Artificial Intelligence in Middle East and Africa

Jordan

Outlook for 2019 and Beyond

How 112 Major Companies Benefit from AI

REPORT COMMISSIONED BY MICROSOFT AND CONDUCTED BY EY

Contents

Artificial intelligence is already changing society and empowering people in new ways by enabling breakthrough advances in areas like healthcare, agriculture, education and transportation. As this technology continues to grow, we will work to deploy AI around the world ethically, inclusively, and with transparency to ensure that it works for everyone.

— Brad Smith, President at Microsoft

Foreword

We see AI as a tool to accelerate our customers' digital transformation and growth journeys.

AI is fueling digital transformation across the Middle East & Africa today. It has the power to amplify human ingenuity and extend our capabilities, empowering us to achieve more. Artificial Intelligence is already improving our lives today and promises to change the world in ways unimaginable to us now.

The AI maturity assessment study, conducted in five countries across MEA, highlights the strategies adopted at different layers of an organization today and helps us understand their readiness in AI adoption, rate of impact and benefits from its implementations, as well as how AI is being approached on a practical level. This study is also a stepping stone in our efforts to better understand the needs of our customers in the region and accelerate their growth journeys.

Samer Abu-Ltaif
President - Microsoft Middle East and Africa

Microsoft's vision for AI is to design AI to amplify human ingenuity and make AI available to everyone. AI has the power to revolutionise industries in Jordan and throughout the Middle East and Africa more than any other transformative technology in recent history. We firmly believe in using AI to empower and create new opportunities for every person and every organization which will lead to advances in nearly every field of human endeavor and progress in many existing societal challenges

Ibrahim Youssry
Regional General Manager, Microsoft Middle East and Africa Multi-Country Cluster

By harnessing new technologies like AI and big data, we can drive entirely new services, business models, better employability and needs that is in line with Jordan REACH2025 vision which aims to have a digital economy that empowers people, sectors and businesses to raise productivity and ensure growth and prosperity, creating a highly attractive business destination for investments and international partnerships. Just as every other transformative technology that's gone before it, AI will fundamentally change the way we live and work. Jordan is certainly no exception. In fact, with many talented and forward-thinking entrepreneurs popping up across the region, the Kingdom has what it takes to become a technology hub for the region.

Hussein Malhas
Microsoft Jordan Country Manager

At a Glance

While the hype of artificial intelligence (AI) and its potential role as a driver of transformational change to businesses and industries is pervasive, there are limited insights into what companies are actually doing to reap its benefits. This report aims at getting a deeper understanding of how companies currently manage their AI activities, and how they address the current challenges and opportunities ahead.

To get to the heart of this agenda, we received input from AI leaders in 112 companies, across 7 sectors and 5 countries in the Middle East and Africa, via surveys and interviews. Below is the brief summary of what they had to say.

AI is a "hot topic" - but more so on C-level than in daily operations

80% of the companies respond that AI is considered an important topic on the executive management level. This is significantly higher than on the non-managerial / employee level where AI is only considered an important topic in 26% of the companies. Interestingly, Board of Directors also came out lower with only 37% of respondees reporting that AI is important to their board. This strong executive sponsorship resulted in 38% of organizations driving their AI agenda from the top down, although 95% of companies that were more advanced in their AI agenda had a combined top down and bottom up model in operation.

Most benefits expected from 'optimizing operations', with 'transforming products and services' next in line

89% of the respondents expect AI to generate business benefits by optimizing their companies' operations in the future. This is followed by 71% that expect AI to be key in the creation of new products and services through AI driven insights that enable tailored and personalized products, or processesing more complex data sets that drive new products to address the needs of a changing consumer market. Surprisingly, the poorest showing at 63% was direct customer engagement.

AI is expected to impact entirely new business areas in the future

28% of the companies expect AI to have a high impact or a very high impact on business areas that are 'entirely unknown to the company today', although the exact nature is still vague. The overwhelming majority, however, expect AI to impact the core of the current business with 71% of companies striving to improve their primary value chains and unlock short-to-medium term benefits. With AI opportunities close to home as well as pushing companies into totally new domains in the future, it is perhaps not surprising that AI is receiving attention as a key topic for executive management.

Very few of the 112 companies consider themselves 'advanced' with AI

Despite the sizable impact that companies expect from AI, only a very small proportion of companies, constituting 7% of the total sample, self-report that AI is actively contributing to 'many processes in the company and enabling quite advanced tasks today' (referred to as 'most advanced' in this report).

Another 20% are in the 'released' stage where they have selectively put AI to active use in one or a few processes in the company. The majority, 55% of companies, are still only planning for AI or are in early stage pilots. 13% of companies are self-rated as least mature, indicating that they are not yet thinking about AI at this stage.

Noticeable potential for AI in many corporate functions

The most widely reported adoption of AI (at 47%) was in the IT/Technology function, followed by R&D and Product Development with 30%, and Operations and Logistics with 20%. Interestingly, several functions are hardly using AI at all; most notably the Procurement function, where only 3% of the companies currently use AI, and Strategy with 3%. This is perhaps surprising, given the many use cases and applicable solutions in these functional areas.

Only 7%

of the companies are actively using AI in 'many processes and to enable advanced tasks'

Percentage of companies seeing 'optimizing operations' as top AI benefit:

89%

80%
of the companies

respond that AI is considered 'an important topic' on the executive management level

Jordan coming off a low AI base

The executives participating in the study articulated that AI has not yet gained traction to any great degree in Jordanian organisations. The Telecommunications and Finance sectors are leading the way when it comes to embracing digital and AI technologies to engage with their customers, whereas Government Departments are focused more on achieving operational efficiencies using AI as a medium. There is a cultural shift in progress from being advisor-led to data-driven in decision-making, and this in itself will be a catalyst for greater emphasis on data management as a precursor to allowing machine learning and other predictive tools to move the organizations forward. There is a common thread in the discussions around the need for strong regulation to be put in place to not only set boundaries, but define and enable the direction of travel of the digital and AI agenda in Jordan. Another enabler would be increased investment by both private and government institutions, not just in the form of cash funding, but also investments to create capacity and environments to innovate - employees are so absorbed in meeting daily operational needs that they are unable to lift their heads to look at the AI horizon. On the skills front, the Universities in particular are producing good technical resources to develop solutions, but the counter skills of being able to identify AI use cases that address business problems or opportnuties are still missing. Although at a low base, Jordan has a unique opportunity to put in place the enablers, and then to move forward into the AI world with confidence.

8 key capabilities that are most important 'to get AI right'

When asking the respondents to rank the importance of 8 capabilities to enable AI in their businesses, Advanced Analytics and Data Management emerged as the most important, with AI Leadership closely grouped with the top two.

When self-assessing the capabilities where the companies are least competent, they point to Emotional Intelligence and AI Leadership - defined as the (lack of) ability to lead an AI transformation by articulating a vision, setting goals and securing broad buy-in across the organization.

To summarize, the challenge ahead appears to be as much about culture and leadership as it is about data, analytics, and technology.

What sets the most 'AI mature' companies apart?

They see AI predominantly being driven from a combination of technology push and business pull (57% of 'more mature' companies vs 38% of 'less mature' companies)*.

They report using a combination of structured and unstructured data for AI (53% of 'more mature' companies vs 42% of 'less mature' companies), and data from both internal and external sources (53% of 'more mature' companies vs 37% of 'less mature' companies).

They are looking to AI for insights to 'transform products and services' (82% of 'more mature' companies vs 64% of 'less mature' companies).

They expect AI will help them 'engage customers' (75% of 'more mature' companies vs 50% of 'less mature' companies).

* 'More mature' defined as companies that self-ranked as 4 or 5 on the maturity 5-scale, and 'less mature' defined as companies that self-ranked as 1 or 2.

60%
of the companies

are using partners or alliances to obtain the required capabilities

Companies expecting AI to have a high impact on 'business areas that are entirely unknown today'

28%

70%
of companies

are using AI in a 'to predict' function

About this Report

What's new?

Artificial Intelligence is not new - it has existed for decades: processing voice to text or language translation; real-time traffic navigation; dynamically serving targeted advertisements based on personal data and browsing history; predicting trends and guiding investment decisions in financial institutions. The current developments have been fueled by an exponential rise in computing power, increasing accessibility and sophistication of powerful algorithms, and an explosion in the volume and detail of data available to feed AI's capabilities.

Reality vs. hype
Only recently have we started to see more widespread, scaled adoption of AI across sectors, value chains and ecosystems. Yet AI technology is quickly approaching a point where it is becoming a critical element in enabling companies across sectors to drive revenue, increase profits and remain competitive.

We hear people in many companies talk about AI. While the hype is pervasive, not a lot of people fully understand its technological potential, where it can create value or how to get started. This report provides a practical understanding of why companies in the Middle East and Africa are investing in AI, what they are investing in, and how they are managing the complicated process of adopting this new technology and deriving value across business opportunities.

Perspectives, experiences, self-assessment, and benchmarks
From new surveys, interviews and case studies gathered from approximately 112 companies, we provide a snapshot of the current state of AI in Middle Eastern and African markets. This includes analyzing AI's relative importance on the strategic agenda, it's expected impact and benefit areas, how mature companies are in terms of adoption, and examining self-reported competence levels regarding the capabilities required to succeed when implementing AI.

From the aggregate dataset we have been able to determine some benchmarks across the covered markets, which we compare to Jordan throughout the report. The report also covers a full spectrum of industry groups which reveals interesting insights.

> **One of the issues we have is a lot of 'buzz' about AI, and not actually looking at how we can use it.**
>
> **—Jordan University of Science and Technology**

Straight from the executives
This report and extensive dataset adds new insights primarily into how leading companies are approaching AI on a very practical level. We hear straight from executives how their companies are addressing current challenges, and how they apply AI to unlock new value pockets.

Based on the many interviews conducted, this report reveals some clear excitement and immense potential for using AI to bring new, improved products and services to market, create exceptional experiences for customers and employees, and create ways to operate that enhance performance across the board.

We learned that, regardless of which use cases the companies pursue and the role that AI currently has, taking a strategic outlook to assess the implications for the business and responding accordingly are increasingly seen as crucial for any executive agenda.

Contributions from open-minded and collaborative companies
We are extremely thankful for the time and effort the many executives have put into participating in interviews and providing data for this study. We're particularly appreciative of their willingness to openly share experiences and provide their perspectives on where the future of AI is heading.

While this indicates a general interest in the AI topic, it also speaks to the increasingly collaborative approach many leading companies are taking when entering new technology domains and embarking on journeys into uncharted waters.

> **AI is at the core of our business.**
>
> **— Careem**

We need to start with the business need, and then see if AI is applicable, not start with the technology itself.

— Jordan Payments and Clearing Company

With the rapid change in business the dependency on data for decision making has never been higher, a reliable secure source of data should always be available to meet the high demand.

— Arab Potash Company

Rich Data

Which sources of information is the study based on?

This report combines multiple sources of data to determine why, where and how AI is currently being used in business. It provides an inside view across markets and sectors, combining local and regional views. The quantitative perspective measures how advanced companies are in terms of AI, and the qualitative perspective indicates how to develop the skills required to succeed with AI initiatives. We have received input from over 100 participating companies in the form of interviews responses to our online survey.

Extensive online survey data from business leaders in 101 companies
We have surveyed people with a leading role in managing the AI agenda in all the companies that have contributed to the study. This gives us an aggregate dataset that enables a perspective for each market and each sector, as well as comparative insights for the respective company types, sectors, and countries in the Middle East and Africa.

Qualitative in-depth interviews with senior business executives
In addition, we conducted deep-dive interviews to gain deeper, qualitative insights into how AI is affecting the executive agenda. Through conversations with business leaders, we report on where they expect AI will have an impact, how important AI is to their current and future business strategies, what benefits they hope to realize from implementing AI, and which capabilities they believe are key to advance AI maturity in their companies.

We also present case studies of specific companies, both local and international, to provide an understanding of what they are doing with AI and why, drawing on lessons learned and obstacles to be overcome when putting AI to use for specific use cases and to derive value on a strategic level.

Proprietary AI investment data
We have supplemented the primary source input from the companies with acquisition data from numerous sources, to take the pulse of the AI investment market in the Middle East and Africa. These insights help provide a picture of the wider AI ecosystem and its development in the region.

AI expert perspectives
With this wider understanding of AI start-up acquisitions, partnerships, and investment funding, we outline how investments in AI are skyrocketing, where AI investment is taking place geographically, and which sectors are making bets. As we are on the cusp of widespread change driven by AI, we also reached out to AI experts from academia for an outlook on AI technologies going mainstream, and to gain an understanding of the macro scale of business effects that they expect will materialize when looking into a distant future.

Recognizing and mitigating potential survey and interview bias
In terms of methodology, this report follows robust research design and protocol. Doing so minimizes potential bias, but does not eliminate it, as it is inevitable in market research. One potential type is social desirability and conformity bias, as the topic of AI receives lots of media and political attention. Response bias, including extreme responding, cultural bias, and acquiescence bias ("yea-saying"), are potential factors as we ask respondents to self-report on their respective companies' experience. Therefore, while this report follows best practice, some bias is possible. Nonetheless, with the combination of extensive survey data, interview data, investment data, and expert perspectives, we believe the report provides a solid foundation for an indispensable view of executive experience with – and future plans for – AI in business.

If there is no real awareness of what AI is and isn't, no-one can do anything.

— Jordan Ministry of Energy and Mineral Resources

Executive Perspective

Who are the respondents that have contributed to the study?

The data approach used allows us to identify trends across industries and countries based on input from various functional business areas. Consequently, we have captured a range of insights, learnings, and perspectives from both strategic and technical points of view.

Respondents almost exclusively in senior level positions

To ensure that these insights and perspectives are relevant at the executive level, we surveyed and interviewed high-ranking officers with a responsibility for driving the AI agenda in their respective companies. With 91% of respondents being either part of top management or the executive management team, their input is likely well attuned to the general perspective and overall strategic direction of the companies they represent.

Functional diversity

The respondents cover very different functions, of which the most common are designated IT/Tech/Digital departments, followed by General Management roles, then R&D/Product Development and Strategy functions. This functional diversity increases the breadth of the report, with insights and perspectives covering widely different aspects of AI.

Surveyed companies span multiple sectors

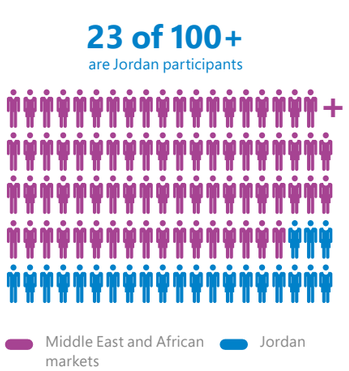
The participating companies are spread fairly evenly across seven sectors, with the majority of companies belonging to Professional Services (includes Government Departments and Public Services), followed by Financial Services, Retail and Infrastructure & Transport. ICT & Media, Manufacturing & Resources, and Health are represented to a lesser extent.

Jordanian participants from senior levels in the organisation

At 76%, the majority of respondents in Jordan were from Top Management, with the remaining 24% being representatives at C-suite level. The significant representation from Top Management was highest out of all the countries participating in the survey. The high level representation from within the organizations provides an excellent insight into how Jordanian companies perceive Artificial Intelligence and strikes a good balance between strategic and execution perspectives.

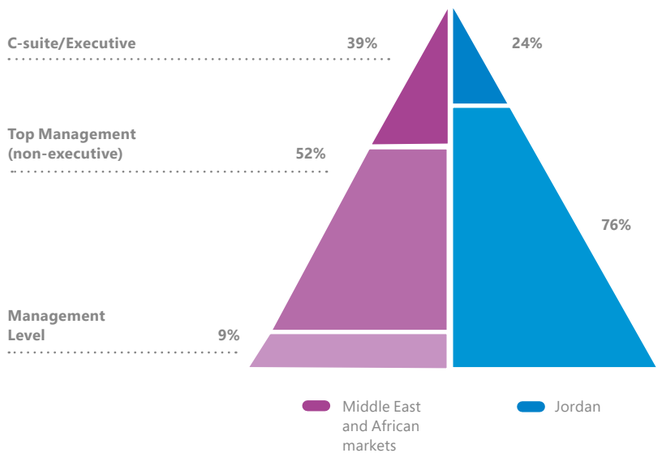
More than 100+ participants

Number of participants interviewed and/or online surveyed in the study



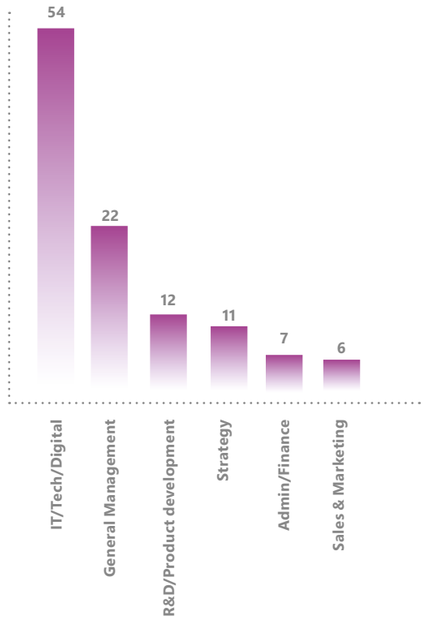
Majority hold a top management or executive position

Organisational level of person participating in the study for Jordan



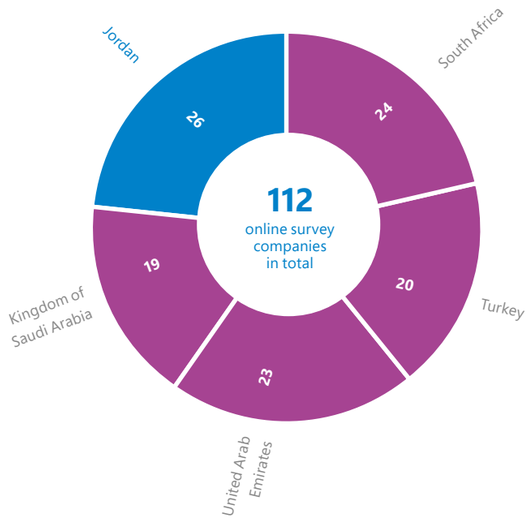
Large group of respondents with a specific AI/digital role

Organizational function of respondents in the online survey



Surveyed companies are well represented across each of the five Middle Eastern and African markets

Number of online surveyed companies per country



Seven major sectors covered in the study

Representation of participating companies per sector category

10% — **Health**
Pharmaceutical, Healthcare, Biotech

7% — **Manufacturing & Resources**
Manufacturing, Materials, Equipment

14% — **Financial Services**
Banking, Insurance, Investments

32% — **Professional Services**
Professional Services, Hospitality, Public Services, Membership Organization, Government Departments

12% — **Retail**
Consumer Products & Retail

12% — **ICT & Media**
Technology, Media/Entertainment & Telecom

13% — **Infrastructure & Transport**
Transportation, Energy, Construction, Real Estate

100+ Companies

AB InBev, Adenium Energy Capital, Alinma Bank, Allianz Turkey, Amman Municipality, Arab Potash Company, Arçelik, Assan Bilişim, Aveng, Bankalararası Kart Merkezi (BKM), BCX, Bigen Group, Bridgestone, Cairo Amman Bank, Careem, CarrefourSA, De Beers Group, Discovery Group, dnata, Emaar, Erdemir, Etihad Airways, Etihad Credit Export Insurance, Exxaro, First Abu Dhabi Bank, General Mobile, Harmony Gold Mining Company Limited, Hashemite University, Hello Group, Heriot-Watt University, Hikma Pharmaceuticals PLC, Imam Abdulrahman Bin Faisal University, Johnson & Johnson, Jolly Tur, Jordan Ministry of Energy and Mineral Resources, Jordan Ministry of Labor, Jordan Ministry of Transport, Jordan Payments and Clearing Company, Jordan University of Science and Technology, KSA Ministry of Finance, KSA Ministry of Health, KSA National Health Information center, Life Healthcare, Majid Al Futtaim Holding, Medscheme, Migros, MTN Group, MultiChoice Group, Nader Group, Nampak, Netmarble Turkey, Opet Petrolcülük A.Ş., Pharmactive, Publicis, Quantum Global Solutions, Sasol, Savola Foods Co., Setur, Smart Dubai, SMEC South Africa, Specialized Technical Services (STS), Standard Bank, Super Group, Teknosa İç ve Dış Ticaret A.Ş., The ENTERTAINER, Total Marketing Middle East, Transunion, Tüpraş, Türk Ekonomi Bankası, Türk Hava Yolları Kurumsal Gelişim ve Bilgi Teknolojileri (THY), TymeBank, UAE Prime Minister's Office, University of Jordan, Vacation Exchanges International Trading as RCI South Africa, Vakıf Emeklilik, WSP, Yapı Kredi Bankası, Zain

Note: Certain participating companies requested to remain anonymous and are not included in the list above. Also, certain companies supplied perspectives for more than one surveyed country.

Bits and Bytes

What technologies and data solutions are within the scope of the study?

AI can be defined as the ability of a machine to perform cognitive functions which are normally associated with humans. This includes reasoning, learning, problem solving, and in some cases even exercising human behavior such as creativity.

Advanced AI applications are not yet widespread

AI holds the potential to transform business in a radical way given its wide variety of use. Quite simply, business leaders need to understand AI in order to grasp the opportunities and threats the technologies pose.

While companies acknowledge the significant potential of broader, more advanced AI technologies such as computer vision, speech recognition and virtual agents, they are currently not in common use by companies in the Middle East and Africa (MEA). Companies surveyed are currently focused on narrower and more specific use-cases that support existing business. These efforts will undoubtedly help companies build capabilities that are necessary to deploy more advanced AI solutions in the future.

