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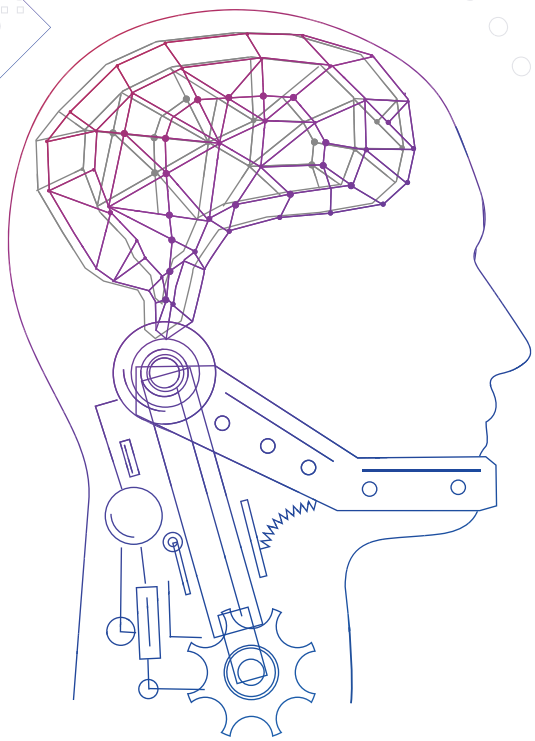

Robotics Integration

in The GCC Region

معًا للتغيير
Together for Change

P.O. Box: 76167 Manama, Bahrain
Tel: 17383833 - Fax: 17383839
www.bipa.gov.bh
@bipabh

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Introduction

ADDRESS BY HE, DR. RAED MOHAMMED BIN SHAMS, DIRECTOR GENERAL OF THE BAHRAIN INSTITUTE OF PUBLIC ADMINISTRATION (BIPA)

The Kingdom of Bahrain has made great progress in providing support to scientific research in public administration. It has assumed a leading role in the Middle East and North Africa by establishing the Middle East & North Africa Public Administration Research Network (MENAPAR), which takes pride in being chaired by the Kingdom of Bahrain. The Kingdom has also launched the Public Administration Master's degree program, the first professional and academic program of its kind in the region. The program is based on a needs assessment study and aims to fulfill the requirements of both public and private sectors.

The Bahrain Institute of Public Administration (BIPA) has succeeded in extending the horizons of collaboration and partnership internationally by launching the Public Administration Master's degree program. The program was motived by the recognition that keeping abreast of the requirements of human resource development is one of the most important aspects of the government work program. The degree also meets the requirements of leadership development and preparation of a second generation of leaders.

Linking academic knowledge to real-world practice is considered the most notable aspect of the Public Administration Master's degree program launched by BIPA in collaboration with several institutions including Aix–Marseille University of France, which is listed among the world's top 130 universities as per Shanghai Ranking, as well as the National School of Administration, which has produced global leaders and presidents of France. Strategic local partnerships have also been established with the University of Bahrain and Tamkeen. Thus, on the one hand, the program helps improve the quality of government services from public sector employees while, on the other hand, it develops these employees' performances. This will ultimately help improve the efficacy of government bodies.

The program seeks to develop the government cadres by providing them with the opportunity to sharpen their skills and capabilities. The program is also designed to develop a new cadre of civil service servants equipped with modern knowledge and best practic-

es in public sector management. It also aims to provide the government apparatus and public service employees with the required skills in major fields such as public policy making, public sector management, planning management and strategic change, state budget and public finance, partnerships between public and private sectors, contracts management, human resources management in the government sector, economy, policy and community in the Gulf Cooperation Council (GCC) region, leadership, and ethics in public service.

The Public Administration Master's is an integral part of the National Government Leadership Development Program, which focuses on the citizens. It also dovetails with BIPA's strategy, which builds on two key platforms in the field of research, namely providing support for evidence-based government policy making and problem solving through scientific research.

Through research and scientific studies developed by program graduates, today we look forward to linking those graduates with actual work in both the government and private sectors alike. The ultimate goal is to reach the highest levels of quality in providing government services to support the development aspirations of the Kingdom of Bahrain.

