Viewpoint: Artificial Intelligence Government (Gov. 3.0): The UAE Leading Model

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Abstract

The United Arab Emirates (UAE) is the first country in the world to appoint a State Minister for Artificial Intelligence (AI). The UAE is embracing AI in society at the governmental level, which is leading to a new generations of digital government (which we are labeling Gov. 3.0). This paper argues that the decision to embrace AI will lead to positive impacts on society, including businesses, organizations and individuals, as well as on the AI industry itself. This paper discusses the societal impacts of AI at a macro (country-wide) level.

1. Introduction

The aim of this paper is to shed light on the positive macro-societal impact of AI adoption in government. Pessimistic voices and opinions surround AI in the media and in research communities concerning AI. We consider Epstein's (2015) and others' perspectives that the depiction of AI in the media is a "mixture of flawed entertainment and fear". She showed that the depiction of AI in the popular press has done little to enhance its reputation, and has exaggerated both its negative and its positive impacts on human society. This paper will not focus on the negative social/ethical impacts associated with using AI, which have been addressed intensively in the literature. Rather, this paper takes a viewpoint that aims to address the socially positive impacts of AI relative to a specific country (i.e., the UAE) that also have a global economic impact.

The second section of this paper starts with introduction of the UAE AI strategy and projects. Section three discusses three positive impacts of moving toward Gov. 3.0 (AI government), followed by the author's recommendations for government policy/decision makers and researchers regarding the use of AI in government.

2. UAE AI Ministry

The UAE government always aims to be ahead of other governments in achieving high efficiency and excellence in public services. Digitally enabled public services have evolved over three stages of development. A successful implementation of e-government services was soon transformed to a mobile government (smart/m-government) platform. Most recently, the UAE has shifted to artificial intelligence-enabled services, which necessitated the establishment of the Ministry of AI. It is telling that the UAE did not choose to call it the Ministry of IT or ICT, as is common in many other countries around the world. This sends a clear message that the future of services is to be enabled through AI applications and systems. Thus, AI is a core field and the basis for any technological solutions that will be used for nearly all services and sectors. The UAE AI vision and strategy for the next 15 years (UAE

Government, 2017) is to compete at the global level in developing and using AI tools, applications and systems. The UAE AI ministry first formulated its AI strategy in October 2017; it is the first such strategy in the world as no other government has yet given such high level attention to AI. Other developed countries (in North America and Europe) might set regulatory frameworks related to AI, but they have not yet appointed a minister for AI or formulated a national AI strategy that would make it a priority for future development.

A new generation of governments is on the horizon, which warrants future investigation and exploration by researchers. We propose labeling this new generation "Intelligent Government"—the third generation (Gov. 3.0) of digital government.

In the short term, the UAE AI strategy aims to increase government performance, productivity, and efficiency at all levels and sectors (e.g. saving 50% of annual costs using AI); to use an integrated smart digital system that can overcome challenges and provide quick and efficient solutions; to make the UAE the leader in AI investment in various sectors; and to create a new, vibrant market with high economic value. In the long term, it aims to achieve the objectives of UAE Centennial 2071 (which defines its ultimate goal to be the best country in the world by 2071).

In fact, the decision to create an AI ministry came after many AI projects and initiatives that were implemented by the government. The UAE has already used AI applications and systems in various sectors. For example, in security and police services, it developed a police officer robot. In Dubai, the Water and Electricity Authority employed a customer service robot and used a pilotless flying taxi. In the banking sector, AI applications (using natural language processing) were developed to respond to customer calls and inquiries regarding banking services. Other AI initiatives include the UAE's "AI and Robotics Award for Good", which was launched in 2015 to encourage innovative research and applications of AI (both locally and globally) to provide solutions for challenges faced by the UAE and world at large. It has also led to an increased awareness among the public of AI opportunities. In 2017, Sheikh Mohammed, ruler of Dubai and UAE Prime Minster, launched a "One Million Arab Coders Initiative" which aims to provide free training opportunity for Arab youth in computer programming, the language of the future digital economy, which is essential for developing AI applications and systems. Furthermore, the initiative will reward top students and instructors with incentives exceeding $1 million.

The UAE is a leader in pursuing the latest modern technologies and innovations in the Middle East region. With its recent appointment of a Minster for AI, it has become ahead of many developed countries in the world in this regard.

3. Social Implications

In this section, I will discuss the impacts of launching the AI Ministry and the transformation toward the third generation of digital government (Gov. 3.0).