Companies are using a combination of on-premise and cloud solutions

Cloud based solutions are starting to gain prevalence in the region to support AI solutions with both storage and on-demand computing given its flexibility to swiftly scale up and down to accomdate changing demand, variable costs structures and access to larger datasets. Despite the advantages almost 43% of respondents utilise a combination of on-premise and cloud architectures, with executives acknowledging that cloud will inevitably grow more dominant over time.

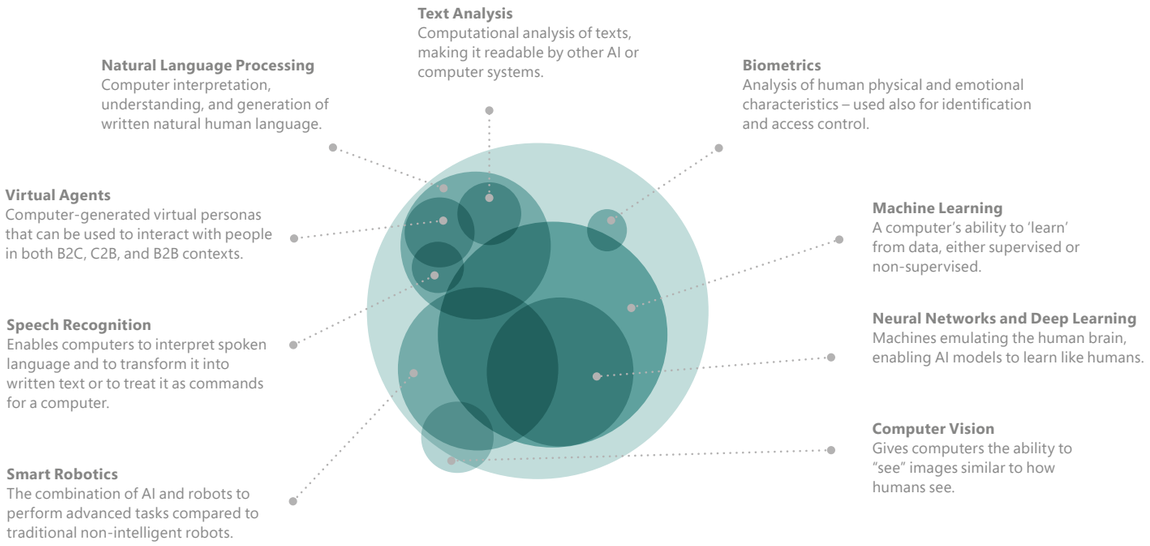
Machine learning

The most commonly used AI technology among the surveyed companies is machine learning. This is inarguably due to its wide-ranging applicability, making it relevant for a variety of use-cases across the value chain. Of the different types of machine learning, the most common is supervised machine learning, where software is fed structured data and finds patterns that can be used to understand and interpret new observations. While companies historically have primarily used internal data for supervised machine learning, most have now begun exploring the possibility of combining internal and external datasets in order to produce even deeper insights.

Machine learning was found to be the most useful. It is not clear from the study if this is because it is simply the most common starting point before deploying more advanced technologies, or if it also in the longer term holds the most wide and significant application potential.

A broad definition of technologies are included in this AI definition

Technologies included in the definition of AI used in this study



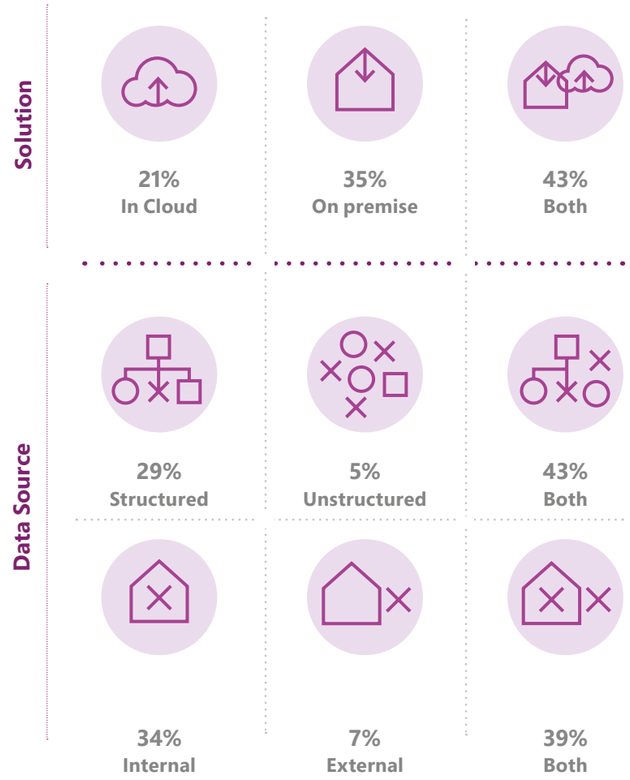
Machine learning and biometrics the most useful for Jordanian companies

Organisations scored Machine Learning highest at 35% and as expected with the strong Government Department representation in Jordan, Biometrics came in a solid second at 21% when it came to the most useful AI technologies in play today. Smart robotics was scored third, reflecting a growing interest in this aspect of Artificial Intelligence. Although all of the major AI technologies are present in the list of useful AI technologies, indicating experimentation across a wide spectrum, no single technology stood out as having significant penetration or broad-based adoption across institutions.

Companies are using a mix of Data Sources and Storage

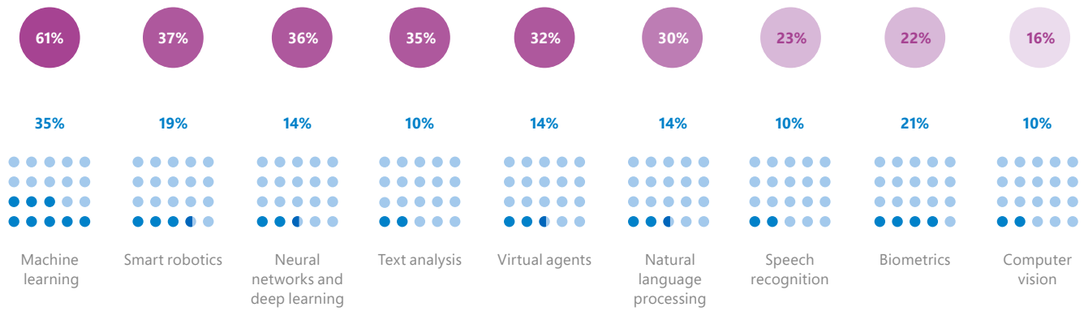
Solution: How are you primarily dealing with the computing demands needed for AI?

Data Source: 1.Are you currently using unstructured or structured data types in your AI process? 2.Are you currently using internal or external data sources in your AI process?



Machine Learning leads the pack

Which of the following technologies have you found to be most useful in your company's deployment of AI?



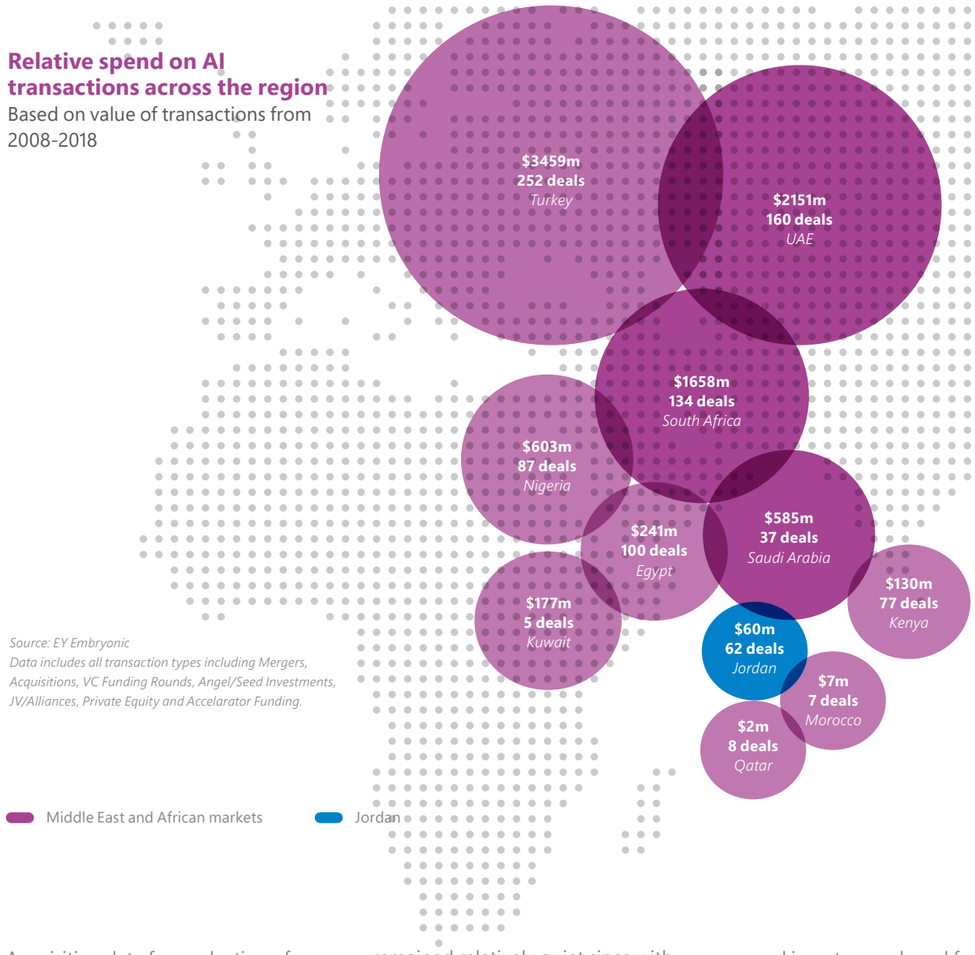
Note: Remaining percent 'Don't know' responses

Follow the Money

How much is invested in AI in the Middle East and Africa?

Relative spend on AI transactions across the region

Based on value of transactions from 2008-2018



Source: EY Embryonic
Data includes all transaction types including Mergers, Acquisitions, VC Funding Rounds, Angel/Seed Investments, JV/Alliances, Private Equity and Accelarator Funding.

Acquisition data for a selection of countries in the region gives an indication of where money is being invested in AI technologies. A very broad interpretation of AI was considered, since most countries in the region are in the very early stages of AI.

Growth trend in the past decade

There has been a steady growth trend in AI investment over the past 10 years, from a mere 2 transactions in 2008 to 171 transactions in 2018. Interestingly, the two early starters in 2008 were Saudi Arabia and Egypt, but they remained relatively quiet since with the exception of one large deal for Saudi Arabia in 2018. Not only has the quantum of transactions increased over the past decade, but the relative size of the deals has also been increasing over time.

Mergers and acquisitions account for most of the investment

The amount of funding coming from mergers and acquisitions ($3.9bn) and corporate investment ($1.1bn) makes up more than half of the total amount invested in AI in the region. Although angel investors and seed funding are involved in a significant number of transactions, the total value remains small by comparison, reflecting a cautious attitude to betting large amounts in the high-risk/high-return arena of AI start ups.

Investment activity greatest in Turkey, UAE and South Africa

The greatest amount of investment activity over the past 10 years is seen in Turkey, UAE and South Africa. The number of transactions in Turkey was 252 out of the total of 929 transactions, and it is also the leader in terms of the amount invested, being $3.4bn. The UAE invested strongly in 2016 and 2017, and whilst South Africa surged in 2011 and then showed a marked slow down in recent years, it remains a major player. Saudi Arabia is emerging strongly again in 2018, and Jordan, although behind others in the region, is positioning itself to capitalise on opportunities in the immediate future.

Social media followed by IoT the most popular AI investment

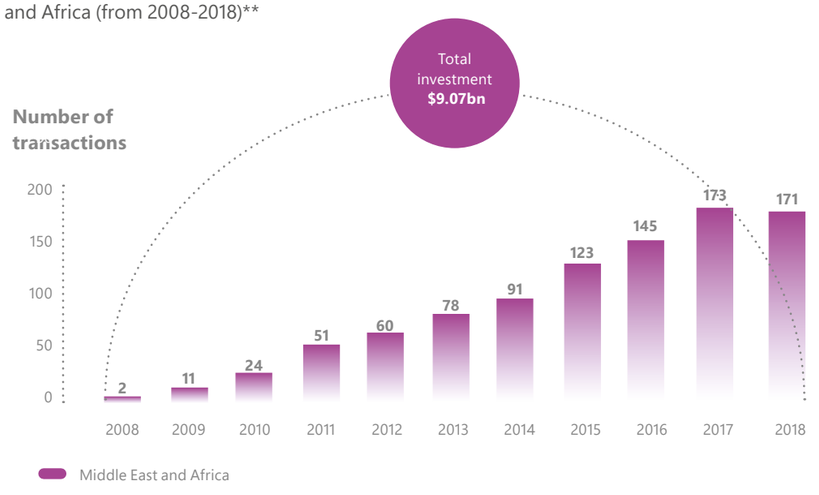
Social media transactions account for 44% of the number of transactions, with IoT in second place having 28% of transactions. However, the position is reversed when looking at the amount of investment, with IoT investment amounting to almost 60% of the total investment across the region, and social media investment amounting to only 36%. The balance of the investment amount is shared across the other AI formats with cyber security and smart mobile beginning to gain some real momentum.

$60 million invested in AI in Jordan in the past decade

Jordan took some time to come out of the starting block in terms of AI investment but has strengthened notably in more recent years, particularly 2018, and with the greenfields AI landscape this is expected to keep moving northwards in the coming years. There have been 62 investment transactions, 46 of which were angel investor or seed funding transactions. Social Media transactions were by far the most significant, 39 out of the 62, with the other investment areas being Internet of Things and Smart Mobile.

Steady increase in Middle East and African AI investment

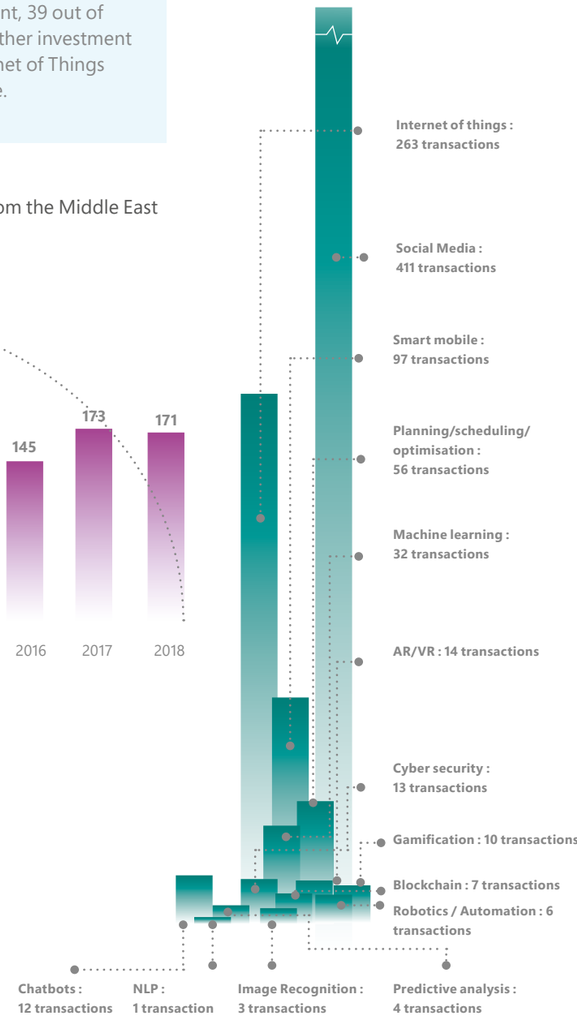
AI companies invested into, transaction volume, selection of countries from the Middle East and Africa (from 2008-2018)**



** for a selection of 11 countries from the Middle East and Africa

Social Media and IoT most popular

Based on number of transactions from 2008-2018



**Including governmental investment

Note: Several transactions in the dataset did not have publically disclosed deal values, suggesting that actual total values are higher than what's shown above

Arab Potash Company

Although Arab Potash can see that there are real opportunities to leverage Artificial Intelligence within their operations, they are at the beginning of the discovery process, assessing and understanding what the opportunities are, what solutions are available in the market and how they can be maximised for bottom line business benefits.

Given the highly technical and process driven nature of its operations, Arab Potash has a naturally cautious approach to new technologies, wanting to be completely certain of the impact of such advancements before adopting them.

However Artificial Intelligence, while maybe not yet a hot topic for the upper echelons of management, is definitely starting to gain some momentum in the company as a consideration for the future. In particular they are excited about the opportunities it could present across supply chain, logistics and maintenance in terms of driving efficiency and empowering employees. Key to AI being adopted at any level is more education, not on the technologies themselves, but how to apply them and maintain them. The most important capability to realise the value of AI will be people, because although the IT department can lead it, for AI to be successfully implemented company-wide the business units themselves need to own it and take day to day responsibility for it.

The most important capability to realise the value of AI will be people.

First and foremost though they have some initial challenges to overcome around data quality - recognising that the output of AI will only be as good as the data that goes into it. The focus for now is on improving data quality and developing and implementing the necessary governance processes and structures to ensure the reliability and trust of the output of any AI activity.

البوتاس العربية
Arab Potash

Arab Potash Company (APC) is the eighth largest potash producer worldwide by volume of production and the sole producer of potash in the Arab World. Established in 1956 in Jordan, APC operates under a concession from the Government of Jordan that grants it exclusive rights to extract, manufacture and market minerals from the Dead Sea until 2058. APC group employ more than 2,100 workers across its locations in Amman, Aqaba and Ghor Al Safi.

What next?

In the future Arab Potash want to use artificial intelligence to support decision making across all aspects of the business, from production and operations to sales and finance plus enable automation to reduce operations and maintenance costs, although they only expect to see real benefits to be available in the next 3-5 years. To enable a greater accelerated change they are keen to see real solutions that solve real problems from external providers, not just generic technologies and unproven solution concepts.

“ There’s a big ocean of opportunity to discover.

“ We haven’t yet found mature enough solutions from partners for us to adopt, there is still a gap between aspiration and reality.

Expert Perspective

What does the future look like according to AI analysts?

We also spoke to a range of leading AI experts from business and academia to gain insights into the kind of change which we are on the cusp of, and the role AI is expected to play as part of a broader transformational wave.

AI is entering the mainstream and here to stay

One thing was clear from the experts we spoke to: as far as the peaks and troughs of hype and technological leaps surrounding AI go, there is no doubt that we are living through a particularly prominent peak, with no indication that the buzz nor the potential will fade away any time soon. In a world increasingly dominated, disrupted and driven by innovative tech powerhouses, large and small, it is no understatement to suggest that AI will be a chief protagonist in the change transcending all elements of business in what has been labelled the Fourth Industrial Revolution.

Business-minded people will drive the transformation

The AI experts confirmed some of the key ingredients necessary for AI in organizations: a combination of domain and technical expertise, the appropriate technology, the right talent, and lots and lots of data. While letting tech-savvy individuals drive innovation is great for building understanding, true transformation will not come until business people start suggesting problems for AI to solve - not the other way round.

Agile culture enables AI

Culture was a recurring theme as well. It can either stifle forward momentum in organizations, or be the silver bullet that enables the potential of AI to be realized from top to bottom. Some of the experts even argue that it’s not only technical skills that hold up AI projects, it’s also the need for a culture of experimentation. Companies that are more natively digital or have gone down that road understand the value of experimenting and iterating. They don’t think in traditional terms of committing to year-long projects that need to produce specific outputs, but rather to explore and test ideas before scaling.

When it comes to AI, knowledge is power

Expert opinion also seemed unanimous in that most people not directly involved with AI must still have quite a basic understanding of what AI is and what it can actually do. Therefore, the task is to educate and improve understanding, from C-suite leadership teams to employees at the coal face.

This also ties in with the importance of partnering to get started and access the expertise needed to use AI. While partnering and collaborating solves the perennial AI challenge concerning the scarcity of talent, the significant cost and substantial benefit that can be gained from AI means that organizations also need to be cognizant of building capabilities in-house for the long-term.

Finally, as AI develops, we are also going to see innovation and expertise spreading outside of the dominant clusters of the likes of Silicon Valley, as governments, businesses and universities increasingly invest in building knowledge, resources and capabilities.

“ The focus for companies shouldn’t be so much on developing an AI strategy, but rather ensuring business strategy is enabled by AI and machine learning.

— Majid Al Futtaim

Key insights on the potential of AI*

*Global Leader's views from the field

The full extent of the AI story remains in its early stages. What we do know is that big data, computing power and connectivity are changing the industrial landscape. The opportunity rests in accelerating the digitization of businesses, making them more data driven by building applications that deliver machine-assisted insights.

— Mona Vernon, CTO, Thomson Reuters Labs

AI will eventually transform many enterprises and industries. But its pace of development has been affected by a lack of trust. Today, without mature risk awareness and the right frameworks and controls, applications of AI have not evolved much beyond proofs of concept and isolated solutions. Though proper implementation of AI into business models still faces a number of questions around trust, understanding and appreciating the risks will ultimately allow businesses to position themselves to capitalize on it the most.

— Nigel Duffy, Global AI Innovation Leader, EY

Think about the sheer computing power that is getting distributed, and how it is creating rich experiences through our lives. In our homes and cars, in our cities and at work, across every industry, from manufacturing to health care—all will be transformed by data, cloud and AI. That's the incredible opportunity in front of us.