This technical booklet is a collection of the six best student articles regarding robotics integration in the GCC region. The articles discuss the students' views about the social and economic impacts of such integration and whether the impact is an opportunity or threat to the region's economy. The articles were chosen from the Masters of Public Administration program and were submitted for an assignment in one of the program courses.

Assignment Detail

By: Dr. Omar Al Ubaidly

Assignment: "Why Advanced Robots Are an Opportunity for the GCC Countries" OR "Why Advanced Robots Are a Threat to the GCC Countries"

Assignment Brief: This topic was selected because virtually no GCC relevant material is available, which forces students to apply the concepts that they learned in class and in their professional lives.

The topic is very important because a fundamental tenet of GCC economic visions is the transition to knowledge economies, as is the creation of job opportunities for GCC citizens. In this sense, robotics—which is a corollary of a dynamic, innovative economy—potentially both contributes to and undermines these goals. Moreover, as many students argue in their articles, GCC countries have a very unique labor market owing to the abundance of migrant workers. The implications of robotics and automation are therefore unprecedented to a certain degree and thus worthy of analysis.

Student Bios

Abdulla Al Hasan

Abdulla Al Hasan is a seasoned international executive with a career spanning multiple fields and industries, including investment banking and financial services, real estate development, special economic zones, management and business consultancy, consumer packaged goods, and oilfield services.

For the past two and a half decades, Abdulla has managed and directed businesses and investments for multinational companies including Fortune 100 and FTSE 100 firms such as Unilever, Schlumberger, and Man Investments, as well as regional companies such as Al Rajhi Group, Capivest Investment Bank, and the Savola Group. He also worked in the public sector for the Governments of the Kingdom of Saudi Arabia and the Kingdom of Bahrain.

Abdulla has taken up in-country assignments as board member, senior executive, and advisor with work stints in the UK, Italy, Egypt, Pakistan, India, Saudi Arabia, Bahrain, and the UAE. He has managed businesses and worked on projects located in Kuwait, Qatar, Oman, Turkey, Libya, Morocco, Tunisia, Iraq, Iran, Jordan, Lebanon, and the USA.

Dana Rabeea

Dana Rabeea has been a Senior Qualifications Specialist at the National Qualifications Framework (NQF) of the Education and Training Quality Authority since April 2014. At her current role, Dana is a part of the team that developed and implemented the NQF, which is set to revolutionize Bahrain's education and training system. In addition, she is processing applications for the Qualifications Placement and the Institutional Listing, through which she provides the necessary assistance and training to evaluators, educators, and experts. She received her B.Sc. in Business Information Systems from the University of Bahrain in 2009. She previously worked at University of Bahrain as an Information System Lab Instructor in the College of Information Technology, where she used to teach various computer software courses until April 2014. She has also worked in many academic and administrative committees, such as the Departmental Quality Assurance

and the Department's timetable committee. She also worked as an IT trainee at Bahrain Economic Development Board in 2008.

Her current job provides her with the opportunity to study and analyze qualifications from education and training sectors. Her research interest lies in business, information technology, and quality assurance of education and public administration.

Dr. Hana Kanoo

Dr. Hana Kanoo has worked as an economist with the Bahrain Economic Development Board (EDB) since May 2002. She holds a Ph.D. in economic growth from the University of Northumbria (UK) and specializes in the areas of foreign direct investment, productivity, and primary sector investment.

Her main achievement has been the founding of a specialist program with the OECD for public and private sector investments, called the MENA-OECD Investment Programme, which currently assists 18 Arab countries in developing beneficial policies and functional regulations for constructive growth. In addition, along with the MENA-OECD team and Bahrain EDB, Hana helped create the MENA Centre for Investment in 2006, which she manages with her colleagues in Bahrain. This Centre is dedicated to promoting investment in all Arab countries.

