labor law organization to provide information about labor regulation via newsletters and access to a specialized website. In a randomized controlled trial with 1,824 small and medium-sized enterprises, the authors tested the impact of improving knowledge of labor laws. Six months later, they found that providing this information increased employment by 12 percent, demonstrating that better knowledge of legal rules is another mechanism through which enhanced rule of law through e-justice interventions can boost economic growth and productivity.

Case management and training can improve the resolution of disputes. Increasing knowledge about one's rights can make justice systems more equitable. The examples described in this section are theoretical and practical. There is more to understand about how the speed and fairness of justice can be increased. This matters not only for economic development, but also for fragility, conflict, violence, and corruption.

The benefits of the data revolution do not mean that promoting this transformation is effortless. Three prerequisites are crucial for reform. First, national lawmakers must make or change laws to allow digital justice. As an example, the UAE (2021) changed its federal law to allow remote communication technology in criminal procedures. Second, court staff and justice actors must receive adequate training on new technologies. Court systems are meant to be consistent rather than adaptive to large-scale changes. Thus, preparation and readiness are crucial to reducing the upfront cost of switching to a new set of technical solutions. Finally, as mentioned in Section 3.2, national governments and institutions should be engaged as stakeholders to ensure sustained institutional resources, infrastructure, and data transparency.

We consider greater diversity in study sites to be paramount to better research and policymaking. The Middle East and North Africa, with a population of more than 464 million,[6] is underrepresented in studies related to justice and the rule of law. Automated technological infrastructure and an institutional culture that favors transparency over opacity would increase data availability in the region, push the frontiers of research, and bring knowledge and innovation to the forefront of justice systems. This would help address the challenge that countries that stand to gain the most from data-driven technologies tend to lack the resources and data infrastructure to take advantage of them (Ramos-Maqueda and Chen 2021). Equipped with resources and interdisciplinary expertise, a variety of actors—including governments, international organizations, and the private sector—may continue to transform the justice system through technology and data-driven interventions.

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6 See Population, total - Middle East and North Africa (database), World Bank, Washington, DC (accessed), https://data.worldbank.org/indicator/SP.POP.TOTL?end=2020&locations=ZQ&start=1982.

References

Aberra, A., and Chemin M. (2021). "Does legal representation increase investment? Evidence from a field experiment in Kenya." *Journal of Development Economics, 150*(102612). https://doi.org/10.1016/j.jdeveco.2020.102612.

Aboal, D., Noya, N., and Rius A. (2014). "Contract enforcement and investment: A systematic review of the evidence." *World Development, 64*, pp. 322–338. https://doi.org/10.1016/j.worlddev.2014.06.002.

Acemoglu, D., Cheema, A., Khwaja, I. A., and Robinson, J. A. (2018). "Trust in state and non-state actors: Evidence from dispute resolution in Pakistan." Working Paper No. 24611. National Bureau of Economic Research, Cambridge, MA.

Ahsan, R. N. (2013). "Input tariffs, speed of contract enforcement, and the productivity of firms in India." *Journal of International Economics, 90*(1), pp. 181–192.

Babic, B., Chen, D. L., Evgeniou, T., and Fayard, A. L. (2020). "A better way to onboard ai understand it as a tool to assist rather than replace people." *Harvard Business Review, 2020*(July-August), pp. 2-11.

Bertrand, M., and Crépon B. (2021). "Teaching labor laws: Evidence from a randomized control trial in South Africa." *American Economic Journal: Applied Economics, 13*(4), pp. 125–149.

Blattman, C., Hartman, A. C., and Blair, R. A. (2014). "How to promote order and property rights under weak rule of law? An experiment in changing dispute resolution behavior through community education." *American Political Science Review, 108*(1), pp. 100–120.

Carrillo, P., Chen, D., Ramos-Maqueda, M., and Silveira, B. 2022. "Information provision and court performance: Experimental evidence from Chile." *Mimeo*.

Chakraborty, T., Mukherjee, A., Saha, S., and Shukla, D. (2018). "Caste, courts and business." IZA Discussion Paper No. 15037. Institute of Labor Economics, Bonn, Germany.

Chemin, M. (2009). "The impact of the judiciary on entrepreneurship: Evaluation of Pakistan's Access to Justice Programme." *Journal of Public Economics, 93*(1-2), pp. 114–125.

Chemin, M. (2012). "Does the quality of the judiciary shape economic activity? Evidence from a judicial reform in India." *Journal of Law, Economics, and Organization, 28*(3), pp. 460–485.

Chemin, M., Chen, D., Di Maro, V., Kimalu, P., Mokaya, M., and Ramos-Maqueda, M. (2022). [Forthcoming]. "Data Science for Justice: Evidence from a Randomized Judicial Reform in the Kenyan Judiciary." World Bank, Washington, DC. https://users.nber.org/~dlchen/papers/Data_Science_for_Justice.pdf.

Chen, D. (2020). "Incremental AI." *Mimeo*. https://users.nber.org/~dlchen/papers/Incremental_AI.pdf.

Chen, D., Graham, J., Ramos-Maqueda, M., and Singh, S. (2022). "Do judges favor their own ethnicity and gender?" Policy Research Working Paper No. 9956. World Bank, Washington, DC.

Cooke, B., Diop, B. Z., Fishbane, A., Hayes, J., Ouss, A., and Shah, A. (2018). *Using behavioral science to improve criminal justice outcomes*. ideas 42 and University of Chicago Crime Lab. https://www.ideas42.org/wp-content/uploads/2018/03/Using-Behavioral-Science-to-Improve-Criminal-Justice-Outcomes.pdf.