— Harry Shum, Executive Vice President , AI & Research, Microsoft

If you have a ton of data, and your problem is one of classifying patterns (like speech recognition or object identification), AI may well be able to help. But let's be realistic, too: AI is still nowhere near as flexible and versatile as human beings; if you need a machine to read, or react dynamically, on the fly, to some kind of ever changing problem, the technology you seek may not yet exist. Intelligence is a really hard problem.

— Gary Marcus, Founder & CEO, Geometric Intelligence [acquired by Uber] professor, NYU, contributor to The New Yorker and The New York Times

AI is a general purpose technology, so will eventually affect all industries. However, this impact can be slowed by the lack of data in particular industries. There's also more innovative cultures inside different organizations, that can either drive adoption or prevent it.

— Marc Warner, CEO, ASI Data Science

Role of AI in Middle East and African Business

There is a lot of hype surrounding AI at the moment, and few doubt its potential. We examine how important AI is compared to other digital priorities and where AI fits on the strategic agenda.

We look at the impact of AI on the company's core business, as well as on adjacent and new areas of business.

We also examine the current AI maturity levels across sectors and markets, the potential drivers for deploying AI, and where AI is applied within organizations, across customer-facing functions, operations, product development, and internal business support.

A Strategic Agenda

Where is the AI conversation currently taking place?

AI is being discussed across organizational levels in Jordan, with 62% of companies reporting direct involvement at the C-suite level. A further 48% of managers are educating themselves and looking for opportunities to engage with AI technologies.

AI is generating a buzz in many companies

Many of the companies reported a high level of excitement and curiosity about what AI has to offer, especially those organizations where the executive levels are knowledgeable about AI technologies. There is also interest at the non-managerial level in companies with younger employees who are experimenting as far as possible. AI is generally still in its infancy in most Jordanian companies, and there remains a certain sensitivity towards taking significant risks, with the associated potential for early failure, that hampers the conversion of the growing buzz into multiple deployed use cases and a regeneration of business processes and systems.

Board of Directors involvement

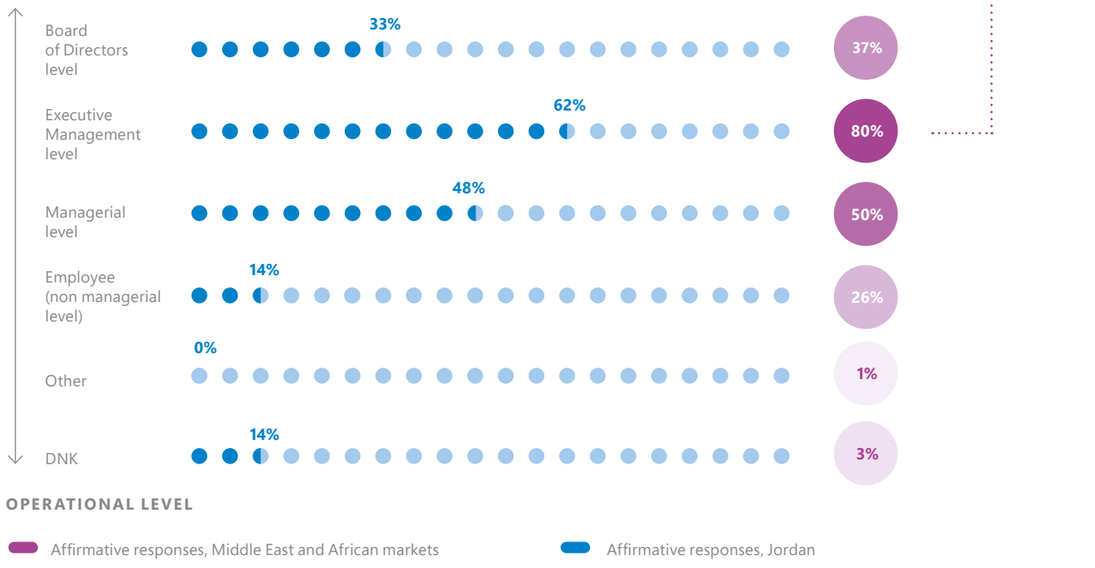
Although Boards appear to be knowledgeable around AI, they remain conservative in their approach, with direct engagement limited to just 33% of Jordanian organizations. This will no doubt increase as the initial discussion on AI gives way to tangible use cases that show material long term benefits that could have a transformational influence on their organizations.

AI particularly relevant at higher organizational levels

80% of regionally surveyed companies had AI as an important topic on the C-Suite agenda regardless of their degree of AI maturity - from cost-conscious CFO's, to efficiency-focused Operations Heads, and CDO's with customer-centric ambitions as part of wider digitalization efforts. On the other end of the spectrum, the AI agenda has not cascaded down through organizations to the point where non-managerial levels (employees) are discussing it systemically, due mainly to a lack of knowledge, limited involvement in pilot programs and fear of the impact on job security.

AI is an important topic on the C-suite level in particular

On what hierarchical levels in your company is AI an important topic?



Among Friends

What is the importance of AI against other digital priorities?

When looking at how AI ranks against its digital peers in terms of strategic importance, a significant 24% of Jordanian companies regard it amongst their top strategic digital priorities, with a further 48% recognizing its importance for their organizations, albeit not their primary focus. No distinct sector bias was noted with all sectors having high, medium and low ranking representation, indicating that the distinction lies between specific companies and the agendas the respective executives are driving.

Jump in the deep end

Those Jordanian companies who are early adopters of AI technology are holding their own with other companies in the region who are relatively mature in terms of AI. There is a direct correlation between those companies who are early adopters and those who have indicated that AI is 'most important' compared to other digital priorities. These companies are looking at AI in a very broad sense, including some of the less mainstream AI technologies like computer vision, neural networks and biometrics, to mention a few.

Test the waters

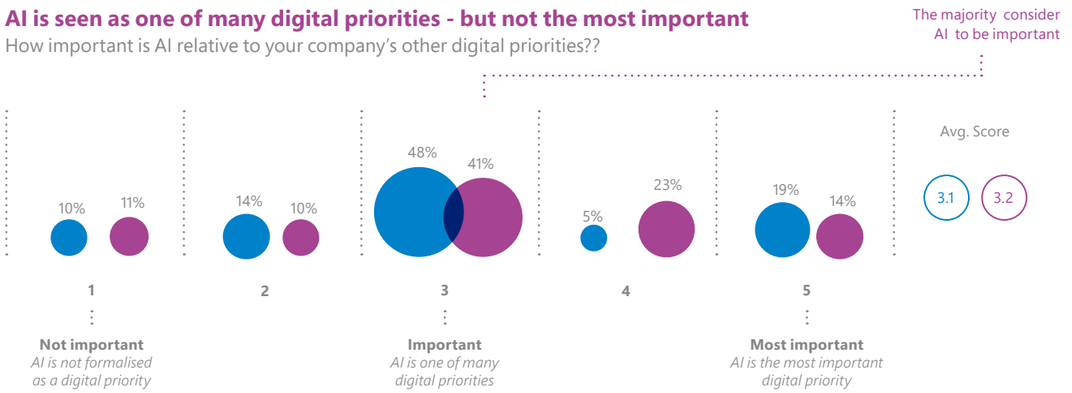
Other companies in Jordan are still in the very early stages of educating themselves about the new technologies, or putting in place the infrastructure and data to support their future AI initiatives. In these instances AI did not rank high at all, with executives acknowledging that the lack of appreciation of AI applicability pushes it down the priority list. They are therefore taking a more cautious approach and watching to see how other sectors and companies tackle AI adoption, and the use cases they apply it to.

Future impact driving AI's digital ranking

Despite AI being in the early journey stages in this region, it has managed to anchor itself to other digital initiatives as a peer or higher, with a significant 78% of respondents. This reflects the understanding that the future will be heavily influenced by AI and that it will become a major domain for differentiation between competitors in all sectors. This strength in ranking is caveated with the knowledge that AI is a relative newcomer to the digital stable, other initiatives are significantly more advanced in their programs, and AI has some catching up to do in terms of actual value creation. Cross dependencies between AI and broader digital initiatives is also contributing to AI being seen as an actual digital priority, more than just a important topic.

AI is seen as one of many digital priorities - but not the most important

How important is AI relative to your company's other digital priorities??



Note: Remaining percent 'Don't know' responses

Push or Pull

How is AI predominantly deployed into the organizations?

It is always insightful to understand how AI is being orchestrated in organisations, either being driven down from executive levels or bubbling up from the workforce and operations, and also to what extent it is driven by IT vs Business. In Jordan the approach for driving AI within organizations is not well defined, whereas they are very clear about whether it is business or IT calling the shots.

Top down vs bottom up

The majority of companies (45%) were uncertain about whether it is top executives who are driving AI in their organization or whether it is coming from initiatives at the lower levels. This is not completely unexpected given the very early stages of AI maturity of most Jordanian companies, where there is insufficient activity to discern a clear modus operandi. Where a trend is discernable, the the dominant approach is that of Top Down with executives taking the lead.

Technology push vs business pull

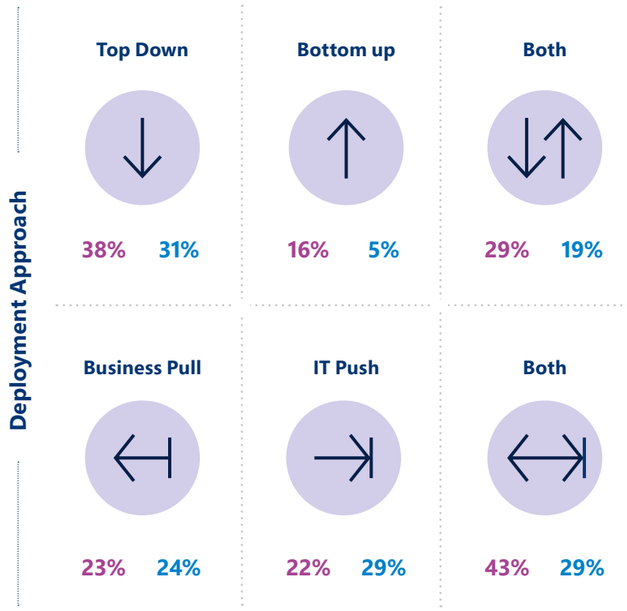
Technology based functional domains are the catalyst and driving force behind AI solutions in Jordan, either driving the agenda directly or collaboratively in almost half of the organizations. Most executives stated a lack of understanding of AI in general across their organizations. This is less acute in the technology-centric areas where employees are more exposed to technology and therefore more willing to experiment and tackle potential use cases across the business.

Regional Business and IT driving from the top down

As expected, given how prevalent AI is on the Executive management agenda, most companies (38%) are managing their AI programs from the top down, directing the strategic direction as well as centralizing innovation and pilot programs. The ideal is to accelerate and concentrate the activities whilst avoiding duplication of effort across the organization and unnecessary cost. Where strong digital cultures and technical capabilities exist, a hybrid of both top down and bottom up has enabled functional use cases to be identified and to attract executive sponsorship and direct funding. The concentration of executive buy-in for AI has also driven a more integrated collaboration between business and IT, as both play their role in driving the AI agenda, with 43% of respondents adopting this approach.

AI deployed and managed in a balanced way

How would you characterize the way AI is being managed in your company? How would you characterize the way AI is being deployed in your company?



Note: Remaining percent 'Don't know' responses

Ready, Set...

What is the maturity of AI in different sectors?

The shift to becoming AI enabled is a continuous journey with some organisations further along the path than others. The vast majority of organisations surveyed have not progressed beyond the early pilot stages as they grapple with early adoption issues. However, a few organisations are definite leaders in their respective sectors, being beyond the early formative stages and already accelerating in the released stage of maturity. And then there are those organizations who consider themselves to be advanced, in that they are already applying AI technologies in the running of their business.

Experimenting with technology, but need use cases

The more technically-oriented companies have no shortage of interested staff members who are experimenting with the AI technologies and running pilots. Despite this, almost all the companies in the study indicated that they have difficulty in identifying use cases to support the business and provide a meaningful return on investment to attract more funding. Those companies who are more structured in their approach are taking a strategic view of how AI can give them a competitive advantage, and are directing AI initiatives in these areas with more success.

Some machine learning models in production

ICT&Media and Financial Services are the standout sectors where some companies have gone beyond experimentation, with machine learning models running in a production environment, but these are in narrow channels within the companies and not systemically at scale. Across all sectors the number of machine learning models directly corresponds to those companies with high volumes of well managed data, strong foundational infrastructure and where AI takes its place alongside their other top digital priorities.

Trends across the other sectors

In the Retail and Consumer Products sector, the majority of companies stated they don't have the same ability to leverage data as the information technology orientated sectors, and are still trying to break out of the planning and piloting stage, due to complex legacy IT and a shortage of relevant skills. There is a general intention, with a few exceptions, across the Infrastructure & Transport and Manufacturing & Resources sectors to be behind the bleeding edge of AI and therefore look towards leveraging AI solutions from other sectors as 'tested solutions', or buying them off-the-shelf as they mature. These sectors also have large workforces with the majority in the low to unskilled category, and cite the need to handle change management and worker reluctance towards AI before they invest more heavily. The Health and Professional Services sectors are generally being held back by inadequate data on which to base their AI efforts, and are thus mostly in the planning phase.

Everyone is in the race, but the pace differs

Regardless of sector, there are a few companies that are leading, a handful that are bringing up the rear, and the vast majority that are in the Planning or Piloting stages somewhere in the middle.

Financial Services have progressed the most as a collective sector with 38% of respondents in the Released stage, and productionized AI use cases in their daily operations. This sector's run to the front has been fueled by fierce market competition, accelerated starts to AI programs and generally stronger foundations in data management and technology adoption.

Historically more conservative sectors such as Retail, Manufacturing & Resourcing as well as Infrastructure & Transport are yet to move to the next level, with the numerous pilots still underway reflecting their slower technology adoption lead times.

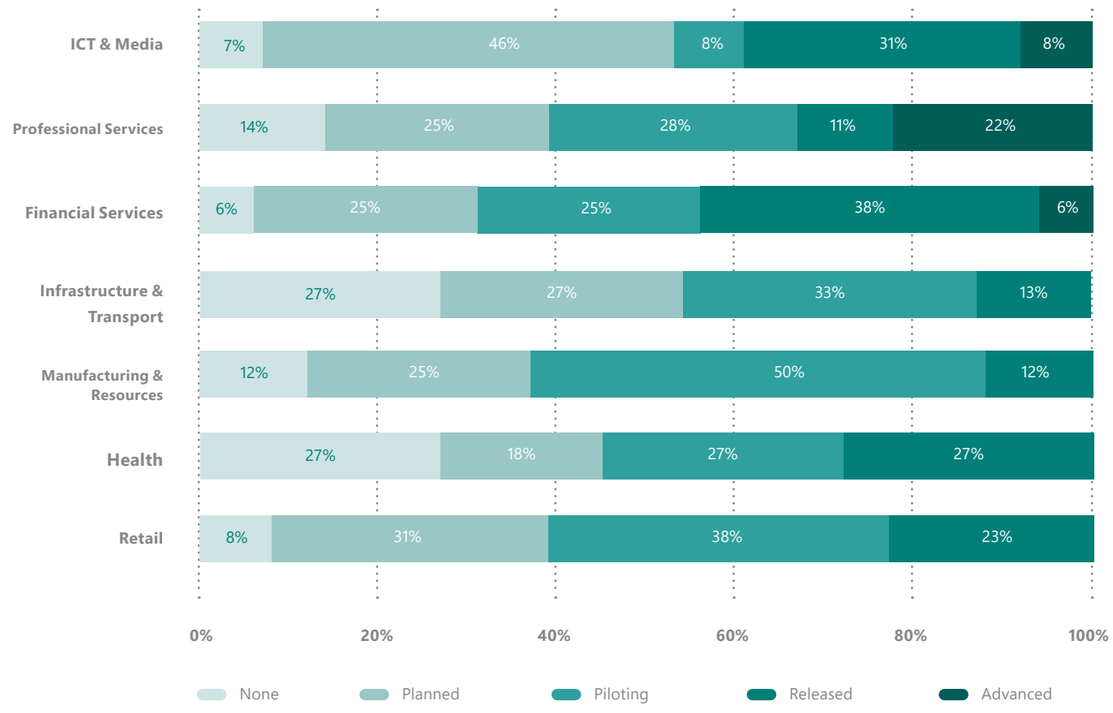
Surprisingly, given their data-rich and customer-centric environment, the ICT & Media sector still has 46% of the respondents in the Planned stage and working hard to close the gap on the sector leaders.

> **Most people believe in the technology but don't trust it enough to use it.**
>
> **— Zain**

Role of AI in Middle East and African Business

Most companies in Middle East and Africa still in Planning or Piloting stage

How would you describe your company's general AI maturity?



Lots of ground to cover for Jordan

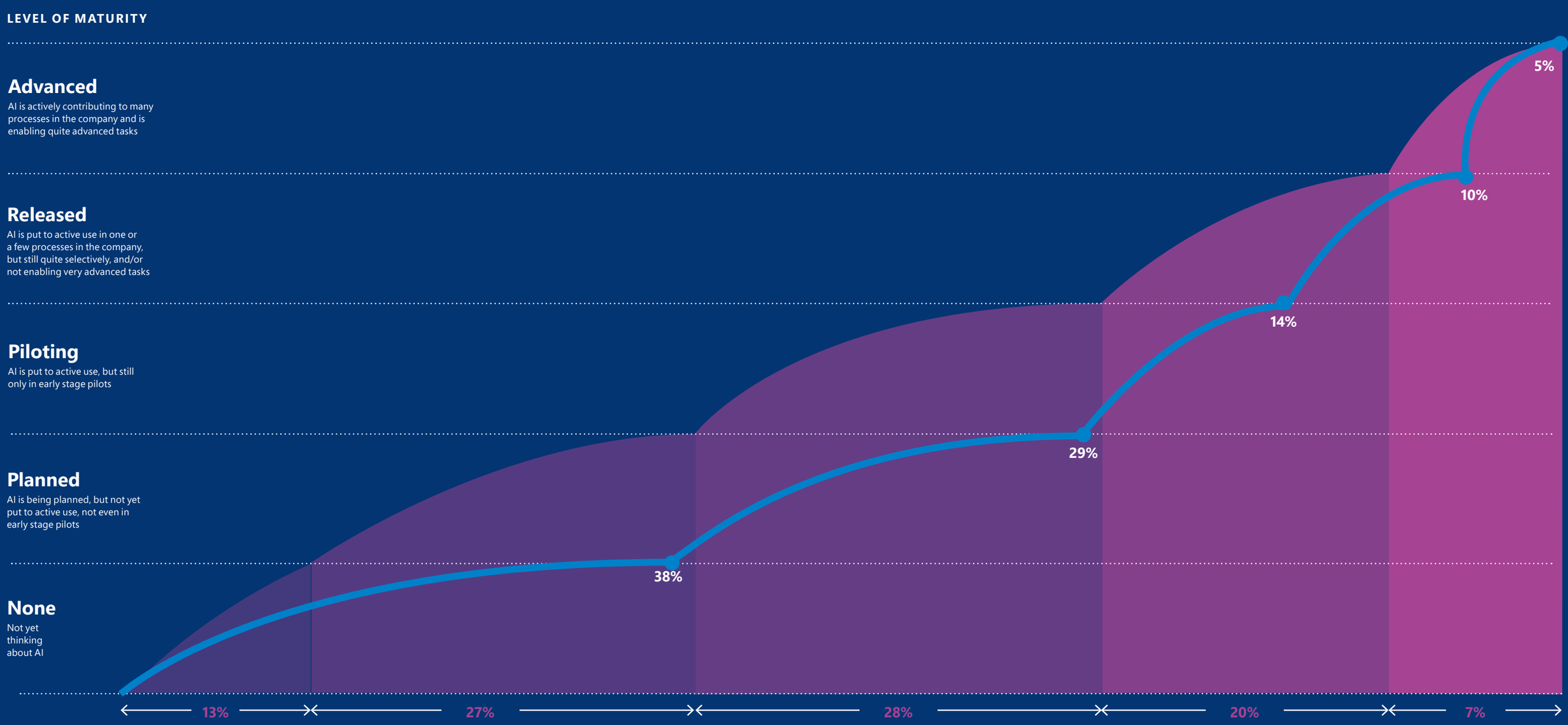
With 5% of Jordanian companies rating themselves as Advanced in terms of AI maturity, there are clearly pockets of innovation across sectors in the country. A further 10% of companies are in the Released stage where AI is in use in limited processes, and 14% are in the Piloting stage, indicating that there is likely to be much more AI being implemented in Jordanian companies in the near future. Despite the wide variations of AI solutions being explored by early leaders, a significant number (38%) of interviewed companies had not implemented any AI solutions or were still thinking about it - citing lack of knowledge, skills shortage and a general cautious wait and see approach.

Role of Ai in Middle East and African Business

AI Maturity Curve

Majority of companies are in the ‘Piloting’ or ‘Released’ stage

We asked companies to self-report their current AI maturity level, grading themselves at None, Planned, Piloting, Released, or Advanced - as defined below.



Note: “Did not know” responses are excluded from graphic above

State your Business

Where is AI currently deployed across the companies' value chains?

Noting where organisations have AI activity and focus gives insight to where capabilities reside and where companies see early benefits from 'low hanging' AI applications and quickest time to value opportunities.

Not yet out of the starting block

Given the slow take-up of AI technologies in the Jordanian companies surveyed, it is to be expected that some companies will not have implemented any AI processes to date. Many of surveyed companies declared that they do not have any AI implementations in their business as yet, even though there is a lot of interest and discussions are taking place around the possibilities that lie ahead. Added to that, there are some business domains like procurement, product management, admin/finance and customer service where AI has not yet found a foothold.