Dr. Mohamed AlShaaban

Dr. Mohamed AlShaaban currently serves as the Chief of Health Programs and Policies at the Supreme Council of Health. He is an M.D. and has worked as a surgical resident at the Ministry of Health for three years. He holds an M.S. in journalism from Columbia University in New York, which he earned after receiving the Fulbright Scholarship in 2012. Mohamed has served as a part-time broadcast journalist at the national radio and television station since 2006. During his time in the States, he worked as a foreign correspondent with the Associated Press and interned at the UN's media office. He also worked as a Fellow at the First Deputy Prime Minister's Office as part of the first fellowship batch in 2015-16. Mohamed has won two regional awards for his scientific research on cardiac hypertrophy, which he presented as his graduation project for his B.Sc.

in Medical Research from the University of Manitoba.

▫ Mohamed Shaji

Mohamed Shaji is a gas request specialist who works with the National Oil & Gas Authority. He has more than 8 years of experience in the government sector. His duties involve developing gas policies/studies and monitoring various energy projects. He is responsible for evaluating and managing applicant gas request through the "Gas Allocation Model." Mohamed holds a B.Eng. Honours degree in Mechanical and Energy Engineering from Heriot-Watt University, Edinburgh, Scotland.

▫ Osama Alalawi

Osama works at the FinTech & Innovation Unit of the Central Bank of Bahrain (CBB). Leveraging on his capital markets regulatory experience, he has contributed to a number of strategic projects in relation to improving the CBB's regulatory and supervisory framework. In his current role as Superintendent of the FinTech & Innovation Unit, Osama is tasked with overseeing all aspects of the CBB's regulatory sandbox, researching the latest regulatory and supervisory trends, and contributing to the overall objectives of developing a more efficient financial sector.

Osama holds a B.Sc. in Banking and Finance from Ahlia University. In addition to his academic degree, Osama holds a number of professional qualifications including the International Diploma in Compliance and Investment Representative designation (Series 7) and is a Certified Anti-Money Laundering Specialist (CAMS). Having been employed in a range of sectors both locally and internationally, Osama gained considerable experience and understanding of multiple industries, thereby supporting his commitment toward developing a conducive FinTech ecosystem.

Social & economic impacts of robotics integration in the GCC region

Can Robotics be a Solution to the Demographic Imbalance in GCC States?

By Abdulla Al Hasan

In December 2017, the first Robots Olympics in the Arab Gulf Cooperation Council (GCC) region is set to be staged in Dubai.

The World Drone Prix held in 2016 was such a success that it will apparently be expanded in its second edition this year to become the World Future Sports Games. At the same time, the Gulf's most globalized city brand has already set a target to make 25% of all transport journeys driverless by 2030.

If Dubai is a mirror in which GCC states are reflected, the ubiquity of robotics across the region will only be a matter of time.

However, the rest of the GCC has not yet visibly embraced the robotics revolution—at least, not as enthusiastically. Recent history, however, indicates that other GCC cities are not far behind where technology adoption is concerned.

A 2016 McKinsey* report illustrates the situation. Digitization is advanced in this region relative to other MENA countries, and certainly, smaller GCC countries like Bahrain, the UAE, and Qatar have achieved progress close to advanced Western economies in some aspects. The report calculates that Bahrain's 8% digital contribution to GDP is at the same level as that in the US. McKinsey's Digitization Index indicates that some consumer adoptions in the GCC exceed that of global digital leaders like the US and Europe. Although businesses in the region lag behind their global peers, according to the Index, some of the region's governments have made commendable progress.

Digitization is the backbone and essential enabler for wider adoption of robotics, drones, and artificial intelligence (AI).

Less conspicuous but nonetheless impactful uptakes of robotics are occurring in different fields. Robotics surgery has seen strong growth since its 2003 introduction in Saudi Arabia. Use of robots in offshore and onshore oilfields by the likes of Saudi ARAMCO is gaining ground. Boston Consulting Group (BCG) estimates that the global share of robot-

ics in manufacturing will rise from 10% to 25% by 2025. This will penetrate the GCC's manufacturing sector, driven by plants owned by multinational companies. Blue-chip local manufacturers will follow suit as they seek to compete regionally.

However, the most profound potential impact in the GCC could be elsewhere.