Crawford, R., Klein, B., and Alchian, A. (1978). "Vertical integration, appropriable rents, and the competitive contracting process." *Journal of Law and Economics, 21*(2), pp. 297–326.

Decker, K. (2022). "MENA justice and rule of law." Concept Note. World Bank, Washington, DC.

Decker, K., and Ebeid, O. (2019). "MENA rule of law and justice policy note." World Bank, Washington, DC.

Kaufmann, D., and Kraay, A. (2021). *The Worldwide Governance Indicators* [Data set]. World Bank. http://info.worldbank.org/governance/wgi/.

Kleinberg, J., Lakkaraju, H., Leskovec, J., Ludwig, J., and Mullainathan, S. (2018). "Human decisions and machine predictions." *The Quarterly Journal of Economics, 133*(1), pp. 237-293.

Kondylis, F., and Stein, M. (2018). "The speed of justice." Policy Research Working Paper No. 8372. World Bank, Washington, DC.

Laeven, L., and Woodruff, C. (2004). "The quality of the legal system, firm ownership, and firm size." Policy Research Working Paper No. 3246. World Bank, Washington, DC.

Lichand, G., and Soares, R. R. (2014). "Access to justice and entrepreneurship: Evidence from Brazil's special civil tribunals." *The Journal of Law and Economics, 57*(2), pp. 459–499.

Litschig, S., and Zamboni, Y. (2015). "Judicial presence and rent extraction." Working Paper No. 796. Barcelona GSE Working Paper Series. Barcelona Graduate School of Economics. https://bse.eu/sites/default/files/working_paper_pdfs/796.pdf.

Litschig, S., and Zamboni, Y. (2018). "Audit risk and rent extraction: Evidence from a randomized evaluation in Brazil." *Journal of Development Economics, 134*, pp. 133–149.

Lührmann, A., Marquardt, K., and Mechkova, V. (2020). "Constraining Governments: New Indices of Vertical, Horizontal, and Diagonal Accountability." *American Political Science Review, 114*(3), pp. 811–820.

Malekian, S., and Maher, H. (2021, October 22). What the appointment of 98 female judges to Egypt's State Council means for women's rights. *ABC News*. https://abcnews.go.com/International/appointment-98-female-judges-egypts-state-council-means/story?id=80685728.

Mocan, N. H., Samantha, B., and Wim, M. (2018). "Quality of judicial institutions, crimes, misdemeanors, and dishonesty." Working Paper No. 24396. National Bureau of Economic Research, Cambridge, MA.

Ramos-Maqueda, M., and Chen, L. D. (2021). "The role of justice in development: The data revolution." Policy Research Working Paper No. 9720. World Bank, Washington, DC.

Rodrik, D. (2000). "Institutions for high-quality growth: What they are and how to acquire them." *Studies in Comparative International Development, 35*(3), pp. 3–31.

Sadka, J., Seira, E., and Woodruff, C. (2020). "Information and bargaining through agents: Experimental evidence from Mexico's labor courts." Working Paper No. 25137. National Bureau of Economic Research, Cambridge, MA.

Sandefur, J., and Siddiqi, B. (2013). "Delivering justice to the poor: Theory and experimental evidence from Liberia." Working Paper. https://haushofer.ne.su.se/ec2303/Lecture%209%20-%20Institutions/Non-required%20papers/Sandefur_Siddiqi_2015.pdf. Schwab, K. (2019). *The global competitiveness report: 2019*. World Economic Forum. https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf.

Sequeira, S. (2016). "Corruption, trade costs, and gains from tariff liberalization: Evidence from southern Africa." *American Economic Review, 106*(10), pp. 3029–3063.

Shvets, J. (2013). "Judicial institutions and firms' external finance: Evidence from Russia." *The Journal of Law, Economics, and Organization, 29*(4), pp. 735–764.

Sviatschi, M. M., and Trako, I. (2021). "Gender violence, enforcement, and human capital: Evidence from Women's Justice Centers in Peru." Policy Research Working Paper No. 9624. World Bank, Washington, DC.

UAE (United Arab Emirates Government). n.d. *Digital justice*. The official portal of the UAE Government. https://u.ae/en/about-the-uae/digital-uae/digital-justice.

UAE (United Arab Emirates Government). (2021). *Virtual litigation*. The official portal of the UAE Government. https://u.ae/en/information-and-services/justice-safety-and-the-law/litigation-procedures/virtual-litigation.

Varieties of Democracy. (2022). *The V-Dem Dataset* (Version 12) [Data set]. https://v-dem.net/vdemds.html.

World Bank. (2018). *Women, business, and the law 2018*. https://wbl.worldbank.org/content/dam/sites/wbl/documents/2021/02/WBL2018_ENG_v2.pdf.

World Bank. (2020). *Digital Government/GovTech Systems and Services Dataset*. [Data set]. https://datacatalog.worldbank.org/search/dataset/0037889/GovTech-Dataset.

World Bank. (2021). *Egypt economic monitor: The far-reaching impact of government digitization*. https://documents1.worldbank.org/curated/en/754121644245654929/pdf/Egypt-Economic-Monitor-December-2021-The-Far-Reaching-Impact-of-Government-Digitalization.pdf.

World Justice Project. (2019). *Measuring the Justice Gap*. World Bank. https://worldjusticeproject.org/sites/default/files/documents/WJP_Measuring%20the%20Justice%20Gap_final_20Jun2019.pdf.

Chapter 6: Playing Catch-up: Education Governance in the Middle East and North Africa Region

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