Leading the race

IT/Tech/Digital environments often act as incubation centres for AI, as would be expected - the presence of technology-orientated skills, direct access to data sources and greater appreciation of the technology landscape encourages earlier adoption. In companies surveyed, this business area is the leader at 24% and is ahead of most other areas by almost 10%, and reflects the emphasis noted that a large proportion of AI projects are being led by the CIO or equivalent.

Horses for courses

Already in the game are the Sales and Marketing domains at a combined 15% and the R&D/Product development domain at 19%. The telecommunications and finance industries are making use of chatbots and machine learning to enhance customer interactions, and these are the dominant sectors where frontline AI technologies are evolving. Operations and Logistics are the main playground in the other sectors, where the prize is expressed as gains in efficiency and associated cost savings. Functional areas like Strategy, General Management, HR and Manufacturing are just over the line at 5% each, indicating that interest is just starting to emerge in those areas but has some way to go still.

The name of the game

In Jordan, AI is generally considered to be a technology that can drive efficiencies and cost savings rather than promote business growth or new business. Most of the activity is in the back-office functions, in areas like IT and Operations, where efficiencies are easily achieved, and AI is being driven strongly in the defensive domains of Fraud Prevention and Cyber Risk Management. The Public Sector respondents had a lower degree of interest for customer-facing technologies, but rather focused attention on technologies like biometrics, smart robotics and machine learning to reduce costs and increase service delivery.

Given that the Jordanian business culture is pivoting from having advisor-led to data driven decision-making, there are so many opportunities ahead for machine learning, supervised and unsupervised, to take its place in mainstream business processes. The road ahead is exciting, and Jordan is on the brink of discovering a whole new world of business opportunities.

When taking a regional view of where companies are focusing their AI efforts, there is consistency in the reported business functions where AI is being used.

Lots of AI in R&D and IT/Digital functions

On top of an expected high prevalence of AI within IT departments, AI is also commonly used within R&D functions (or similarly focused functions). This primarily comes down to three factors: employees in R&D are often engineers who tend to have a good understanding and appreciation of AI; the R&D function is often already wired towards taking an experimental, agile approach which is key to AI; and the R&D function often sits on significant amounts of useful data leading to high potential use-cases.

Online customer interactions generating front-end data

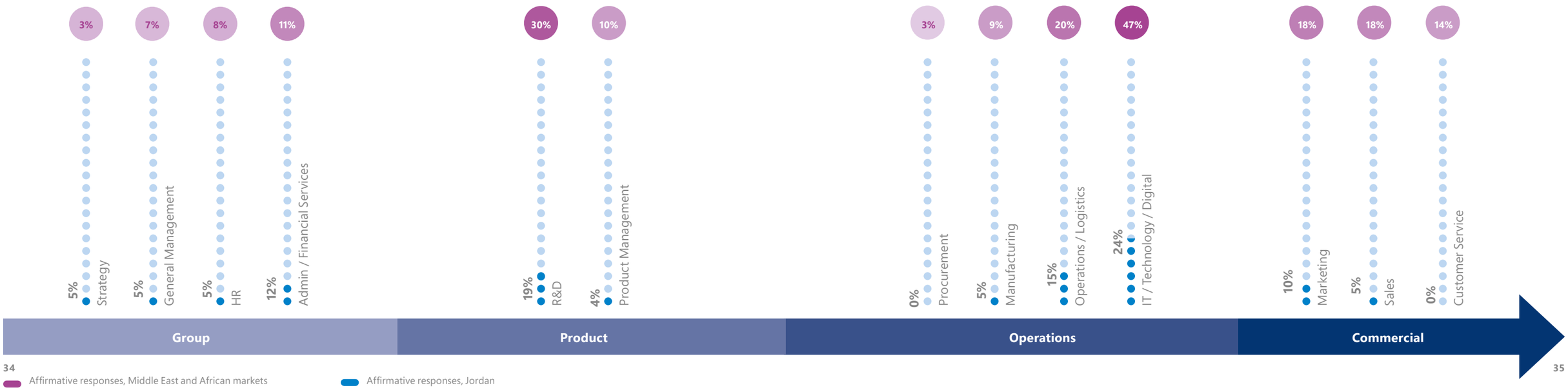
Customer-facing, commercial functions such as Marketing, Sales and Customer Service are also heavier users of AI, partly driven by their digitization levels. Although AI is generally adopted more slowly in customer facing interactions than in back-end functions, due to heightened caution in avoiding any negative customer experience, the abundance of data from increased use of online channels is expected to make these functions obvious candidates for AI technologies in the future. Operations and back-end functions use AI to increase efficiency by automating processes and informing decision-making. The key enabler is data infrastructure, and many companies – currently limited by legacy systems and processes that impede capture and retrieval of data – need to upgrade their infrastructure.

Limited use in HR and Procurement

There are several functions where AI is hardly in use among the participating companies. This includes 'people-intensive' functions such as HR and Procurement. This is not due to lack of potentially valuable AI use-cases, which in the case of HR include talent acquisition (avoiding human bias), onboarding (Q&A), performance evaluation (analyzing data), etc. but rather seems to be a result of prioritizing other functions and priorities first.

AI most commonly applied in IT /Tech / Digital functions

Which of your company's business functions currently use AI?



Etihad Airways

Like most airlines, Etihad has been using artificial intelligence of some type for a long time - for example in flight path routing, however there are differences across the business in maturity and deployment.

Etihad is undertaking a significant investment in AI and see it as one of the most important aspects of digital transformation. Their key focus is on on the use case and benefits and they are driving the conversation across all levels of the business.

Most of the initial focus has been on the front office as it is easier ground to start on due to the marketing teams already being relatively mature in their understanding of automated insights and actions and willingness to adopt new technologies.

Most of the initial focus has been on the front office.

The most important requirement for implementing artificial intelligence at the airline has definitely been people, they need to be willing, interested and educated. A major challenge with AI generally across all companies is that while everyone is using the buzz words no one really know what it is or how to apply it to what they do. To solve this Etihad are launching an Artificial Intelligence Academy to deliver grass root training to everyone at the airline. Once employees understand what AI can do, are aware of tangible examples, realise how it can enable their day to day activities and understand that it is not just a scary black box that will replace them, they become much more proactively engaged in the change programme, not only just supporting it but also proactively suggesting use case opportunities to be implemented.

الإتحاد ETIHAD AIRWAYS ABU DHABI

Etihad Airways was established by Royal (Emiri) Decree in July 2003 and is wholly owned by the Government of Abu Dhabi with a mandate to operate safely, commercially and profitably. Etihad's guests are at the heart of everything it does. The airline has a network of over 110 passenger and cargo destinations across six continents, with a young and environmentally friendly fleet of more than 120 aircraft.

What next?

Etihad is continuing to expand the use of artificial intelligence throughout the core business to drive insights, automate processes and enable employees, across customer engagement, operations and business efficiency. The AI Academy employee education programme and the continued drive for better quality data are seen as pivotal to its future success. Artificial intelligence is only going to become a greater business requirement in the future as guest expectations continue to increase, datasets become bigger and more complex and competition increases.

“

We need everyone at the airline to be AI literate.

“

The machine learning algorithms is often the easy part - implementing it on live systems with the required people, process and system changes is the difficult one.

Business Benefits and Risks

As a number of industries are beginning to reap the benefits of AI, we investigate what AI is actually doing for businesses today and what is expected in the future. We look at how big an impact executives expect AI will have in terms of driving growth or causing disruption in their industry, and examine AI's basic and more advanced uses - highlighting examples of these functionalities in operational mode.

We also present a strategic approach to understanding AI's four benefit domains from a business perspective, summarizing the value executives expect to generate by using AI, and touching on what business leaders see as the most prevalent business risks.

Another World

What is the expected impact from AI within the next 5 years?

Almost without exception the companies surveyed expect AI to have a significant impact across a broad spectrum of Jordanian businesses, and strong conviction exists that companies using AI technologies successfully will have a competitive advantage over those who don't. The difference in opinion between interviewed executives surfaces around the anticipated time horizon for when AI will have this significant impact - selected sectors showing strong progress favor the short term view, but the general consensus is that the impact will only be felt nearing the back-end of the 5 year window.

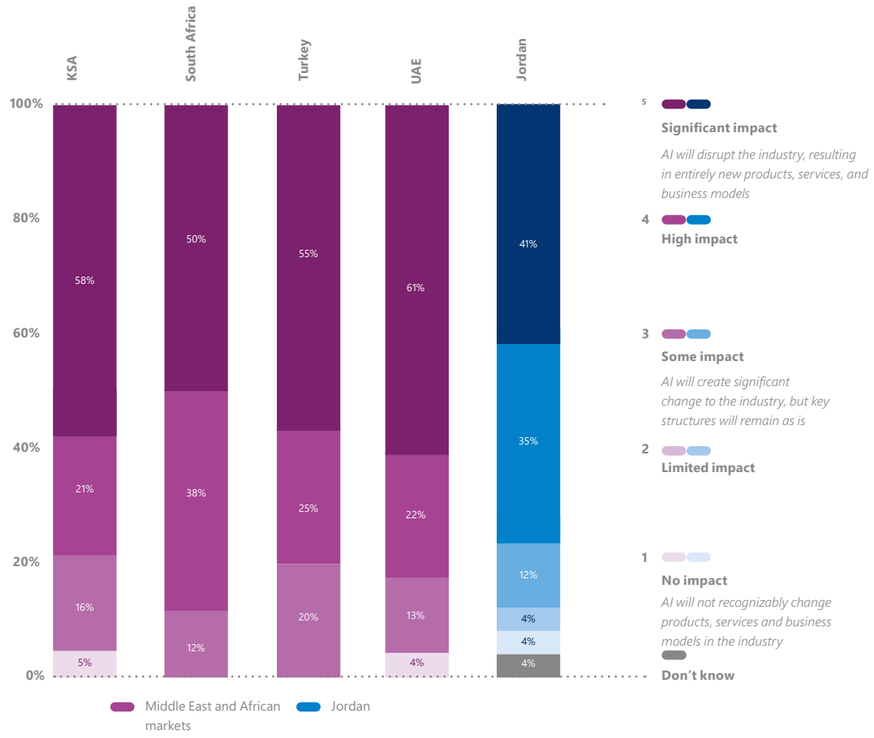
Expect optimization of core business
The most significant benefit expected from AI over the next five years is quantum improvements in efficiency across the operational sphere of the organization, applicable to all areas of the core business. The resultant cost savings will enable price reductions on their products, and some companies are anticipating gaining market share as a result. This illustrates how Jordanian executives are seeing AI as an enabler, rather than as an end in itself.

New business could flourish
The more optimistic participants envision the creation of entirely new businesses that are as yet not even imagined, the result of the disruptive effect that AI will bring. This optimism is tempered by the restriction imposed by the lack of supporting operational structures and legislation that enable innovative AI-driven initiatives to see the light of day in the form of new business ventures. This is currently experienced in the form of interesting AI pilots which are proving their viability, but are not being productionized due to funding restrictions and absence of clear legislative direction.

AI maturity a factor
One of the reasons being cited for holding back on bigger scale deployment of AI technologies is the perception that AI has not yet reached a level of maturity that will enable a risk-free application to current business - this perception can only be overturned when experimentation with AI reaches a level of success that will inspire confidence in the technology.

Retail, Financial Services and Infrastructure & Transport expect the highest impact from AI

How much impact do you expect AI will have on your industry within the next 5 years?

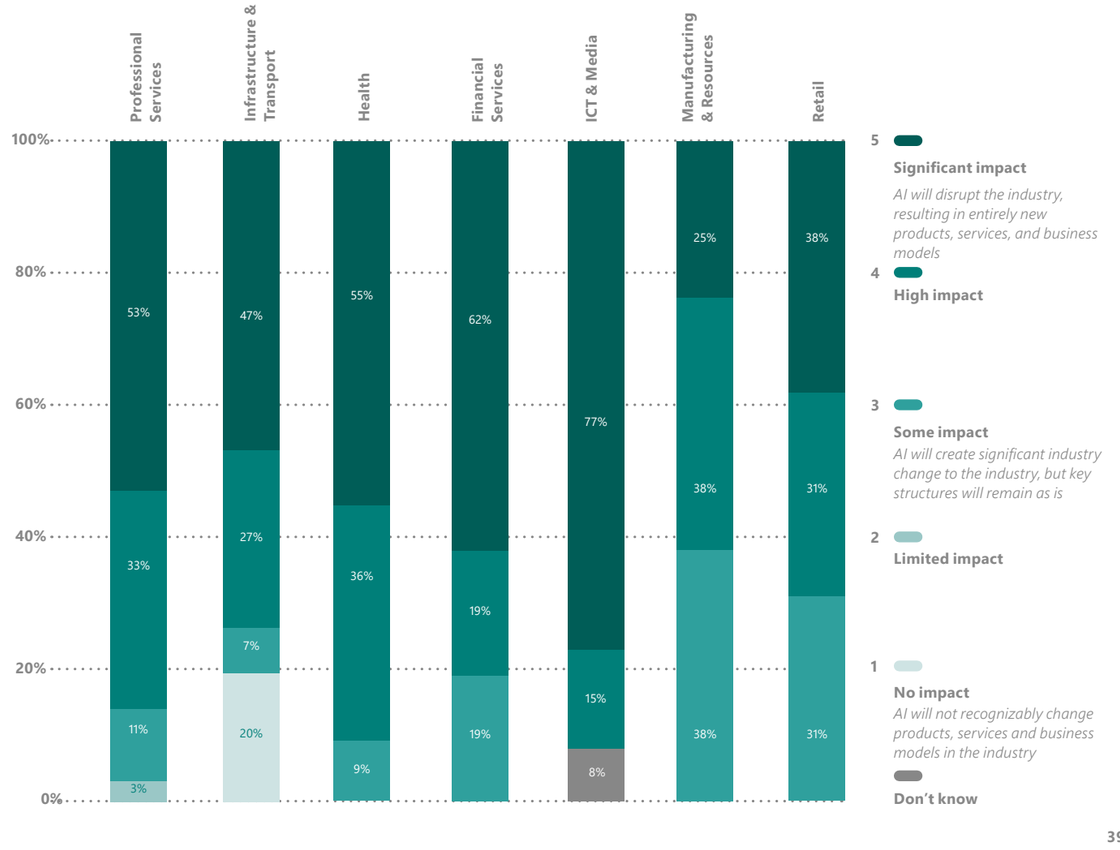


Influence vs Disruption
All companies surveyed in the region were clear that AI will have a marked impact, however the extent to which it will affect businesses varies by sector. Technology and customer-centric sectors who are predominantly in the B-2-C model such as ICT & Media, Financial Services, Health and Infrastructure & Transport see the impact as disruptive, with more than 50% signalling significant impact - changing the fundamentals of how they do business, completely redefining customer interaction models and creating alternative revenue streams. In the Retail and Manufacturing & Resources sectors executives believe AI will have a significant influence on the future business, but it was not seen as systemically disruptive. Methods of material sourcing and manufacture will remain largely constant and the impact will be on step-changes in efficiency, increased productivity and enhanced Health and Safety.

> **We need to teach how AI can be applied, not just the abstract technical skills.**
>
> **— University of Jordan**

ICT & Media the sector with the highest expected impact from AI across the region

How much impact do you expect AI will have on your industry within the next 5 years?

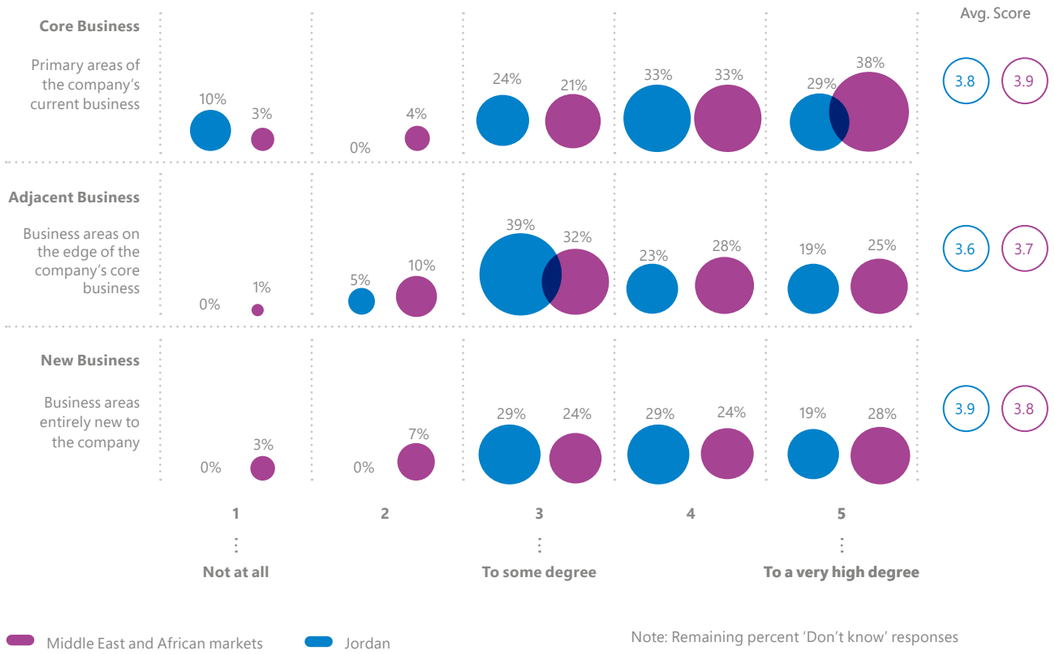


AI Here, There, Everywhere

What is the proximity of AI's future impact to core business?

Companies expect impact across all horizons

To what degree do you expect AI will create impact for your company within each of the following areas?



Note: Remaining percent 'Don't know' responses

Although core business seems to be the area expecting the most impact within the next 5 years, some Jordanian companies also foresee an impact on adjacent business. Most interviewed executives see AI being applied to extract operational efficiencies and do not see it as a natural enabler for business growth.

Efficiency in the medium to long term

Only 29% of the companies surveyed in Jordan believe that, within a 5-10 year timeframe, the implementation of AI solutions will allow them to achieve a very high degree of efficiency and cost saving in their core business, and enable better service delivery. However, a further 57% expect some degree or more of benefit to their core business. The greatest differentiators are expected in the areas of automation, improved decision-making and advances in efficiency.

Impact on new and adjacent business a bit more vague

Although almost all companies expect that AI will have at least some degree of impact on adjacent business and also result in new business, most executives were unable to identify the exact nature and associated extent of the impact.

Regionally: Sweet spot in the Core

38% of all companies surveyed across the region feel that AI will impact their core business to a very high degree. This is expected, as technology-driven transformation normally happens where there is a deep understanding of the value chain, a significant amount of data exists and the time to value is short, thereby justifying initial investments. Over time this is expected to spread to adjacent and new business areas, as companies become more comfortable with the technology and business understands what is the 'art of the possible' with AI, enabling them to identify opportunities that may not be so obvious today.

Hashemite University

Artificial intelligence is having a huge transformational impact on the education sector, affecting everything from what is being taught - from AI specific skills to how AI can be used in various fields - as well as how we teach.

In light of this, Hashemite University is treating Artificial intelligence (AI) as a top priority and it is being given attention at the highest levels of management.

Various initiatives have already been undertaken to ensure they don't fall behind the curve, including transforming to a paperless organisation, the implementation of smart boards in lecture rooms to support more engaging and interactive teaching and the initial planning and design for implementing smart management systems for the university operations and eventually, a fully smart connected and intelligent campus.

At a base level the smart campus will enable greater efficiency and more effective teaching, staff enablement and university operations. It will also provide the necessary clean, granular and real-time data to power AI, which will use the data to automate and optimize functions for more seamless operations (from optimizing power consumption to security and intelligent student support tools).

The smart campus will enable greater efficiency and more effective teaching, staff enablement and university operations.

If they anticipate any challenges to implementation, it is having the clear vision and understanding of how to use / apply AI and the associated measurable benefits so that budget can be made available to not just build, but also maintain it.

الجامعة الهاشمية

The Royal Decree to establish the Hashemite University was issued on 19th June 1991. Teaching at the university started on 16th September 1995. Hashemite University is oriented toward achieving an academic pioneering position and excellence in university teaching, scientific research, at both the national and regional levels, to serve society through its educational functions, and to participate in the advancement of knowledge.

What next?

The university is about to activate its plans to be become a fully smart organisation, from smart classrooms, to smart university management systems and smart insights. AI is a critical component to monitor and realise the value of the new mass of data that will be made available. This intelligence can then be used to ensure that the smart capabilities are not just about gathering data but also learning and acting on it to provide the best student and faculty experiences and services.

AI will affect not just what we teach but also how we teach it.

We need to help people understand how to both apply and sustain AI.

Use It or Lose It

How is AI put to use in companies today?

Despite the objective of AI applications varying greatly across the surveyed companies, AI is predominantly being applied in back office and operational functions at this stage.

Intelligent Automation for improved efficiency

Automation in one form or another is used in just over half of the interviewed Jordanian companies that have commenced with AI, with a primary focus on effecting cost savings, efficiency gains and improved customer service. There is a strong emphasis across sectors on increasing operational efficiencies, and Intelligent Automation is seen as the AI technology that can deliver the best results for Jordan at this point in time. The applications are to be seen in supply chain logistics, marketing, finance and training via robotics and virtual reality.

Prediction and Generating Insights closely linked

Prediction (at 43%) and Generating Insights (at 38%) are closely aligned and together complete the podium when it comes to the application of AI. Executives acknowledge that the primary focus at present in these domains is analysis and interpretation of historical information to enhance understanding and insights into various aspects, and where possible to utilize these insights to create a forward looking perspective. Although useful to get data based perspectives on the organization's value chains, the ability to accurately predict future outcomes is restricted, as long term and complex predictive algorithims are still not widely used. This is expected to remain that way for the immediate future as the cultural shift in decision-making occurs, from being 'Advisor Led' to 'Data Driven'.