The GCC is a unique region in the world in that it hosts the largest "temporary" guest worker population, which accounts for the majority (roughly two-thirds) of the workforce in these states. Along with their dependents, this expatriate population comprises half of the GCC's population. In the UAE and Qatar, where the phenomenon is most pronounced, citizens represent only 11% and 14% of their total populations, respectively, while expatriate workers constitute 94% and 96% of the labor force, respectively, according to the latest available data.

The IMF estimates that over the first decade of the new millennium (2000–2010), seven million jobs were created in the GCC (with the significant exclusion of the UAE due to lack of data). More than three-quarters of those jobs (5.4 m) were generated by the private sector. A staggering 88% of those jobs were filled by foreign workers, with the majority of the jobs (around 85%) being low-skilled.

As in every economic downturn, the issue of the demographic imbalance and concomitant triple economic, social, and security risks is coming to the fore. The complaints this time are more vocal and the debates more heated.

The robotics revolution presents yet another once-in-a-lifetime opportunity for GCC states to curb the demographic imbalance.

Experts agree that the most immediate impacts of the robotics revolution will be in the fields of logistics, driving, and domestic help. It is no coincidence that in a recent interview, Microsoft's cofounder Bill Gates singled out these three areas as early candidates as sectors where jobs will disappear, to be replaced by robots.

This technological revolution represents a significant opportunity for GCC states to reconfigure their population patterns. In Saudi Arabia alone, where women did not drive prior to mid-2018, it has been estimated that 800,0000 drivers provide mobility to fe-

males and families. This represents 12% of those employed in the Kingdom. Expatriate females providing domestic help account for another 1.2 million, or 18% of foreigners employed in the Kingdom.

Another area where robots, drones, and AI could fundamentally reshape the landscape in the GCC is retail.

Emergence of the likes of Noon, a digital retail platform launched by UAE real estate mogul Mohammed Al-Abbar in partnership with Saudi Arabia's Public Investment Fund (PIF), and Amazon's acquisition of souq.com are ushering in an unprecedented era in e-tailing with tremendous competition. According to the Financial Times, Noon aims to grow e-tailing in the region more than twentyfold from US$3 billion to US$70 billion within a decade. The most obvious investment areas required to achieve such an ambitious goal are logistics and transport. These are also areas where utilization of robots, drones, and AI will be pivotal, and Amazon has been investing in these areas for years. A precursor to what is to come is the 16% stake taken up by investors led by Al-Abbar in regional logistics provider Aramex.

But even traditional retail, whether in hypermarkets or in malls, is set to be transformed by the robotics revolution. Robots, drones, and AI will not only be deployed in straightforward supply chain and replenishment functions. Even traditionally human-heavy customer services functions are being redesigned to be handled by intelligent machines.

The crucial caveat is, however, the question of whether GCC states will, this time around, successfully re-orient their education systems toward wider adoption of robotics, AI, and drone technologies. It is true that the adoption and widespread use of these technologies have the potential to create high-skilled robotics design, programming, maintenance, and control jobs for nationals. However, the fast pace of technological change also requires a faster adoption and adaptation by the education system to meet the needs of the industry.

Bill Gates rightly puts responsibility squarely on governments, not businesses, to manage the difficult disappearance of pre-robotics jobs and the transition into the new robotics era.

While many countries are daunted by the task of re-training their existing work forces set to become redundant due to automation, GCC states seemingly have a less complex task. Given that the majority of the existing labor force is in the region on a “temporary” basis, it should be easier, if sensibly managed, to simply phase them out.

Will GCC countries be ahead of the curve this time?

* Digital Middle East: Transforming the region into a leading digital economy. A report by Digital/ McKinsey, October 2016.

^ IMF: Economic Diversification in the GCC: Past, Present, and Future. IMF Staff Discussion Note, December 2014.

Why Are Advanced Robots an Opportunity for GCC Countries?

By Dana Rabeea

Have you ever dealt with a robot? You may take time answering this question, but the answer is as easy because you do so on daily basis. With smartphone technology (e.g., Siri), almost everyone nowadays has an intelligent robot right in his pocket or in her purse.

GCC countries have always played a significant role in technology adoption and consumption. Many software and hardware companies have established their business in GCC countries as regional markets for IT products and services due to these countries' high incomes, high spending power, and excellent IT infrastructure.