3.1 New Jobs and Economy

It is forecasted that new jobs might be created as there might be a greater need for programmers and systems engineers to develop the many different AI systems and applications that are needed in every sector the government is interested in including transportation, health, space, renewable energy and water, technology, education, environment, and traffic. Manufacturing might also be impacted as the quantity of systems (e.g. robots) required scales to cover the country and region, as opposed to simply

filling the needs of a particular company or segment of the market. It is expected that the move toward Gov.3.0 will lead to growth in the digital economy (including hardware and software). This differs from the e/m-government, which is mainly software-based. In the last decade, there has been significant development in the software industry (mobile applications) while the hardware industry declined. Moving toward Gov.3.0 will boost both the hardware and the software industry, as they are both integral parts of most AI systems used in many sectors, such as health, transportation and space, water and energy. This might also lead to increased revenue from AI production and sales, which also ultimately helps to develop the country's economy. There will be a shift from an industrial economy to a digital economy. Sooner or later, many other countries are expected to recognize the importance of AI in developing modern technology-based cities and intelligent governments (GOV. 3.0). When they do, they might also establish an AI Ministry or implement related programs/initiatives. Thus, the global market for AI applications and systems is expected to increase and the global revenues from AI grow. In 2017, the global AI market was expected to be around 2.42 billion U.S. dollars (Statista, 2017). However, with the transition towards Gov. 3.0, this number is anticipated to increase as new AI firms are established and existing giant technology firms (e.g., Google and IBM) are likely to focus their technology business on AI products to meet the market needs.

3.2 Impact on Education

In the UAE, there are around 76 accredited and licensed universities including international universities that have campuses in UAE (Ministry of Education, 2017). A search of each university's accredited programs reveals, however, that there is only one university (British University in Dubai) among them that offers a degree program in specializing in AI. To cope with future market needs and their vision, the government will need a new generation that has the knowledge and skills to design and develop AI systems, and not only consume these systems. Competence in this field requires deep knowledge and advanced skills obtained through dedicated academic programs. Universities will need to integrate new courses or offer new programs related to AI and its different subfields. Future generations might not fill traditional rolls in government anymore. They might still have jobs, but many of these jobs are expected to be related to AI professions, including a wide range of multidisciplinary areas. Furthermore, the universities' need of researchers and academic staff specializing in AI will increase as a result of offering specialized programs and courses. In the UAE, the AI field has not received focused attention from universities and computing curriculum designers, where at most students need to take only one course that provides an introduction to AI. In the past, the focus was on other areas of computing such as security, computer networks, information systems, mobile application development, and IT in general.

The need of specialized AI programs and professionals, as well as the UAE AI Ministry's need for AI consultants and experts will be met by global companies, research institutions, and universities that will provide the skills, knowledge, and expertise needed, at least in the early stages until a new generation of Emirati youth is ready and equipped with the required skills. Thus, a positive impact on the global external AI profession and market will also occur.

3.3 Achieving Happiness

One of the UAE's visions is to bring happiness to citizen and residents by providing world-class five-star services. The UAE was listed among the happiest countries in the world in 2017. It was ranked 21st happiest nation in the world and the first in the Arab world according to the UN World Happiness

Report (Helliwell, Layard, & Sachs, 2017). The UAE continues to strive to be number one in the world in this regard.

AI is expected to ultimately help to achieve this happiness goal. As services become digitalized and computerized, the amount of time, effort, and cost are reduced. Computerized services are also available at any time. AI applications and systems will be embedded in every aspect of people's lives, which is expected to cause their quality of life to increase as they gain access to more accessible, accurate, independent, limitless (as it does not rely on humans with limited capabilities) services, that have less human interaction where errors, bias, misinterpretation, misunderstanding, and other human communication problems abound. They are eliminated through the applications and systems (e.g. robots), which only work as they were designed. In addition, their ability to learn from their interactions with users exceeds a human's natural ability to learn, remember, and make decisions.

4. Conclusions

The AI Ministry should continue its work for the current and next generation to achieve its short and long term strategic goals. To do so, the Ministry should remain in place through any future government changes. The AI Ministry needs to facilitate knowledge transfer to acquire the required skills and expertise, especially in developing AI systems in certain complicated sectors. The AI Ministry, in co-ordination with Ministry of Education (MOE) needs to specify the AI subfields that are needed and urge the MOE to call upon local universities to offer the required programs. It also needs to organize international conferences, workshops, and exhibitions that assist in sharing AI research and development, tools, and products. It also needs to define a list of AI jobs that are needed and direct local people toward them. It will need to prepare people for them through specialized training or scholarship to study at top universities around the world. In addition to AI technical fields, this includes law and policy administration fields that will be needed by regulators/policy makers to be able to develop related AI regulations based on a strong understanding of the implications of AI development and use.

AI researchers might develop an AI society readiness framework which will assess the readiness of society (individuals and firms) to accept integrated AI services. Furthermore, future research is required to identify the characteristics of Gov. 3.0 (i.e. AI/ Intelligent Government), the third generation of the digital government, to show how it is different from e/m-government, and to identify the organizational and technical implications for the transition to the new generation.

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