Insights for cyber protection and fraud detection

Several companies are currently using their massed data, linked with AI solutions, to strengthen their cyber defences and manage the potential threats that they are exposed to. The defensive perspective is extended to using AI for the near real-time detection of fraud especially in the Telecommunications and Finance sectors.

Personalization and Prescription not much in use

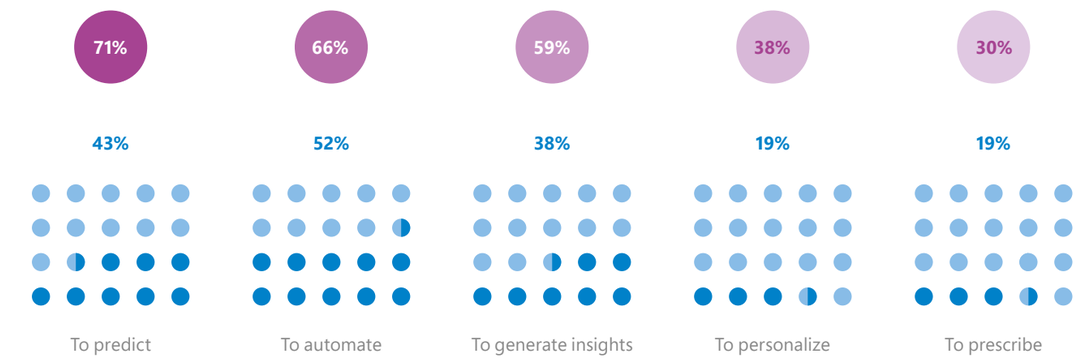
Both of these forms of AI only scored 19% with Jordanian companies, partly due to the strong representation in the survey by the public sector, who don't have a strong need for personalisation-orientated solutions - as such, personalisation remains limited to selected sectors. Prescription is also not yet on the radar for most companies, not only because it requires large volumes of data and an understanding of which variables are significant, but also due to a strong cultural bias against using AI to make definitive decisions, as was highlighted by interviewed executives.

Heritage behind Prediction and Automation

Prediction (71%) and Automation (66%) are the top use case genres for AI across all companies surveyed. The numerous production solutions range from predicting customer churn or consumer conversion rates, to proactively managing machinery downtime, through to chatbots and machine learning-enabled automations. This is largely due to companies having used supporting capabilites such as analytics and desktop automations for several years and these have pivoted rapidly into the AI domain, enabling rapid adoption.

Prediction and automation relevant to most companies

What are the relevant uses of AI in your company?



Predict

Anticipate events and outcomes

There is a lot of uncertainty around the accuracy of AI and proving it is right.

— Zain

Automate

Handle tasks without human intervention

We have been using AI mainly for automation to maximize efficiency and increase accuracy, and currently are working to use AI for predicting demand and consumers' buying behaviour.

— Nader Group

Insights

Identify and understand patterns and trends

AI is a fundamental requirement to enable and deliver SMART services.

— Hashemite University

Personalize

Tailor content and user-experience

The immediate value AI brings us? More effective CRM and more relevant app experiences.

— The ENTERTAINER

Prescribe

Suggest solutions to defined problems

We'll always need the human interface to provide checks and balances.

— dnata

Making AI Simple

What is a good framework to map the potential benefits from AI?

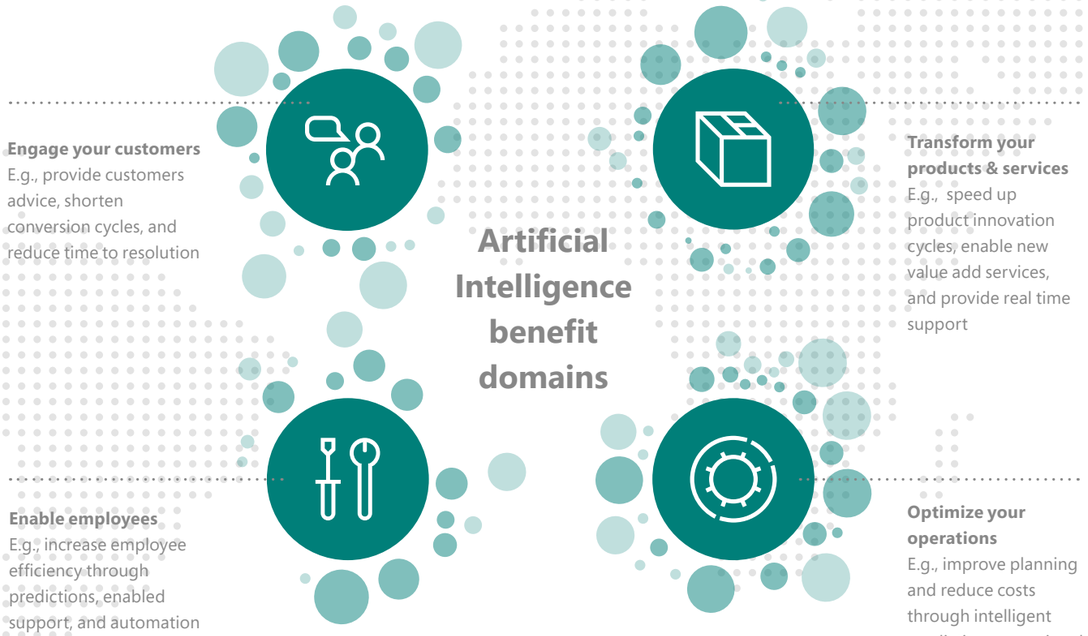
The contributing companies generally expect to benefit in all four key domains as outlined in Microsoft's Digital Transformation framework: optimizing operations; engaging customers; transforming products and services; and enabling employees. Each domain draws on underlying AI functionalities – 'reasoning' through learning and forming conclusions with imperfect data; 'understanding' through interpreting the meaning of data including text, voice, and images; and 'interacting' with employees, customers and other stakeholders in natural ways.

Applying AI to these domains can be transformational to a business, ultimately changing the landscape of the business itself and the industries and eco-systems in which it operates.

Let's look in more detail at what that entails.

Artificial Intelligence impacts business in four benefit domains

Companies must consider how they approach the benefit domains in their AI strategy formulation



Engage your customers
E.g., provide customers advice, shorten conversion cycles, and reduce time to resolution

Transform your products & services
E.g., speed up product innovation cycles, enable new value add services, and provide real time support

Enable employees
E.g., increase employee efficiency through predictions, enabled support, and automation of repetitive tasks

Optimize your operations
E.g., improve planning and reduce costs through intelligent prediction, operational efficiency, and deep insights, predictive maintenance

Improved production and efficiency through optimized operations
While digital transformation in general is based on customer engagement, optimizing operations is what companies first look to when putting AI to use. It draws on multiple levers such as:
* intelligent prediction, e.g., identifying chronic diseases, anticipating non-performing products, or adaptive modelling to flag corrective actions;
* operational efficiency, e.g., optimizing forecasting and order-to-fulfilment flows across the value chain, or processing huge sets of documents in a fraction of the time;
* deep insights, e.g., detecting anomalies to surface irregularities such as fraud, or identifying new pockets of opportunity before competitors do.

Engaging customers more effectively through AI
After optimized operations, companies look to customer engagement as the domain in which to seek most business benefits. Early examples of AI applications in the customer engagement space involve levers such as: conversational agents, e.g., bots providing personal recommendations and transactional advice;
personal assistants, e.g., guiding decision-making, shortening conversion cycles;
self-service, e.g., options to help customers reduce time to resolution.

Staying ahead of the competition by transforming products and services
Transforming products and services, and enabling employees, came out on the same level, slightly below the two other domains when it comes to where companies expect to generate future business benefits. Transforming products and services, ultimately giving rise to entirely new business models, is mostly favored in R&D-heavy sectors where companies consider AI and advanced analytics as levers to speed up the product innovation and discovery process. In B2C-oriented sectors, AI enables provision of new services via multilingual cognitive tools, geo-location suites, sentiment analysis, cognitive robotic advisory capabilities, personalized service agents and more, to transcend the sectors to a new level of value-add -with significantly increased scale and reach in real time.

Enabling employees to be more efficient and capable
Across sectors, numerous AI use-cases focus on increasing employee productivity or serve to enhance the human ingenuity and the ability to fulfil a given function. AI helps employees in B2C companies expand organizational knowledge by analyzing vast customer behavior datasets in order to adapt online and offline store layouts, driving conversion and sales. Customer personalization is used at scale, powered by AI solutions that reveal real-time customer insights, identifying the best next actions for up-sell and cross-sell opportunities, as well as predictive models that obtain a 360-degree view of the customer by integrating customer data and sentiment to generate targeted offers.

> **AI can't just be about reducing jobs, it's about making profit.**
>
> **—Adenium Energy Capital**

> **We need to teach how AI can be applied, not just the abstract technical skills.**
>
> **— University of Jordan**

Where Value Hides

What benefits do business leaders particularly expect from AI?

The benefit domains were grouped into optimising operations, engaging customers, transforming products and services, and empowering employees - the results highlighted an interesting polarization of AI emphasis based on who within the organization is driving the AI agenda.

Optimizing operations championed by CFO's

Where the AI agenda is being driven by the CFO or COO, the organization has clearer focus on operational efficiencies to drive down costs, increase process effectiveness and become more competitive. As many as 81% of Jordanian companies expect to gain significant benefits in optimization of their operations, primarily through intelligent automation, machine learning and virtual agents.

Marketing execs influence transformation of products and services

71% of companies are looking to achieve transformation of products and services, with companies believing AI will assist them in making quicker and better decisions based on the specific needs of their customers, and thereby produce more personalised products and services. This agenda is usually pushed by the marketing executives, whose focus is towards gaining market share through product development and customer engagement.

CIO's promote AI across the board to enable employees

AI programs which were led by collective commitees or CIO's have a wider interpretation of where AI can add value, and favor a lens of employee empowerment focused on broad capacitation and productivity increase through staff being AI supported in their daily functions. With a significant 67% of organisations seeing value in employee empowerment, the high ranking may seem counter-intuitive given the levels of employee resistance towards AI. However, executives feel that this will be mitigated through appropriate change programs and education across the workforce.

Engaging customers expected by half of the surveyed companies

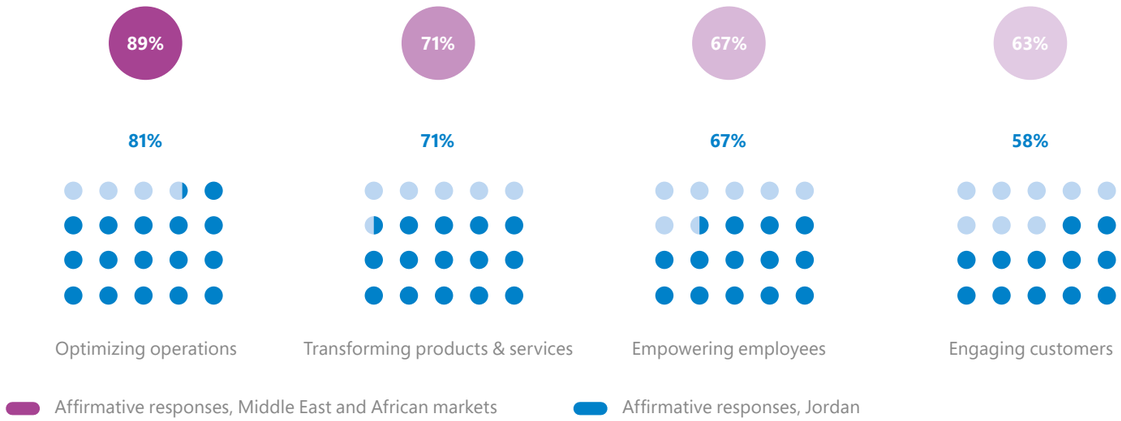
58% of the organizations are expecting customer engagement to be a benefit of AI, and these are mostly in the Telecommunications and Finance sectors where competition for customers is most acute. The slightly lower ranking is certainly influenced by the higher number of Government departments interviewed, where direct customer engagement is less relevant in daily operations.

Optimising operations is quickest time to value

89% of the regional respondents identified optimisation of operations as the top area they expect AI to deliver financial benefits in the near term, as the time-to-value is generally faster in this domain and AI's impact is more directly on measurable metrics. This drive for value realisation is underpinned by the need to show returns on AI investments very quickly, to create momentum and justify further investment whilst maintaining operational performance.

Most companies expect to generate benefit from optimizing operations

What business benefit do you expect AI to generate?



Hikma Pharmaceuticals Company Limited

Artificial Intelligence (AI) and robotics have huge implications for the healthcare industry. Hikma is certainly abreast of this trend globally - having invested in one of the leading health tech start-ups in the US , but internally its AI journey in MENA is only just beginning.

Like others Hikma has recognised that to realise the value of AI to its business, the source data used have to be not only rich but correct. Hence, it is currently in the process of laying the groundwork, including getting the right data governance and processes in place before it rolls out any company wide initiatives.

Hikma believes AI will significantly impact all aspects of their business.

In addition to having good data, Hikma considers two of the most important requirements of successfully implementing AI to be people - ensuring that enough people understand what it is and how to use it so that they "think AI", and process - making sure they don't just automate the existing processes, but take the time and opportunity to redesign the old processes and enable them with and truly take advantage of data and technology.

A critical challenge for all AI and for a heavily regulated sector like pharmaceuticals is the regulation itself. The pharmaceuticals industry needs the regulators to keep up with the changing capabilities and provide guidelines and rules for both the permissive use and restriction to truly enable the change.

Hikma believes AI will significantly impact all aspects of their business, from providing better insights into market needs and enabling accelerated responses, to facilitating more effective and efficient product R&D and optimising internal business processes. So, ensuring the data are clean and the management processes effective is crucial.

hikma.

Hikma helps put better health within reach every day. We create high-quality medicines and make them accessible to the people who need them by transforming cutting-edge science into innovative, every day solutions. Headquartered in the UK, we provide a broad range of branded and non-branded generic medicines in the US, the Middle East and North Africa (MENA) and Europe. Each day, our 8,400 colleagues are helping shape a healthier world that enriches all our communities.

What next?

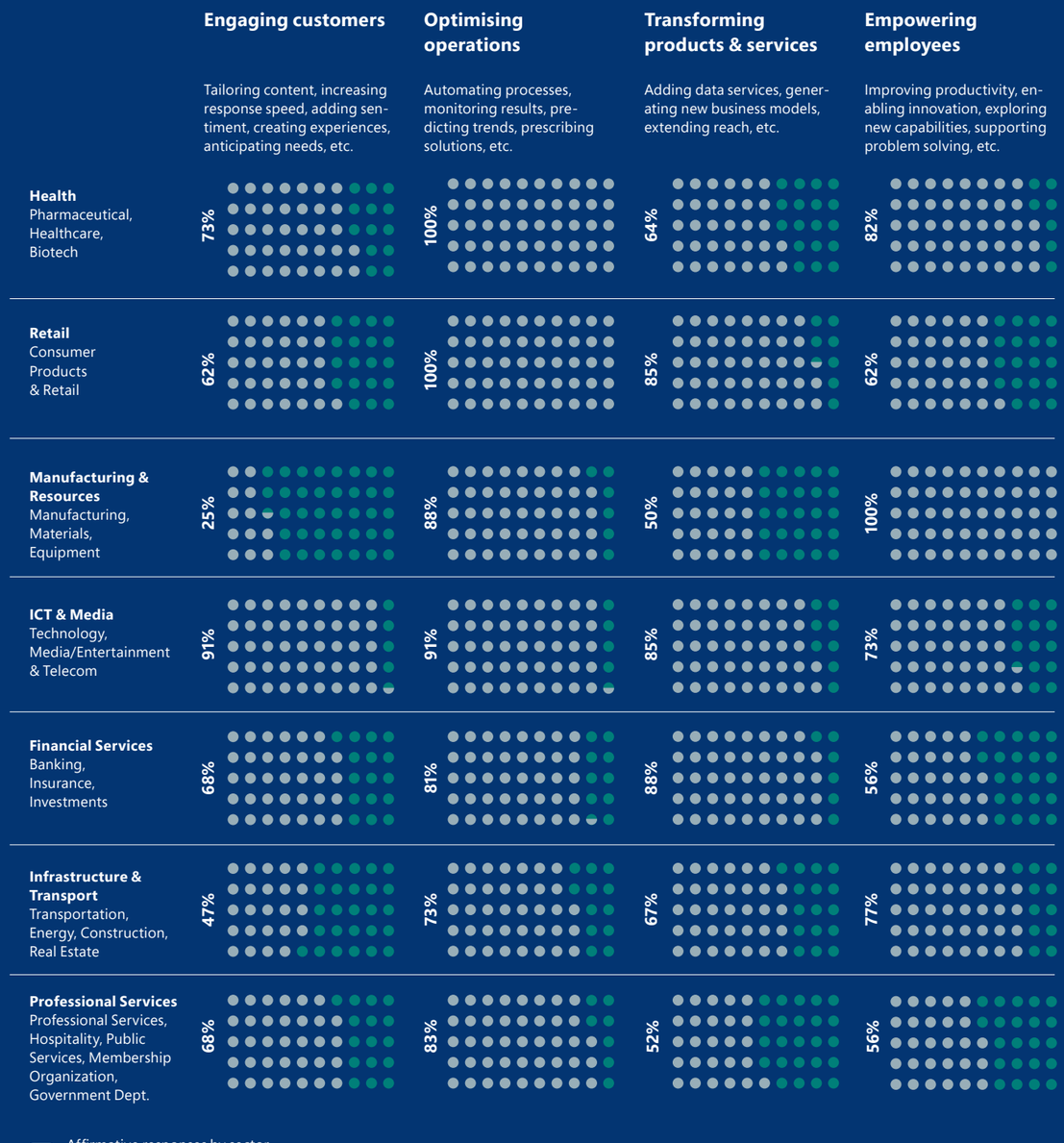
Hikma is continuing to focus on process / use case led transformation and driving digitising patient engagement, product R&D and operations by integrating artificial intelligence (AI) as a core enabler. Also, Hikma wants to ensure awareness and understanding of AI and benefits among its employees to help identify new opportunities and support global deployment of key activities.

> **There are no technical constraints, the challenge is getting people engaged and having the right skillsets.**

> **Regulators are still not ready for what AI can do, if they don't act soon they will delay or even stop progress.**

Sector Benefits Landscape

We asked companies across sectors in the region what business benefit they expect AI to generate across Engaging customers, Optimising operations, Empowering employees, and Transforming products & services



Front to Back

What are the expected benefits by regional sector?

Executives surveyed and interviewed in the various sectors recognize the distinct benefits of AI, speaking about the myriad of ways they see AI transforming their businesses and industries. Although there are clearly discernable patterns, executives from different sectors often speak to different benefit areas that they particularly hope to capitalize on.

ICT & Media companies have the widest range of benefits

ICT & Media companies see significant benefits across the spectrum, where the application of AI ranges from changing customer engagement models to attracting new clients and reducing churn, whilst creating new products that meet consumer needs based on AI enabled customer analysis. In addition, the ability to use AI to reduce the cost to serve in a highly competitive market, and to empower employees to drive up per capita productivity and support better client service are big opportunity areas.

Professional Services companies focus on Optimizing Operations

Despite ranking lowest in overall benefits, executives in this sector all oversee significant human capital pools and intellectual property/knowledge bases. Notable value can be extracted through effective integration and efficient deployment of both assets using AI solutions. As their clients become more technology orientated, Professional Services companies will change their mechanisms of customer enagagement to align.

Efficient operations key in the Health sector

With much of the Health R&D occuring in regions such as Europe, most companies surveyed in this sector see the biggest benefit being more effectve within operations. Using AI to better optimise their workforce and leverage the expensive machinery to generate greater ROI, would be imperative. Despite very advanced technology the sector is still plagued by inefficient analogue processes that hamper operations.

Engaging customers in new ways in the Retail sector

The Retail companies we spoke to rank second highest overall in expecting benefits from AI, buoyed by 100% of them expecting benefits in optimising operations. The ability to develop and deliver targeted, tailored offerings to customers was also very high creating flexibility and nimbleness in product development, manufacturing and highly dynamic supply chains was seen as the key.

Manufacturing & Resources and Infrastructure & Transport look to empower employees

Companies from Manufacturing & Resources with 100%, and from Infrastructure & Transport with 77%, are high in terms of expecting benefit gains through AI empowered employees. Very complex operational environments, managed and operated by highly experienced engineers and operators, are constrained by the availability of specialists, so using AI to assist and enhance the output of specialists would yield significant benefits. In companies with large workforces such as in Mining, micro improvements to employee productivity can yield massive gains.

AI to revolutionize Financial Services firms

Finance companies reported some of the highest expectations for AI benefits across the four domains, which would explain the sector being one of the current frontrunners when it comes to AI maturity. Using machine learning to detect fraud, automation to streamline KYC efforts in the back office, and reducing compliance and regulatory costs via technologies that digest vast quantities of legal documents, financial institutions are looking to provide higher quality service at faster speeds and lower costs. Investment decisions can be guided by robo-traders to transform products and engage customers in the front office.

> **AI can transform the storage and transfer of knowledge in an environment with high staff turnover.**
>
> **— Amman Municipality**

The main challenge is budget cuts. A huge risk is spending on AI and not seeing a result as meeting the high expectation from AI requires considerable efforts.

— Jordan University of Science and Technology

There is risk with all new technology, it is about how we manage it.

— Quantum Global Solutions

Risky Business?

What do business leaders need to pay attention to when implementing AI?