In the last decade, many GCC governments started to adapt e-government to reduce time and costs, improve quality, and achieve higher efficiency and effectiveness. Bahrain is a leading country in the e-government sector. Recently, many companies in Bahrain and in GCC countries have

started to provide their services online or through digital self-service kiosks, with this practice particularly prevalent

among telecommunication companies and fast-food restaurants. For me, passing by McDonalds for having a quick dinner could be a great robotic experience. Others might find it inconvenient to deal with a machine and prefer to deal with humans.

Since first being introduced as a concept, robots have offered both benefits and drawbacks. However, if you search the Internet for articles on robots, you will definitely see that robots' benefits overcome their drawbacks. Simply, the word "robot" was extracted from "Robota," a Czech world means "forced labor." In my opinion, any new technology can open new opportunities for growth if it is used wisely, and this includes advance robotics.

In GCC countries, using advance robotics can be a great opportunity for achieving higher living standards. But why should advance robotics be used?

The answer for this question could be summarized in the following points, which are supported by many articles as well as results of a quick survey and interviews with two IT experts, Dr. Khalid Al-Mutawah (Director of Directorate of Enterprise Architecture and Information Technology - Information & eGovernment Authority) and Dr. Mazen Ali (Chairperson of Department of Information System – University of Bahrain):

1. High Efficiency avnd productivity

Robots can perform routine tasks in a shorter amount of time. They can operate for a longer time before requiring maintenance or rest. Robots contribute to reducing the high production costs and help ensure efficient use of raw materials in comparison to humans. Use of advance robots could overcome the problem of hiring, reallocating, and training human workers to perform routine tasks and provide an opportunity to reallocate them to more value-adding, specialized tasks, which could enhance the employee retention and reduce turnover costs.

Using robots in GCC countries could contribute to increasing the productivity of public servants in many ways. Unlike humans, robots do not have social commitments that might affect their productivity level. They do not have to be part of any group or create relationships with others; at the end of the day, robots are machines, not co-workers. Robots cannot participate in the lobbying and cronyism that might affect productivity. In addition, robots could serve as a sort of competition for inefficient workers, which will result in increasing overall productivity.

2. Accuracy and reliability

Robots can perform repetitive tasks with minimum error. Robots are not affected by the social environment of the workplace and do not have personal issues that might affect their work quality. Therefore, robots are capable of maintaining stability in performing high-quality tasks. Accordingly, robots are used in highly sensitive tasks that need high levels of accuracy and reliability, such as in the medical sector. For example, a robot called ARTAS was introduced in Abu Dhabi as the first and the only robotic hair transplant system in the region.

3. Safety and security

Using robots to perform tasks that are dangerous and require high physical power can help provide more secure working environments and reduce expenditures on health and safety issues. For example, a robot called Bear was invented to carry people over long distances in case of fires or any other workplace incidents.

Interestingly, the Dubai Police recently announced that they are planning to introduce interactive robots as part of their police patrols by the end of 2017. The robot will be able to detect humans and objects, with anything suspicious reported to real-life officers. Featuring an 8-hour battery life, it will also be fitted with a smoke detector to report fires and will return automatically to its charging station..

4. New job opportunities

A quick survey conducted among a random sample with 66 responses aimed to examine the extent to which people feel threatened by robots in term of seizing people's jobs.

A full 33% of respondents were sure that robots will not take human jobs, with only 24% thinking that robots will take human jobs and 43% not being sure.

Overall, the survey highlights that many people think robots could take their jobs and lead to unemployment. In fact, robots might replace humans in low-skills routine tasks that have a high possibility of automation, such as clerks, customer services, insurance brokers, and assembly workers. However, such use of robots will also create new opportunities in other sectors. It will open new job opportunities for high-skilled jobs such as technicians, programmers, and data analysts. For example, in the healthcare sector, new jobs include instructors for how to use or operate machines. Can you imagine ARTAS operating without a doctor's supervision?

Robots could never replace professions that require human creativity and subjective judgment such as doctors, artists, and child care. Robot can only perform tasks they are programmed to perform.

5. Do jobs that humans are not willing or not able to do

In GCC countries, many low- and medium-skilled jobs are not wanted by nationals for cultural reasons. Robots can do these jobs efficiently and effectively. They can contribute in solving the problem of free-visa workers, which has economic and social drawbacks for GCC countries. Honda invented a robot called ASIMO to work as personal assistant for people unable to help themselves, such as the elderly or children.

In addition, there is a skill gap for certain high-level skills that advanced robots can contribute to filling with human supervision.

For example, the number of autism cases has increased among GCC children, and in many cases, parents, therapists, and teachers lack the skills required to deal with these kids. In the US, a robot called MILO was designed to support children with autism and teach them social skills. Imagine having such robots in GCC countries.

Furthermore, a robotic simulation system has changed the way students learn and can ultimately create more knowledgeable and well-adjusted students, especially in circumstances where hands-on, real-life learning is very costly and dangerous, such as in the medical, engineering, and aviation fields.

Higher long-term returns

ASIMO Personal Assistance Robot

Replacing human systems with advanced robots could result in huge initial costs. In addition, robots are machines, which require regular maintenance. Robots could also face some resistance from humans and lack technical skills, which could entail high-cost training and capacity building. Finally, because robotic systems will work for long hours without rest, this will result in a high level of power consumption. However, all of these costs are justifiable by the increase in profit and savings of raw materials, labor, and turnover costs. Usually, a successfully implemented robotic system takes 6–18 months to pay back the initial cost. After that, the possibility for savings is limitless.

In sum, advance robots are a technology, and technology is a tool invented by humans to

support humans. Imagine if all of the discussed benefits were achieved in the GCC; if so, they would certainly open up new economic and social opportunities for growth.

Robots have their drawbacks too, such as high initial cost, user training cost, power consumption cost, and overconsumption, which were previously highlighted. However, robots could never threaten humans. Thus, robots are simply machines that are created and programmed by human to perform certain tasks; thus, robots could also never replace humans.

Multi-Billion-Dollar Robotics by 2019: GCC Jobs at Risk?

By Hana Kanoo

Robotics is now creating a niche market that is poised to hit the $135.4 billion mark by 2019, according to an international report by the Data Corporation.

Robotics is coming to the mainstream, whether we like it or not, and in numerous forms such as robotic software and hardware components, robot services, and robotic consulting. Robotics is the future and is expanding with booming investment. Globally, robotics spending is set to grow at an annual rate of 17%, according to Fortune's technology newsletter.

With the manufacturing and healthcare industries taking the lead in outfitting factories on a global scale, robotics prices are reducing rather than spiking, as was expected by some industry experts.

So where are GCC countries in all of this? In reality, GCC planners have already taken steps toward dipping into this pool of new technologies. Robotics can now be seen in all sectors of the economy and in the marketplace. There are three aspects of robotics integration now occurring in the Gulf economies, with a special focus on development and innovation that will touch the lives of GCC nationals.

In healthcare, heath robotics is taking a prime position, as stated by Said Abu Laila of Pharma Tech Medical, a UAE medical company. They are now bringing the state-of-the-art technology in health medical robotics to GCC hospitals with world-renowned health robotics (STATION ONO), which is one of the leading Italian pioneers in health robotics. These robots are second-generation cancer therapy robots, and having reached 100% of the chemotherapy robotics market, they are ready to expand into other GCC countries.

In 2014, Gulf News reported that the first Da Vinci operating robot was used at Al Qasimi hospital in the UAE. The Da Vinci Robot performed very delicate arterial surgery that saved a local man's life. Today, Saudi Arabia has acquired around ten Da Vinci operating robots. The highly complex Da Vinci surgical system robots are designed to operate using minimally invasive techniques and approaches to surgeries. American company Intuitive

Surgical has also recently helped train 35 surgeons in this field in the UAE.

Another application of robotics is the defense and military sector. Recently, Kuldar Vaarsi, Chairman of Milrem Robotics Warfare Defense Company, confirmed that Saudi Arabia has shown great interest in acquiring autonomous weapons that can be controlled from kilometers away. Several GCC countries are spending significant amounts of their budgets on defense, with the Kingdom of Saudi Arabia taking the top place and the United Arab Emirates coming second, according to latest reports released by Deloitte in January 2017.