Along with the obvious excitement about the benefits that AI can bring, organisations are reflecting on the risks that are linked to disruptive technologies. Executives intuitively sense the value of AI, but are conscious that being caught up in the hype might blind them to the dangers of investment in solutions that are only starting to demonstrate their commercial value.

Common thread is the risk of regulatory requirements
Almost half of the respondents articulated concern about adhering to existing regulatory requirements, as well as navigating the nascent, often ill-defined regulatory landscape for AI. Compliance with regulations such as POPI and GDPR through to cyber exposure means that solutions must be considered not just on commercial viability but also potential non-compliance to regulation. The lack of clarity around possible new AI regulation can slow down scaled deployments as leaders worry about investing in areas where the rulebook is still being written.

Where is the human in the loop?
It is unsurprising that the second most common risk mentioned is the impact that AI could have on staff members. Automation anxiety is a very real concern against the backdrop of high unemployment figures. It will be imperative for companies to consider the organisational change management aspects and ensure employees are reskilled to become part of the journey, motivated and engaged in restructured work activities enabled by AI.

Thirsty for information, drowning in data
AI will consume a significantly greater quantum of data and will also accelerate the velocity and volume of information moving around an organisation. AI can manage and make sense of big data, but using it effectively requires careful consumption of outputs to know what is useful and what is just noise. AI is also only as good as the data that feeds it, and organisations do not have sufficient infrastructure and data management protocols in place. How do you build a data platform for something where you aren't exactly clear what the final outcome will be? A significant amount of spend may still be needed to manage the dynamic and flexible data feeds that AI requires before value is extracted.

Loss of control - not yet
AI has not yet progressed to the point or scale where companies expressed notable concerns of losing control of their business operations, as they feel it is neither pervasive or invasive enough to pose a significant risk.

Top 3 business risks in Jordan

1 Allocation of resources — 52%

In the current tough economic environment in Jordan, business focus and investment is absorbed by day to day operations, and there remains insufficient funding and resources allocated for broad-based experimentation on new technologies like AI. This is more acute as there remains a high level of uncertainty about the quantum of value that AI may unlock.

2 Lack of sufficient regulatory guidelines — 45%

Businesses are uncertain about the way forward with AI, as well as with digital and other technical deployments, due to an absence of clear regulation guidelines to direct their investment decisions. It is not so much about the restrictions and rules to be followed, but more about guidelines to assist businesses in defining their future strategy in this transformational aspect of technology.

3 Impact on personnel — 38%

Against a backdrop of high unemployment, Jordanian companies are experiencing employees' reservation towards AI, and acknowledge the need for education and change management. To counter the fear of job losses, employees need to understand that AI is predominantly an enabling capability that enhances productivity and reduces the amount of time spent on menial tasks. An inability to influence the negative workforce perceptions on AI will certainly stifle any future AI agendas.

Note: Affirmative responses, Jordan. The respondents were asked to select all that applied of the following response options included: Diffusion of resources, Loss of control, Upkeep of the system, Information overload, Regulatory requirements, Impact on personnel.

Learn from the Leaders

The promise of AI lies in creating business value.

We have identified the eight most recognized capabilities needed to successfully create value from AI, and assessed how competent the companies are within each capability.

Perhaps more importantly, the executives we spoke with highlighted the importance of these 8 competencies as those needed to successfully create value from AI.

Capabilities. How?

What competencies are required to get AI right?

This section explores the eight capabilities necessary to develop AI maturity, realize tangible business benefits, and minimize risk. As exhibited in the chart on the following page, we asked the companies to rank the importance of these capabilities in terms of incorporating AI into their business, as well as to self-assess how competent their companies are with regard to each AI enabling capability.

The human element and technology

Some of the eight capabilities center around human elements: AI Leadership; Open Culture; Agile Development; Emotional Intelligence. Others are more technology oriented: Advanced Analytics; Data Management; Emerging Tech; External Alliances.

Ranking of key capabilities for realizing AI potential

Data Managment comes out on top as the most important AI enabling capability among the companies surveyed and Advanced Analytics is second. AI Leadership is regarded as the third most important capability. Open Culture refers to collaboration and the ability to embrace change and uncertainty, and is ranked fourth.

Fifth is Agile Development, where self-organized and multi-disciplined teams are characterized by shorter project cycles and the ability to work with constantly evolving technology, leading to wider buy-in and scaling, followed by understanding how to deploy the right Emerging Technologies in a future proven way.

Entering into External Partnerships ranks second to last in terms of importance, perhaps because it's the area that resonates most with existing capabilities and where business leaders perceive themselves most in control. As the majority of companies we spoke to are looking to enhance their skills by leveraging an ecosystem of internal and external sources and close ties with academia, given the shortage of skills in all surveyed countries, it is not due to a general lack of relevance.

Bringing behavioral science into play via Emotional Intelligence to build solutions that understand and mimic human behavior, and make it easier for humans to interact with the technology, is seen as the relatively least important AI enabling capability. An explanation for this could be that the technical skills are still so relatively complex for companies to grasp and establish, that more advanced human cognitive skills become less of a priority at this stage.

Noticeable sector deviation

As exhibited in the following chart, where business leaders are asked how competent their company is in relation to the most important AI enabling capabilities, there were notable variations across sectors with certain sectors generally showing a stronger competence across most of the capabilities.

Sectors that are more mature in using AI are those that report higher competency in Advanced Analytics - particularly Finance (including Banking, Investment and Insurance), as well as Services (including Services, Professional Services and Hospitality). Life Sciences (including Healthcare and Pharma) was lower than other sectors across the board, due largely to the fact that a lot of the pharmaceutical industry R&D and AI innovation is based in Europe and cascades down to the countries we interviewed. So although they utilise AI technologies extensively, they do not directly create AI solutions to the same degree.

8 capabilities

1. Advanced Analytics
Obtaining and deploying specialized data science skills to work with AI by attracting talent and working with external parties

2. Data Management
Capturing, storing, structuring, labeling, accessing and understanding data to build the foundation and infrastructure to work with AI technologies

3. AI Leadership
The ability to lead a transformation that leverages AI technology to set defined goals, capture business value and achieve broadly based internal and external buy-in by the organization

4. Open Culture
Creating an open culture in which people embrace change, work to break down silos, and collaborate across the organization and with external parties

5. Emerging Tech
The organizational-wide capability to continuously discover, explore and materialize value from new solutions, applications, and data platforms

6. Agile Development
An experimental approach in which collaborative, cross-functional teams work in short project cycles and iterative processes to effectively advance AI solutions

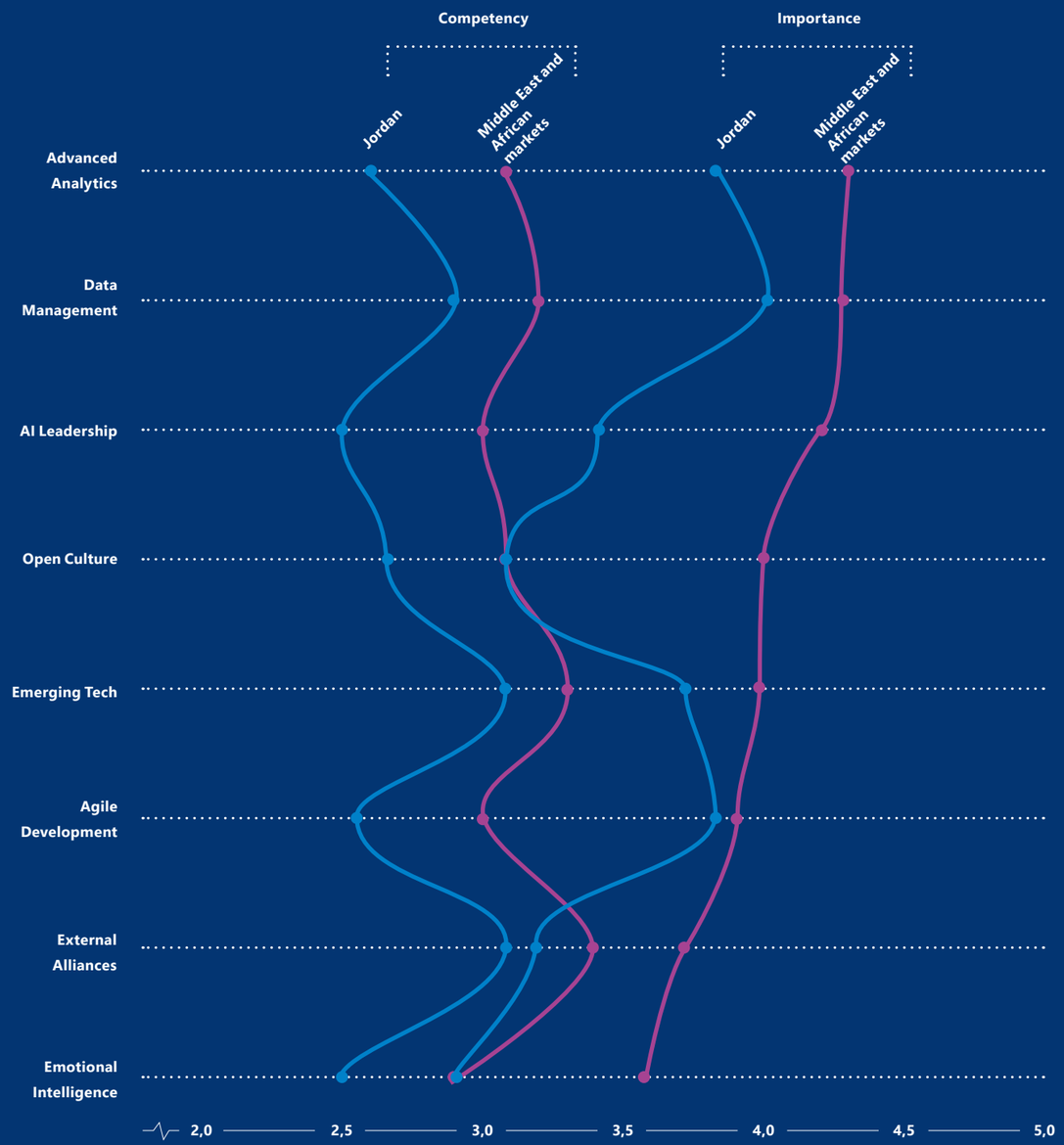
7. External Alliances
Entering into partnerships and alliances with third party solution providers, technical specialists, and business advisors to access technical capabilities, best practices - and talent

8. Emotional Intelligence
Applying behavioral science capabilities to understand and mimic human behavior, address human needs, and enable ways to interact with technology and develop more human-like applications

AI Competency Model

Advanced Analytics and Data management considered most important AI capability

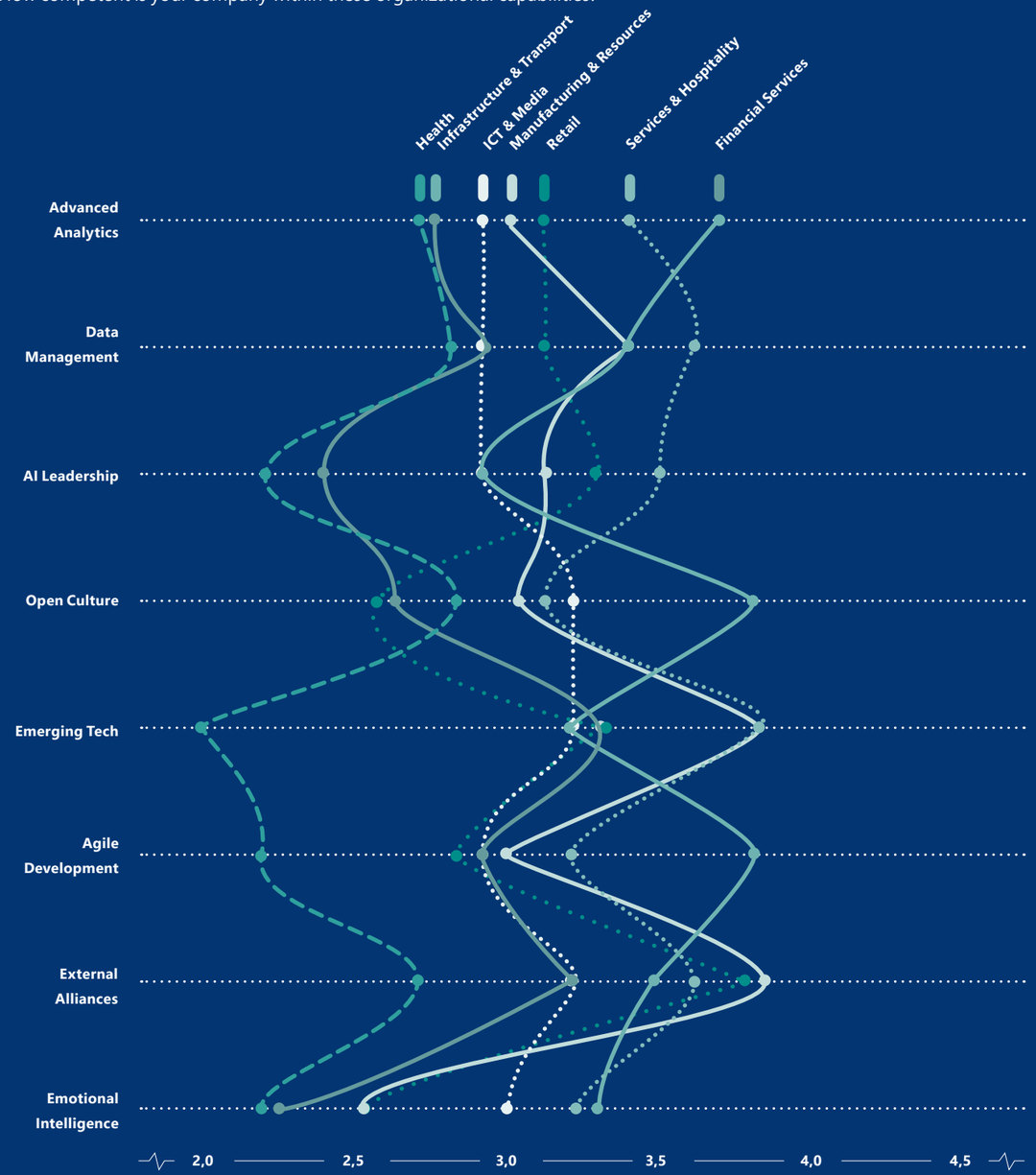
How competent is your company within these organizational capabilities?
How important is each of the organizational capabilities for your success with AI?



Note: 'Don't know' answers not included in average score.
Average competency and importance for Jordan and Middle East and African markets (1: lowest – 5: highest).
Capabilities ranked according to highest importance in Middle East and African markets.

Financial Services leads the other sectors in AI competency

How competent is your company within these organizational capabilities?



Note: 'Don't know' answers not included in average score.
Average competency by sector (1: lowest – 5: highest).

1. Advanced Analytics

Obtaining and deploying specialized data science, data engineering, data architecture and data visualization skills by training employees, attracting talent and co-creating with external partners

> **AI is the 'oil' generated from your data.**
>
> **— dnata**

The backbone of AI is made up of skilled, intelligent minds who are capable of understanding business problems at the granular level, and deploying AI to effectively solve or support others in solving these problems. This requires technical data science and mathematical engineering skills, but also hybrid profiles with sufficient business acumen to decode problems and ability to tackle them using quantitative methods.

A self-fulfilling talent prophecy

It is evident from the study that there is a major lack of technical data skills to meet the drastically rising demand for AI. As a result, the hunt for AI experts has become extremely competitive, and it is far from uncommon that functional AI experts are paid higher salaries than their superiors and this will necessitate new HR remuneration models. Several business leaders state that the lack of AI talent is the greatest barrier to implementation within business operations. Interestingly, companies that have chosen an early adopter strategy for AI have been successful in attracting senior professionals who again have been able to build out strong AI teams in their companies – based on the premise that talent seeks talent – making AI recruitment a self-fulfilling prophecy for these pioneering companies.

In other words, the longer you wait, the harder it can be to get the right people. Consequently, a 'wait-and-see' strategy can be risky for companies that are AI followers due to the scarcity of talent, which may prove impossible to attract once the company is ready to make a more ambitious move into AI. While many companies struggle with acquiring AI talent, we also experienced companies with significant AI teams of highly qualified and experienced data scientists. Most often, these companies have been first movers on AI and attracted senior practitioners tasked with building out sizeable AI communities to work on the most strategic business agendas.

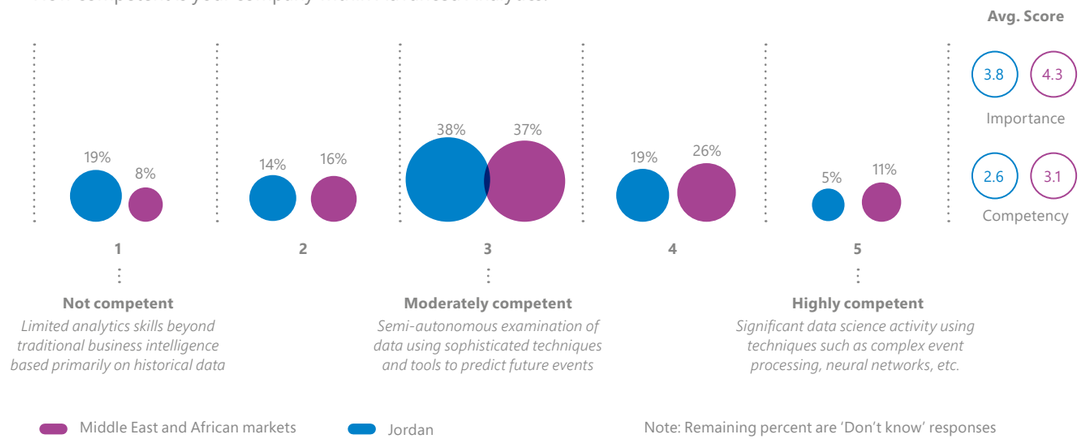
Hybrid profiles becoming the hardest currency

One of the most consistent inputs from the executives was the need for people with deep domain knowledge combined with strong technology proficiency. This hybrid profile is essential to identify relevant use-cases in the business with possible AI solutions.

As opposed to data scientists, software engineers, and even data architects that can be recruited externally, the hybrid profile is often nurtured by training existing employees from the line of business and adding AI skills. To succeed, however, a fundamental appreciation for technology is required.

Companies consider themselves moderately competent within Advanced Analytics

How competent is your company within Advanced Analytics?



Co-creating to compensate for blind spots - while avoiding the black box

The scarcity of available talent has led companies to increasingly co-create solutions with external partners who bring with them specialized know-how. However, executives very clearly point to the need for internal AI capabilities in the receiving end to understand the real problems and evaluate the performance of external partners. Companies find that AI solutions implemented by external parties become black boxes unless the organization is capable of contributing and taking over the solutions after delivery. Avoiding black boxes is a general concern amongst executives. Consequently, internal data scientists must be able to decode and dissect AI applications to explain the underlying rationales. Such rationales are important in making AI driven solutions credible, and greatly reduce the risk that an AI application draws wrong conclusions based on false assumptions.

Jordanian companies starting out in Advanced Analytics

Advanced Analytics was rated an average of 2.6 out of 5 by Jordanian companies, illustrating the statements from executives that this is an area which is just starting to emerge. There was quite a spread in the way companies rated themselves, with a few acknowledging they have yet to start, a few claiming relative competence, and most companies considering themselves moderately competent, at 38%. The emergence of data-led decision-making in Jordan will no doubt accelerate the use of advanced analytics over the course of the next few years.

What to learn from AI leaders:

1. **Providing interesting problems, good data, and a freedom to thrive in a non-corporate environment is key to attracting talent.**
2. **A wait-and-see follower strategy can prove risky and put companies in a talent scarcity trap.**
3. **Training existing staff with deep business intrinsics is key to make AI work - and effective when access to talent is challenged.**

> **Even during an economic downturn investing in data makes sense as AI can provide significant cost advantages and efficiencies.**
>
> **— Emaar**

2. Data Management

Capturing, storing, structuring, labeling, accessing and governing data to build the foundation and infrastructure to work with AI technologies

Companies tend to focus their AI efforts in areas where they aleady have relevant data. We found that the amount of data available for immediate consumption varies significantly by sector but regardless, a significant proportion of the time companies dedicate to AI is spent on data management related tasks.

Data governance is no trivial task
One of the major hurdles companies face regarding data is governance, particularly who 'owns' it, how data is stored, how to access it, and who may access it, are all essential questions when working with AI. Questions that used to be about efficiency suddenly become highly strategic and complex to respond to without rethinking governance structures and policy. Governance aside, the most common obstacles to using data are organizational silos or legacy systems built for specific purposes, resulting in decentralized storage that limits access.

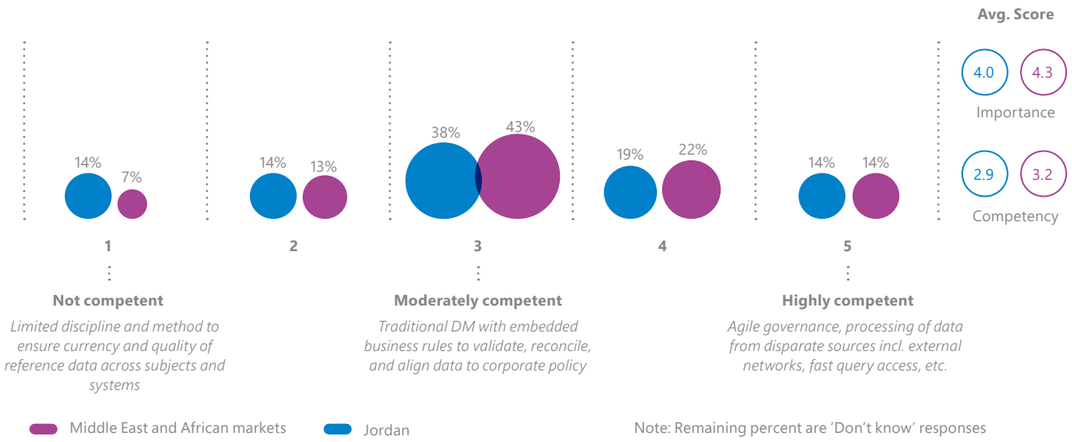
Companies reported that they typically spend 2-3 years building the appropriate data infrastructure for AI, and many respondents with the most ambitious AI visions are still spending the bulk of their time fine-tuning their infrastructure.

Data privacy regulations
Data infrastructure is not only a prerequisite for effectively working with AI, but is increasingly needed to comply with data privacy regulations, which respondents see as a key risk. The recent implementation of GDPR in the EU, as well as local country legislation, has highlighted the need to govern data usage. AI-specific regulation is still very immature, and AI leaders find that a lack of clear guidelines can limit their progress as they cannot factor legisation requirements into their long term planning.

Advanced companies (also) appreciate external and unstructured data
To build precise and useful AI solutions, companies not only need a lot of data, but also accurate data that is appropriately structured and labeled. Data is often reported to be in an unusable state, as it could lead to undesirable or unreliable outcomes. A significant number of clients are investing significantly in the 'foundational' activities, specifically around data, in order to create the platform for AI solutions in the future,

> **Data integration is critical at the start.**
>
> **— Adenium Energy Capital**

A significant share of companies consider themselves moderately to highly competent within Data Management
How competent is your company within Data Management?



including creating completely new data structures. Interestingly, we found that while companies that are less mature in AI tend to use mostly structured data from internal data sources, 53% of the more advanced companies use both structured and unstructured data, and a significant 54% use data from both internal and external sources. Similarly, 36% of these self-rated most advanced companies report use of hybrid architectures with on-premise and cloud based storage, while the less advanced predominantly rely on on-premise platforms.

Data Management also emerging in Jordan
At an average of 2.9 out of 5, this capability was rated third highest for companies in Jordan - 38% rated themselves as moderately competent, and another 33% consider themselves to be more than moderately competent. When it comes to management of their data for the purpose of applying AI, there was often an acknowledgement that they have a lot of work to do to be absolutely ready in data terms for implementing AI in their organizations. They have volumes of data, but most have historically not recognized data as an enterprise asset and lack the structures and mechanisms that enforce strict data managment. The outcome of this legacy is that data quality is not at required levels, data stewardship is still evolving and infrastructure is still being altered to enable dynamic access to data across the organization. There is general recognition however of the important role that well organized data plays in applying AI at scale.

> **Collecting data in a clean manner is now everyone's challenge.**
>
> **— Careem**

What to learn from AI leaders:

1. **Make sure that the value of data is understood and prioritized throughout the organization.**
2. **Engage the C-suite in defining data governance and strategy - it is key to getting AI right.**
3. **Build your data structure to embrace unstructured data, also from external sources - advanced companies indicate that you may soon need it.**

3. AI Leadership

The ability to lead an AI transformation from top to bottom - by articulating a vision, setting goals and securing broad buy-in across the organization

As with any corporate transformation, the foundation for successful deployment of AI is executive leadership buy-in and sponsorship. The C-suite must be aligned in what they want to achieve, and AI must be placed on the strategic agenda to ensure that AI efforts are an integrated part of the company's overall strategic goals, that capital is allocated, and employee time is dedicated.

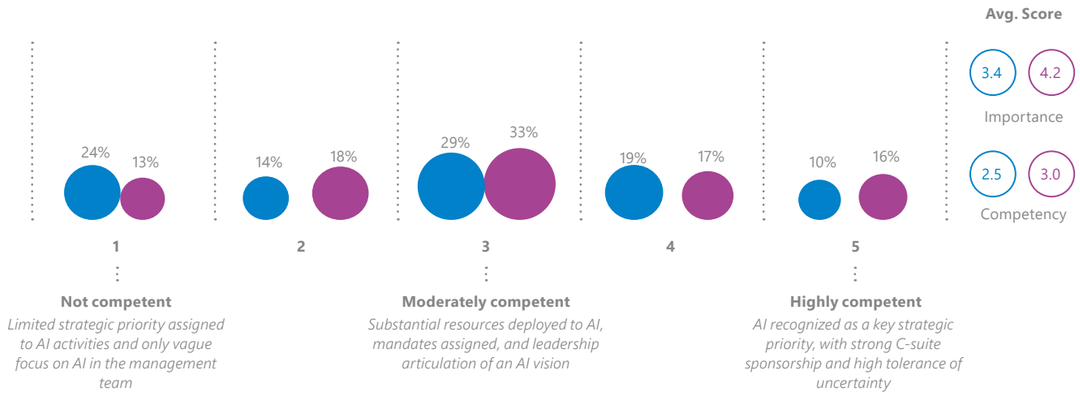
AI Leadership among the lowest competency of all capabilities
Given the relative importance of AI Leadership (avg. 4.2 across all sectors), it is interesting to see that business leaders self-assess their level of competency as among the lowest of all eight AI enabling capabilities, with an avg. competency of only 3.0, and 64% of respondents state that their companies have moderate, little or no AI Leadership competency. Many executives are realizing that business acumen is not in itself sufficient for comprehension of how AI is impacting the business. As AI technologies become increasingly complex, leaders must be able to launch, support and, where necessary, challenge relevant AI initiatives against strategic business imperatives. The disruptive potential that companies believe AI will have also means that leaders should anticipate and prepare for a broader change management exercise aimed at embracing the change from AI on multiple levels.

Significant variation in AI conversations from top to bottom
Interestingly, data reveals that AI is considered an 'important topic' on the C-suite level amongst 80% of the companies surveyed. However, less so on the Board of Director level, where it is only considered an important topic in 37% of companies, and even less so on the operational employee level, at 26%.

We observed in the interviews that companies very rarely have AI capable leaders across the Board of Directors, Executive Management, and Functional Management layers. Senior AI leaders may sometimes be found on one of these levels, but rarely with any speaking leadership colleagues to challenge their ideas. This leadership vacuum was often pointed to as an issue from lower level AI experts.

> **There is a growing interest in AI in teaching and research. This is considered a big advantage for our university and this should be utilized to build capacity in this field and to increase the awareness about the benefits of AI.**
>
> **— Jordan University of Science and Technology**

A large proportion of companies consider themselves to have limited or no AI Leadership competency
How competent is your company within AI Leadership?



Note: Remaining percent are 'Don't know' responses

Accepting loss of control
As new technological opportunities foster innovative, dynamic business models, organizations will need to tear down silos to become more agile and collaborative. To achieve this change, it is paramount for leaders to create and convincingly articulate a vision, so stakeholders understand the bigger picture.

A general characteristic of this challenge is that leadership needs to accept that it will lose some control. Projects will increasingly be explorative, bottom-up and have less certain outcomes, requiring leaders to be ready to adjust the overall direction of the company more frequently. Increasingly, AI projects will rely on open source code and off-site cloud solutions, building on collaborative capabilities outside the company.

Jordanian companies scored lower in AI leadership capability
Competency in terms of AI leadership is being demonstrated in pockets, with 29% of companies rating themselves as highly competent or just below, whilst on the other end of the spectrum 38% rank themselves as below par in AI leadership. Many executives are still building their knowledge and understandng of AI and related emerging technologies, and find that articulating an integrated strategy that marries AI capabilities and business imperatives remains a challenge. In a market where AI adoption is very immature, there is also a shortage of progressive reference sites and leadership role models that set a high bar and against which executives can benchmark themselves.

What to learn from AI leaders:

1. **The organizational transformation driven by AI will be continuous - this requires seeing AI as a process, not a project.**
2. **Leadership must be accustomed to AI technologies to understand how it will affect the company.**
3. **Articulating a clear AI vision is key to achieving buy-in and motivating exploration of use-cases with uncertain outcomes.**

> **We need to invest on data governance because with quality data there is no AI.**
>
> **— Emaar**

4. Open Culture

Creating an open culture in which people embrace change from AI, navigate confidently in uncertainty and ambiguity, work to break down silos, and collaborate seamlessly across the organization

New technologies have often disrupted how work is conducted. AI is no different. Establishing an open, collaborative culture to minimize resistance and enable human performance can prove efficient to prepare the organization for transition. However, this may be difficult, as the magnitude of impact driven by AI can imply a fear of uncertainty, ambiguity, and a general resistance to change.

Risk to employees less of a concern among most advanced companies

Companies reported that employees generally are still uncertain about their attitude towards AI. Although they may have a generally positive attitude towards the principles of AI, the open and supportive attitude wavers, and in many cases reverses, once new technologies start impacting the way work is done.

To achieve buy-in, business leaders must make the changes due to AI tangible to reduce organizational uncertainty. However, companies expect a significant impact from AI which will drive a fundamental transformation and increasingly assist in tasks previously performed by humans.

Regardless of whether companies rated themselves as advanced or not, 30% still raised culture as a major concern, implying that even as companies mature in AI, fostering and growing an open culture will remain a long term agenda item for executives.

Competency gap still noticeable

There remains an appreciable gap between importance (avg. 4.0) and competency (avg. 3.1), as creating an Open Culture is one of the capabilities where business leaders feel much work needs to be done, specifically in regions where a culture of 'knowledge is power' exists and therefore knowledge isn't always freely shared.

An obstacle mentioned by many respondents is the ability to work collaboratively across the organization despite AI most often being put to use in quite narrow use-cases. With benefit areas being limited to specific domains or functions, it is often not seen as relevant to involve the organization in a broad and collaborative approach on AI.

Furthermore, many companies have had difficulty in carrying out effective AI programs, which are closely modelled on the lean processes of startups. The primary purpose of such programs is to enable brief, agile projects to gauge the applicability of the AI use-cases, which requires a substantial change to company culture. Silos between departments in the company have to be broken down in order to promote a culture where AI teams work in conjunction with the rest of the company to create value, circumventing needless complexity and time-consuming processes.

Another issue relates to the concept of sharing data openly, when the value of the data remains largely unknown until it has been treated, processed or combined with other datasets.

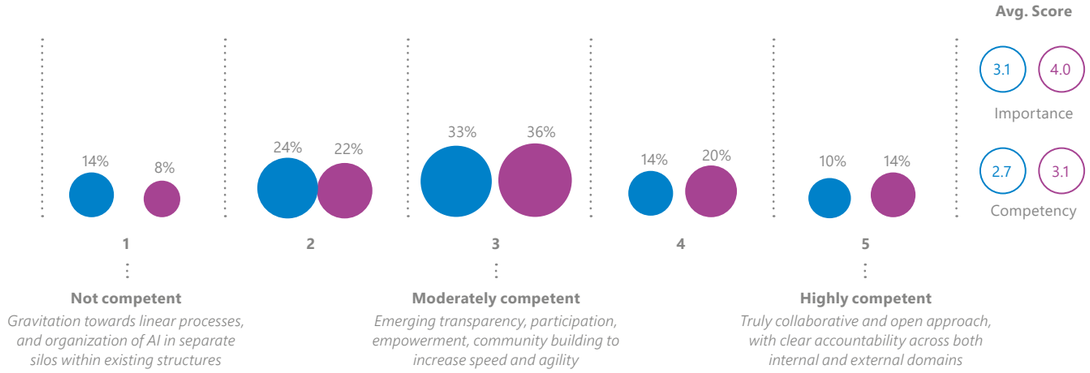
Cooperation across the organization

Many of the most advanced companies that have been able to produce several AI projects have also managed to establish links and cooperation across the organization. These cases indicate that the benefits of an open work culture far exceed the difficulties and associated risks.

An obvious obstacle to an open culture is the fear of job losses with the introduction of AI. According to respondents, the fear of workforce redundancy has some merit, but the concern should not overshadow the significant benefit potential of AI. A pivotal task for company leaders is to proactively articulate a tangible vision for AI initiatives. This will make it easier for employees to understand the AI opportunities on a personal level, and thereby embrace the change ahead.

Most companies rate themselves moderately competent in Open Culture

How competent is your company within creating an Open Culture?



Open culture still a challenge in Jordan

Fourth from the top (an average of 2.7 out of 5) in Jordanian companies, this competency scored 24% at above moderate competence, however the average is brought down by a larger aggregate of 38% ranking themselves as below moderate competence. Although there is significant 'buzz' and excitement around AI, executives highlight the fact that most rank and file employees are not suitably engaged and empowered to maximise these opportunities. Some organizations highlighted their efforts to create a culture that embraces AI and is willing to experiment, but this is hampered by employees not having time and a suitable environment to do so, as they are fully occupied in daily operational activities. Executives will need to create the 'space' for the open culture to take root and grow if they are to realise the AI opportunities at hand.

What to learn from AI leaders:

1. **Establish cross-organizational projects to foster collaboration and learning across functions.**
2. **Ensure employee buy-in by being open and clear about on-going projects and desired outcomes.**
3. **Ensure that governance structures support collaboration through projects co-owned by AI experts and business leaders.**

"Our biggest challenge is the fear of negatively impacting employment.

— Jordan Ministry of Labor

"When people think AI, they still by default think IT.

— Jordan Ministry of Energy and Mineral Resources

5. Emerging Technology

The organization-wide ability to continuously discover, deploy, and create value from intelligent solutions, applications, and data platforms

Evidence of the rapid pace of technological change is plentiful in today's digital world. What we have seen is that there is a definite correlation between being ahead of the pack with AI and having a wider technological adoption. That AI benefits from being able to identify and implement emerging technology may seem intuitive and obvious, yet finding the right formula is no trivial exercise.

How strong is your tech radar?
With an average score of 3.3, the ability to explore and implement emerging technology is an area where business leaders perceive their companies to be relatively competent, second only to External Alliances.

One factor in working with emerging and rapidly developing technology to build a stack that is fit for AI is a well-calibrated 'radar' by which companies pick up on the trends outside of their own walls. Many companies mention that being unable to quickly integrate innovative trends and cutting edge technology due to the burden of legacy systems, siloed business units, and complex governance processes is proving a real challenge for their AI adoption.

While there is some truth behind such stereotypes, we also heard from several executives who have been able to build radars that pick up on what's happening in technology domains and applications. This continuous explorative process is serving them well to get an overview of workable AI solutions that could prove successful in production.

Do you enable or hinder innovation?
Once companies are able to selectively source new solutions from the outside world, the challenge is then how to enable them. This may be a case of actively encouraging enablement, or at the very least not hindering it. Many companies treat AI as a crucial piece of a wider digital puzzle, where dots need to be connected across technologies. This means that success with established technologies, from cloud and SaaS platforms to getting the basics right with analytics, is key to building on what is already there.

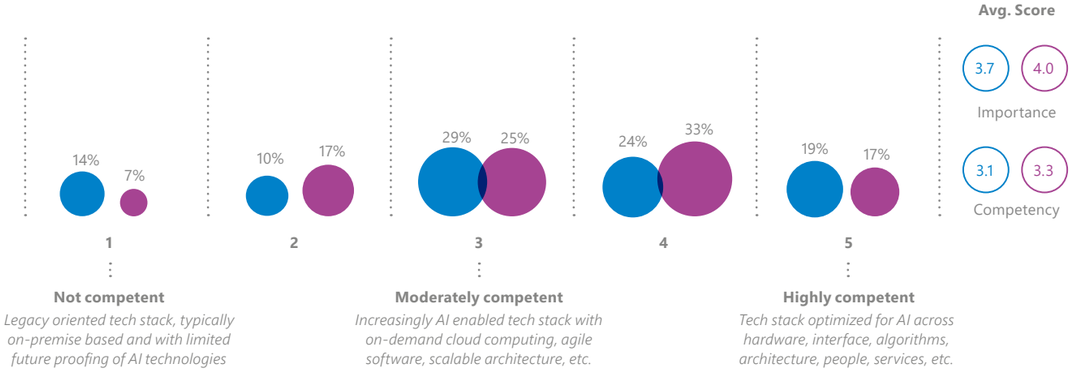
Working with emerging technology also relates to agile development and the ability to trial, test and experiment in iterative, short cycles. This kind of agile culture allows companies to work with less stable, untested technology. Enabling innovation requires an outlook from the very top of the organization that accommodates longer investment horizons and at times uncertain financial returns. This is particularly key when working with AI technology that, according to the executives, is often not as mature as the digital solutions deployed for other purposes.

Not all that glitters is gold
Despite the need to explore and navigate a tech sea characterized by uncertainty, a recurring theme when interviewing executives is the importance of balancing the excitement of new technology and commitment to an innovative mindset, with one foot that is planted firmly on the ground.

Seeing past the hype, remembering the business model, and not wasting finite resources on every shiny object is also important. In other words, remembering as a leader that while experimentation is crucial, all that glitters is not gold.

> **Doing it isn't good enough, it needs to be right!**
>
> **— The ENTERTAINER**

Emerging Technology is the AI-enabling capability with second highest competence ranking
How competent is your company within adopting Emerging Technology?



Note: Remaining percent are 'Don't know' responses

The importance of execution
Finally, this capability is also about effective execution. Many companies we surveyed across the region had developed strong business cases supported by robust concepts and AI applications - on paper. But technical limitations tend to get in the way of implementation. Employees with limited technical ability often need upskilling to work with new technology. IT and business may need to work closely together and speak each other's language to reach common goals. In addition, organizations need to learn to move more quickly and nimbly in this space - whether to complete an acquisition of new tech, to ensure compliance with IT standards, or simply to pair new tech with legacy systems. This ability is often also about speed, not far from the development pace that characterizes the emerging tech itself.

Jordanian companies scored high in emerging technology
The average score for Emerging Technology was one of the highest at 3.1 out of 5, and this capability scored best in terms of high competence, with 19% of Jordanian companies giving themselves that rating. 24% of companies scored just short of that and 29% believe themselves to be moderately competent. Companies reported good AI skills coming out of the universities, but this alone does not translate into use cases with practical applications for business. These technical skills need to be merged with business skills to create business-savvy AI professionals who can identify use cases and deliver solutions to support and enhance business processes. With executives starting to watch the AI market for exciting technologies that may be applicable in their companies, having the right type of skills to execute pilots and productionize them will be key.

What to learn from AI leaders:

1. **Build a radar to pick up on merging tech trends and connect them to market opportunities.**
2. **Look past the technology hype and remember the business model - it may likely need to change in the not so distant future.**
3. **Cloud solutions can be helpful to engage with multiple datasets across sources - increasingly a priority to capture value from new pockets.**

> **There is a shortage of data scientists (with both technical and application knowledge) in the region.**
>
> **— Zain**

6. Agile Development

An experimental approach in which collaborative, cross-functional teams work in short, iterative project cycles to effectively progress AI solutions

Considering that many AI technologies are still in their infancy, working with them is far from plug-and-play. To overcome this, many of the companies that are successfully working with AI tend to take an agile, iterative approach to projects. With this approach these companies greatly increase their ability to explore AI potential, owing to a drastically reduced project cycle time and dynamic risk reduction. Short project cycles allow project teams to receive constant feedback on what works and what does not, to continuously steer the direction of the project. This creates a process centered on learning and experimentation, helping to build internal knowledge and capabilities.

Most advanced companies deploy top down or via a hybrid model

With an average competence level of 3.0, Agile Development is an area where companies are self-reported to be reasonably skilled. Quickly establishing proof of concept is key to organizational buy-in, and many companies report that an agile, iterative approach helps them build evidence and proof in a fraction of the time it takes for a more traditional project.

This has great significance, as they find a tangible proof of concept is instrumental in achieving buy-in and understanding from the wider organization. Efforts to develop proof via agile development processes are often orchestrated by a central unit that collaborates with business units to identify use cases. Of the most advanced companies, 82% deploy AI into the organization via top down only, or a via hybrid approach of top down and bottom up. Whether these central units take a leading role in pushing the agenda, or instead focus on gathering knowledge and experience from already existing efforts that are decentralized in the organization, varies from company to company.

Agility provides the opportunity for informed changes of direction

Taking an iterative approach can also help mitigate risks. Frequent feedback loops allow the project team to better identify, understand, and correct undesired outcomes before the AI application is put into production, potentially doing harm. This flexibility does not only apply to risks - agile projects can generally use ongoing knowledge and experience to make informed changes of direction and avoid the 'black box' syndrome.

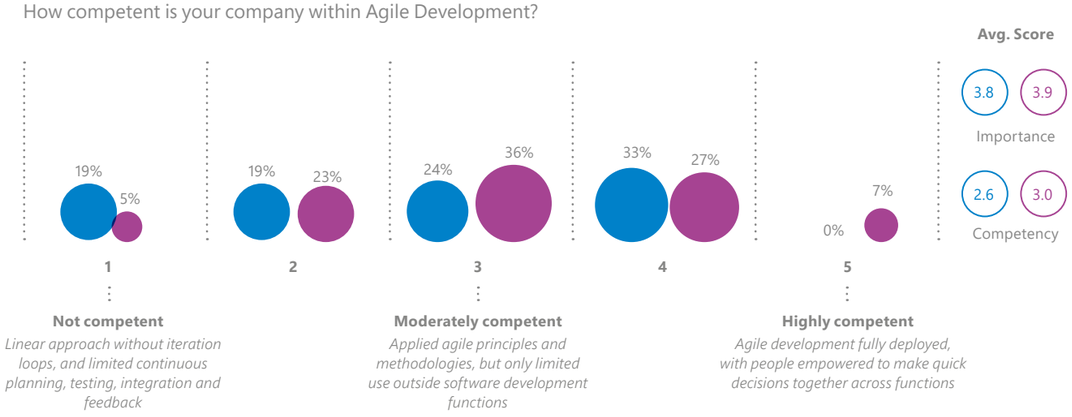
In contrast to agile projects, 'big bang' projects are more destined to fail, as they skip the learning process and lack the important feedback loop pivotal to developing good AI solutions. The world of AI is simply too complex for humans to foresee potential issues, and therefore an agile approach is infinitely better.