Youth and technology aspects of robotics are essential for the prospective national interface of GCC countries to effectively work with new technologies and improve innovation.

A special GCC robotics challenge takes place at GCC universities with the last one being held in 2016 at Qatar University's College of Engineering and Technology (IET). The aim of this challenge is to promote the latest technology in robotics and its applications. These challenges are currently improving the image of robotics to youngsters and youth at academic institutions. All six GCC countries take turns to promote robotics and compete for special prizes.

GCC Jobs

According to the Guardian newspaper, the next ten years will see robot deployment in society and the marketplace. In this regard, two-thirds of Americans believe that robots will soon take their jobs. How does this fare with regard to GCC nationals? No study or survey has yet been done by GCC governments in this respect. However, is this on the minds of GCC nationals, and will the robot revolution actually cause mayhem in GCC job markets? GCC governments have already started to use the best technology that money can buy and have utilized robots in hospitals, youth/academia, and defense systems. Why are GCC nationals not worried about becoming jobless? The World Economic Forum has predicted that robotic automation will result in more than 5 million jobs being lost in developed nations by 2020. Currently, with blue-collar jobs in various sectors being dominated by foreign workers in GCC countries, this does not seem to be a disastrous scenario. Foreign nationals dominate the workforce in many sectors, with the majority

of GCC nationals working in the public sector. On average, the private sector in the GCC is dominated by foreign nationals, according to the Migration Policy Centre in Rome. Currently, Qatar's private sector is dominated by foreign nationals at 89.9%, whereas Oman has the least amount of foreign nationals in its private sector at 45.4%, which is still quite large. Therefore, joblessness from the robot revolution may actually be a blessing for GCC governments rather than a worry.

Robots: Friend or Foe?

By: Mohamed Ali AlShaaban

In the 1960s, Hanna-Barbera launched the popular cartoon series, The Jetsons, which attempted to envision the future. Fast-forward five decades, and their vision may not be so far-fetched. The robotic contraptions that the show depicted may very well be present today or in the not-too-distant future, albeit not exactly in the same shape or form. Robots, automations, and AI have slowly become integrated into our lives following the technological revolution of the late 20th century. It is no longer uncommon to use to a machine to do what a human being used to do a mere few years ago, from placing food orders, to paying bills, or even checking in to a flight. But do robots present any threat to our existence as humans? And what does this inevitable tool of tomorrow mean for us here in the Gulf?

Thanks to the discovery of oil in the 1930s, the Gulf has jumped straight into the realm of modernity. Unlike its counterparts in the West and Far East, people of the Gulf did not have to endure the pains of the Industrial Revolution as a transition to modern-day progress. The Gulf's new-found wealth has managed to catapult the region into a prototype of urban modernity with state-of-the art infrastructure and technologies. In only a few decades, Gulf states have joined the ranks of developed nations in terms of quality of life and services. Robots and automation were not excluded from this leap into modernity. Like many countries around the world, those in the Gulf have endorsed the prospects of automation in day-to-day and strategic activities. This will prove to be of benefit to the region and its people.

People's fear of robots taking over our world is understandable. Thanks to a fear of change in general coupled with Hollywood's extreme sci-fi imagination of how robotics and AI could go horribly south, it is natural for people to be concerned about the negative effects of such technology. However, depriving the Gulf from the potential benefits would be unwise. Like many technological advancements throughout time, change usually provokes resistance. Things like automated telephone lines as opposed to manual human operators, credit cards as opposed to cash money, the calculator as opposed to human computers, and many other breakthroughs of the past century were once seri-

ously feared but soon adopted as a norm in society.

But how can automation benefit us? First, one must see beyond the image embodied by Arnold Schwarzenegger in the "Terminator" movie series when thinking about robots, along with any other such conception of robots as a metallic version of humans. In fact, robots can be hidden and are already in many devices and services we use today. By adopting and accepting this technology, the Gulf will not fall behind other countries that have vowed to adopt automation-driven economies and industries. This can be easily contrasted to the Internet, for instance. What if the Gulf had refused to embrace it when the rest of the world did? Where would that have put us?