Implementing AI is almost an art, not a science.

— The ENTERTAINER

Companies seem relatively competent within Agile Development

How competent is your company within Agile Development?



Note: Remaining percent are 'Don't know' responses

Agile development new to many business departments

Most companies fully understand the need for agile development, but few reckon that they have the necessary capabilities for it. Working in an agile manner is very different from what most organizations are accustomed to. While a department running an AI project might be familiar with an agile approach, the vast majority of project teams consist of people from other parts of the business. Several IT and AI departments indicate that this collaboration can be difficult, but still see it as pivotal to drive value from the projects. Getting the business accustomed to working in an agile manner is not easy, as it requires acceptance of new ways to govern and evaluate projects.

The outcome of agile projects is typically less predictable than for traditional projects, and for stakeholders to fully embrace an agile approach, they have to accept this randomness and recognize the value of learning.

Agile development follows a different pattern

This capability was rated in the bottom 4 out of 8 at an average score of 2.6 out of 5. This was also the only capability where no companies at all consider themselves highly competent, yet 33% rate themselves just below that and 24% consider themselves moderately competent. The not competent and just above not competent ratings were 19% and 19% respectively, indicating that this is an area where many companies are not confident at all. This is not entirely unexpected, as Agile structures and culture normally arise in more mature environments and follow the other 'formative' capabilities over time. The expansion of pilots and proofs of concept in Jordanian companies will encourage the adoption of an agile development approach, where rapid assessment of viable products will need to be produced to confirm executive confidence in the AI journey.

What to learn from AI leaders:

1. **Agile development is effective in engaging people across functions, fostering collaboration, and bridging tech and business.**
2. **Iterative processes promotes quick internal learning due to their frequent feedback loops.**
3. **Fast experimentation with pilot projects and use-case testing can quickly show how to create value through AI.**

We need the right 'dataset', 'skillset' and 'mindset' to realise the value of AI.

— Majid Al Futtaim

7. External Alliances

Entering into partnerships and alliances with academia, solution providers, and AI specialists to access technical capabilities, best practices and talent

AI leaders are increasingly opening up to create collaborative alliances with external partners, enabling them to tap into a significantly larger pool of capabilities and talent, and to reduce the time it takes to develop or deploy working solutions.

This trend seems to be the new modus operandi, unfolding across markets and sectors. It is also the capability with the smallest gap between perceived importance and competence level among the participating companies.

Technology, data, and service delivery partnerships
Development of AI and delivery of related projects are most often done with a mix of internal and external stakeholders. The rationale is multifaceted – some companies are simply struggling to obtain the needed talent, whereas others see a partnership approach to be a faster, more flexible solution. These external alliances typically come in two forms: being focused on technology and technical AI know-how, or focused on strategy and business development.
To address one of the biggest prerequisites of working with AI, access to large amounts of data, companies state that they are increasingly looking to entering into data partnerships where they either buy or exchange data with other parties. This is a way for companies to get hold of data that they are unable to capture themselves, or simply a way of quickly increasing the size of their datasets.

Others report that they look to use pre-developed, out-the-box algorithms, in order to increase the speed of bringing quality solutions into production.

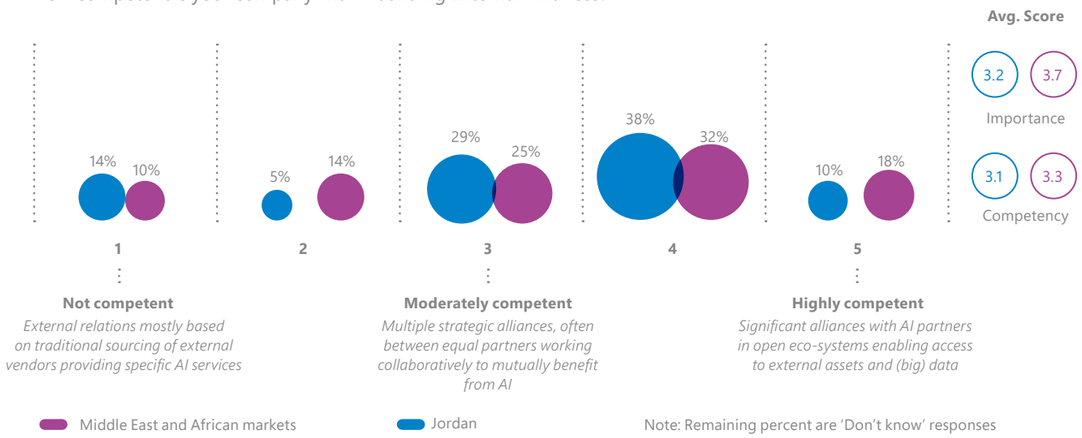
Academia playing a more noticeable role in collaborating with companies
It is becoming increasingly common for companies to enter into partnerships with universities in order to position themselves within AI and get access to crucial knowledge. Companies also see this as a way of establishing a pipeline of AI talent already familiar with their business and the problems they face. Some of the more ambitious companies have a strategy of positioning themselves within AI, comprised of active conference participation and multiple university partnerships in which they actively participate in developing courses and programs.

Documentation of code is proving a challenge - also to externals
The lack of code documentation for self-learning algorithms was often mentioned as a very practical issue with AI in general. This led some companies to prefer internal teams and individuals in order to ensure that despite poor documentation, the knowledge about the code at least stays in-house.

Solution offerings in the market must be very mature before companies invest in it, there is a lot of Powerpoint and not enough working solutions with proven examples.

— Arab Potash Company

Companies generally consider themselves moderately to highly competent forging External Alliances
How competent is your company within building External Alliances?



External alliances most competent in Jordanian companies
Due to the historical shortage of technical skills and lack of knowledge around many emerging technologies, Jordanian companies have a strong history of engaging with a wider ecosystem of vendors and advisors through variance alliance structures in order to access the required intellectual property and execution capability. This heritage is reflected in the survey results with 48% of Jordanian companies rating themselves as highly competent, or just below highly competent in making use of external alliances. In addition, 29% rated themselves as moderately competent, and this capability had an average score of 3.1 out of 5 and was the highest ranked capability overall. Having this strong capability will definitely support executives to kick-start AI programmes, as they are able to quickly bring in required capabilities from alliance partners whilst their internal capacity is grown.

What to learn from AI leaders:

1. Make sure to have internal people in the receiving end before widely engaging with external partners.
2. Academic partnerships are an increasingly sought after way to access innovative eco-systems, gain new insights, and explore emerging AI opportunities.
3. Partnerships can pose a challenge to many business processes; consider involving key functions early, like legal and procurement, to ensure a productive partnership structure and effective collaboration model.

We need more business problems and data to help teach the students how to apply their technical skills.

— Heriot-Watt University

8. Emotional Intelligence

Applying behavioral science to understand and mimic human behavior, address needs, improve human-machine interactions, and ultimately create more human near applications

AI has for long focused on cognitive capabilities and skills within mathematics, statistics and logical reasoning. Adding human emotion and intelligence, these capabilities move to a new, more complex level: the understanding of human behavior, and the ability to interact accordingly with technology.

We have to show the benefits first and build trust.

— Jordan Ministry of Labor

Changing the way people interact with technology

One of the limits of traditional AI has been the inability to understand human traits such as emotional state, for instance exhibited in writing, physical condition, or tone of voice. With AI's cognitive intelligence capacities within reach, machines are increasingly able to sense, recognize, and decode human traits. This holds the potential to fundamentally change the way people interact with machines, making technology capable of handling more complex tasks and ultimately augmenting humans to an extent previously unachievable.

Emotional Intelligence in its infancy

Except for advanced companies, survey results indicate that companies view the adoption of emotional intelligence in AI processes as the least important capability, and the one where they have the lowest competency. When asked to address why this is, companies across sectors and markets note that they are still at a relatively low maturity stage where more immediate requirements such as Advanced Analytics, Data Management and AI Leadership are more relevant and prevalent. However, when taking a deeper look at the companies that have assessed themselves to be 'Advanced' in terms of general AI maturity - meaning that AI is actively contributing to many processes and enabling quite advanced tasks in the company - it is interesting to see that they perceive the Emotional Intelligence capability as more important with a score that is noticeable higher than the average score for all companies.

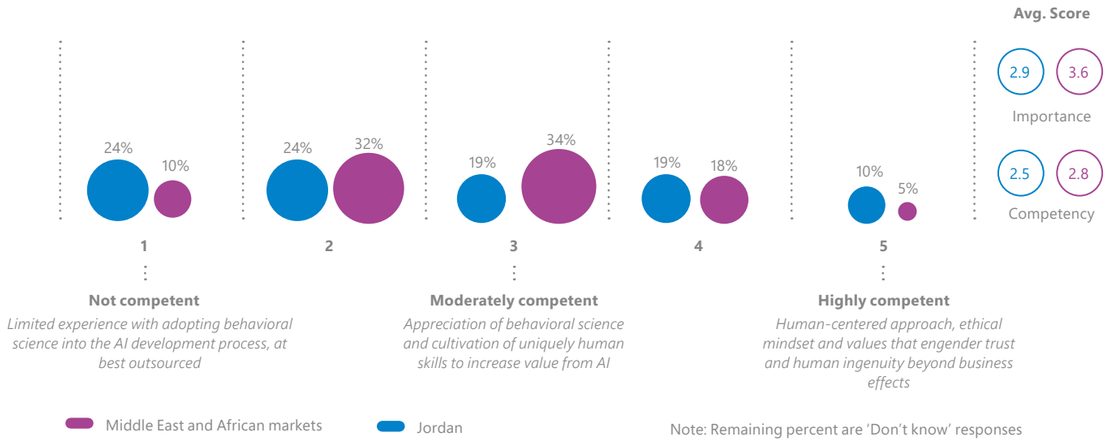
Many advanced companies perceive this to be either 'very' or 'highly' important. Notably, these companies come from five different markets and a wide variety of industries, including Health, Financial Services, ICT & Media, Retail, and Services & Hospitality.

Value in customer-facing applications

The need for behavioral science to understand human needs is expected to increase with the integration of AI in smart devices, and in customer facing applications such as chatbots, robo-advisors, customer enquiry processing, etc. The most advanced companies' AI technologies are beginning to decode human emotions from text, such as irony, anger, and frustration. This will obviously become more valuable as it is increasingly applied in customer-facing solutions with the ability to learn and improve.

Companies consider themselves least capable within Emotional Intelligence

How competent is your company within applying Emotional Intelligence?



Human centrism requires strong leadership

While emotional intelligence holds great potential that could lead to early adopters gaining a competitive advantage, long-term success is dependent on not only technological development, but also leadership. Leaders must drive the transformation that will make humans comfortable with intelligent technology, as a prerequisite for harvesting its potential benefits. What the most advanced companies have shown is that this transformation must augment human ingenuity to become truly effective.

Jordanian companies finding Emotional Intelligence with AI a challenge

Ranked one of the lowest with an average score of 2.5 out of 5, Emotional Intelligence integration with AI solutions remains an opportunity for improvement in Jordanian companies. 10% of the companies rated themselves as highly competent, but a more significant 48% rated themselves as not competent or only slightly competent. Many cited the nuances of integrating human traits into their more cognitive solutions as still being significantly beyond their current focus and that this capability will only become relevant for them once they have a significantly larger base of AI solutions across the spectrum.

Change management needs to be top down and bottom up.

— Amman Municipality

What to learn from AI leaders:

1. **The most advanced companies are putting emotional intelligence to use within their AI applications, despite its relatively infant stage.**
2. **Companies must develop their behavioral science capabilities to mimick human behavior and translate it to technology.**
3. **Many have virtual assistants, chat bots, and NLP as a powerful way to get started with building emotional intelligence into AI solutions.**

We see AI as the holy grail of digital, it sits on-top of everything else. It's a state you can never achieve but always work towards...

— The ENTERTAINER

We must not lose "boots on the ground", AI should support not replace them.

— Amman Municipality

University of Jordan

Implementation of Artificial Intelligence and smart services has been a priority for the University of Jordan for over three years across the entire organisation, including executive and all levels of management.

The journey started with creating and enabling insights through business intelligence internally and led to early innovation with AI. For example, the university developed a smart matching and validation model for dealing with the many variations and special character usage in student names.

Currently the university's AI activities are focused on the student and how AI can be used to enhance the student learning experience, but the future will include internal transformation across university operations and administration themselves.

Implementation of Artificial Intelligence and smart services has been a priority for the University of Jordan for over three years.

For AI to be successfully implemented the university believes it is essential for it to have the right skills and an openness to new technologies and way of doing things across both the management organisation and faculty.

As they progress on their AI journey, internal education on how AI works and can be applied will also be critical to ensure users have patience and understanding of what the technology can and can't do. The leadership need to be not only bought into and actively support the deployment initiatives activities but crucially take ownership and make provision of the budgets required to implement and operate them going forward.

THE UNIVERSITY OF JORDAN

The University of Jordan (UJ), which was founded in 1962, has grown to become Jordan's largest and leading university excelling in pedagogy, research, and innovation. It offers a wide choice of academic programs for students who can choose from more than 250 Programs and 94 bachelors from 24 schools in various disciplines including Medicine, Dentistry, Science, Agriculture, Engineering and Information Technology.

What next?

The university's vision is for artificial intelligence will be everywhere, it will allow it to transform what it does now and enable new ways of doing things. The university will continue to follow a centralised deployment strategy focussed on student benefits and providing relevant and actionable insights to the business, across all of the subjects taught, how the university teaches them and how it operates.

In the end all of the changes will benefit the students.

All technology has risks, there are no new risks with AI just new benefits.

Fast Forward

How to get started and take AI to the next level?

1. Choose a step-by-step approach in getting familiar with AI

Given the wide scope of AI and variations in use cases, it is key to start out by identifying what problems to solve and what opportunities to pursue. High level prioritizing between engaging customers, optimizing operations, empowering employees and/or transforming products and services adds clarity, is helpful to structure the discussion on a strategic level, and ensures a step-change approach to taking the company to the next AI level. Identify the problems you aim for AI to solve, prioritize the value with business owners, and acknowledge the capability gaps to get there. You need to get on the AI train, but do not jump on the AI wagon blindly. AI should serve your business plan, not vice versa.

Read more in the blog on Linkedin about "AI readiness in 2019 and beyond" Samer Abu-Ltaif, Microsoft President, MEA

2. Display executive leadership and approach AI from a position of strength

Leadership comes from the top, also in the case of AI. For this to happen, executives must understand AI essentials and strategic perspectives, and they must communicate a clear AI ambition to the organization. AI leaders must actively sponsor and mobilize AI adoption on all levels, from the Board and Executive levels, through Management and the operational employees. Staying ahead in the accelerating AI race requires executives to make nimble, informed decisions about where and how to employ AI in their business. When doing so, look to strongholds before bringing in the AI 'twist'. Amplifying existing company strengths is an excellent way to catalyze motivation and internal support.

Read more customer stories to see how others are using AI to transform their business, and learn from Microsoft Research on how AI is solving the most pressing challenges

3. Hire new skills ahead of the curve – or focus relentlessly on training existing talent

A key challenge for putting AI to productive use and accelerate intended outcomes is the war for skills and talent. This not only relates to data scientists and software engineers, but also to skill sets and experience within human and behavioral science. Opting for a follower strategy and being late to the game can prove risky, as talent seeks to go where talent is already. If aggressive poaching for insourcing talent is difficult to embrace, then work bottom-up by training the engineers you already have on the new AI paradigm and collaboratively ride on the backs of the others. Regardless of strategy, focusing relentlessly on building required skills and talent is key to staying ahead and progressing along the learning curve.

Learn more: Train your teams through Cloud Society, a free online learning platform with a range of interactive modules on Cloud and AI technologies.

4. Build a data strategy and technology stack purposefully fit-for-AI

Training your AI products essentially requires significant data. Useful data. Valid data. Establishing a solid data strategy and practice in your organization to proficiently acquire data, identify data, clean data, measure data, and manage data will ultimately make your organization flourish with AI. Build your AI resources around data engineers who organize the data, data scientists that investigates the data, software engineers who develop algorithms and implement applications. Make sure that your structure and governance harness the power of data, and that your technology stack across products, solutions, and applications nimbly enables your AI priorities. When doing so, remember that your business model is likely to change.

Read more about how to build a flexible platform and portfolio of AI tools and next generation smart applications where your data lives - whether in the intelligent cloud or on-premise
Four ways to take your apps further with cloud, data, and AI solutions from Microsoft

5. Beyond all, engender trust and enable human ingenuity

When designed with people at the center, AI can extend companies' capabilities, free up creative and strategic endeavors, and help achieve more. Humans are the real heroes of AI – design experiences that augment and unlock human potential. Opt for a "people first, technology second" approach. This entails designing AI for where and how people work, play and live, bridging emotional and cognitive intelligence, tailoring experiences to how people use technology, respecting differences, and celebrating the diversity of how people engage, Thereby putting people first, reflects human values and promotes trust in AI solutions.

Learn more in the Microsoft Trust Center and the book 'The Future Computed' by Brad Smith and Harry Shum from Microsoft on artificial intelligence and its role in society

Designing for people

At Microsoft we believe that, when designed with people at the center, AI can extend your capabilities, free you up for more creative and strategic endeavors, and help you or your organization achieve more.

The following principles guide the way we design and develop our products:

- Humans are the heroes. People first, technology second. Design experiences that augment and unlock human potential.
- Know the context. Context defines meaning. Design for where and how people work, play, and live.
- Balance EQ and IQ. Design experiences that bridge emotional and cognitive intelligence.
- Evolve over time. Design for adaptation. Tailor experiences for how people use technology.
- Honor societal values. Design to respect differences and celebrate a diversity of experiences.

Innovation is what creates tomorrow.

Learn about our AI platform to innovate and accelerate with powerful tools and services that bring AI to every developer.

Explore Intelligent applications where you can experience the intelligence built into Microsoft products and services you use every day.

Learn about AI for business. Use AI to drive digital transformation with accelerators, solutions, and practices that empower your organization.

Who to Contact

from Microsoft

The team in Jordan that can empower your company to achieve more with AI

Wale Olokodana
Intelligent Cloud Business Group Lead
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Wale Olokodana is an experienced technology professional with deep financial and business acumen derived from 17 years in IT industry, with a career spanning sales, business and technical leadership as well as, technology consulting and advisory. He has had a successful career in Microsoft spanning over a decade leading teams and working with customers across multiple geographies and languages within Africa. He is currently accountable for the end to end Microsoft Azure business in the region including strategy, planning, execution, advocacy, governance and learning. Wale has worked with leading technology and telecommunications companies in Nigeria such as Allied Computers, Resourcery Limited and MTN Nigeria. He holds has a Bachelor's Degree in Computer Science and Engineering from Obafemi Awolowo University Ile-Ife as well as other professional certifications.

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Hussein has 30+ years' experience in general management, commercial management and business development across various industries and sectors including Telecommunication and ICT, Real Estate, Manufacturing and services. Hussein joined Microsoft in 2013 and held management roles since then, where he created transformational and leadership impact on both business and talent development. As Country Manager, Hussein overlooks end to end commercial and non-commercial operations. He is responsible for all business activities that are generated and executed within his region including public sector and commercial domains. Previously he was the General Manager of Abu Khader Automotive and Director of Sales and Customer Care at Zein. Hussein has a Bachelor of Engineering, Mechanical Engineering from University of Toledo.

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Chrystèle Dumont is the Regional COO and CMO at Microsoft Corporation for North, West, East, Central, Southern Africa, East Mediterranean and Pakistan-spanning 67 countries. She is in charge of end-to-end Strategy, Planning, Operations, Marketing and Communications covering all Microsoft businesses namely Apps Infrastructure, Data & AI, Modern Workplace and Business Applications and for all commercial customer segments: Enterprise, Public Sector, Small and Corporate businesses as well as the Partner organization. She has 20+ years' international experience in Business Development, Channel, Sales and Marketing, People Management in B2B mainly in the IT industry. She joined Microsoft in 2006 and held several positions in marketing and business development mostly in the Middle East and Africa. Prior to that, she had 7 years of Sales and channel management in Europe. Deeply driven by learning and curiosity, she is committed to an always on learning and open feedback culture through her management & leadership style to develop talents and drive for results.

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EY-Box is focused on digital strategy, growth ventures, innovation architecture and tech-led transactions. Thomas works with leading companies to uncover plausible futures, launch new businesses, and rewire their core through data and digital in the search for new profit pools and business models. He serves on the board for several entrepreneurial growth-stage businesses.

Thomas was responsible for the methodology development of the AI study and led a similar study across 15 countries in Western Europe.

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Ellen holds a PhD in technology, policy, and management from MIT. She holds masters degrees in engineering man-agement and system design from MIT and in applied statistics from the University of Oxford. Ellen advised this study on research design, methodology, and analysis. Ellen is engaged in the EY EMEIA Center of Excellence on innovation, analytics, and digital. She has worked with global organizations and start-ups, having recently served as the head of R&D for a precision Ag startup that uses AI to assist farmers.

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He has over 20 years experience in IT and data management fields across various industries including Financial Services, Telecoms, Parastatal, Mining&Metals, Manufacturing and Fast Moving Consumer Goods. James is responsible for this study in the Middle East and Africa.

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