A recent study by American financial services firm Cornerstone Capital Group found that around seven million jobs in the US are at risk of being replaced in the next decade by some form of automation during. These jobs seem to be concentrated in retail and manufacturing industries, where it is more efficient and cheaper to use automation systems. In other words, low-skilled and routine jobs will soon be carried out by machines. To a short-sighted individual, this might be of extreme concern, but in the long-term, this technology will give birth to a whole new, more creative industry and ensuing job market, especially for a highly educated workforce such as that in the Gulf. Automation will greatly reduce labor costs for businesses and make procedures more efficient, positively reflecting on the overall economy and creating more opportunities.

On the social front, automation could be an indispensable human helper. With changing demographics and a generally aging population, along with a shift in the Gulf's social fabric toward a more Western existence (where kids leave home), automation could soon be widely implemented in nursing homes and homecare industries. Robot nannies and nurses may soon be a household appliance—a definite positive point for the people of the future.

Defense is another beneficial prospect of automation for the Gulf. Robot soldiers are a global aspiration of many defense industries and could greatly reduce human losses as machines do jobs deemed too dangerous for humans to carry out.

There is no affirmation of the pace or the extent that automation would affect us here in

the Gulf. But one thing is certain—the only way forward is to adopt this global technology. The doubts associated with change are understandable, but they do not justify staying behind while the world embraces the future.

Why Advanced Robots and Automation Systems Are a Threat to GCC Countries: The Digital World

By Mohamed Shaji

The philosophies behind using robots and automation systems around the world vary widely, and no clear narrative has emerged. Among those who say that robots increase the rate of unemployment—or vice versa—economists believe that this evolution of technology and science is inevitable and the digital revolution will require this to happen.

As media strategist Tom Goodwin wrote in a TechCrunch article in March 2015, "Uber, the world's largest taxi company, owns no vehicles. Facebook, the world's most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world's largest accommodation provider, owns no real estate."

Impact of Robots on Employment

The motivation for using robotics and automation systems historically include raising productivity, competitiveness, and quality, which are important factors in stimulating economic growth, but the use of robot and automation systems is at the expense of labor. In GCC countries, this could be a potential threat if lost jobs are not replaced with other form of work.

Unemployment rates are relatively high in most GCC countries (except for Qatar), with more than 1 million currently unemployed, most of whom are women and university graduates, according to recent studies by the Statistical Centre for the Cooperation Council for the Arab Countries of the Gulf (GCC-Stat).

In the developed world, robots and automation systems could possibly allow for the preservation of industrial and economic privileges, especially in countries that suffer from aging problems, such as Germany and Japan. These countries will in future suffer from a population deficit caused by declining fertility rates and/or rising life expectancy.

Developed countries are fully aware of the danger of population declines and deteriora-

tion of the labor force, which in turn will hamper economic growth and potentially damage the economy. Thus, use of the robot in these countries could offer a way to maintain their economic progress.

In GCC countries, the situation is quite different. GCC countries do not suffer from a population deficit, and their economies are not advanced in the first place. Second, complex and advanced industries almost do not exist, and utilization of robot and automation systems is limited to certain industries.

The motivation behind the use of robots is mainly to raise productivity, competitiveness, and quality. However, safety, security, and human rights are also important aspects. A good example in the GCC context would be a robot jockey that is being used in camel racing.

It should be noted here that the use of robot and automation systems remains limited to certain industries in the GCC, mainly manufacturing, construction, and medicine, which rely on modern machines. However, a recent trend shows that robots and automation systems are being used in the operation of some service-sector jobs such as telemarketing, customer service, sales, and other places where human labor is needed. Moreover, IT solutions through governmental portals (egov) have been massively successful in GCC; with a click of a button, GCC citizens can benefit from many services such as scheduling of appointments to receive a national ID card, and payment services for utilities, telecommunication services, traffic fines, etc. However, this is also criticized by clearance offices because it will gradually take away their jobs.

Unemployment in GCC countries was present before the use of robots and automation systems, because of structural problems in these economies and the recent oil crisis. Revenues from natural resources are not well spent to diversify into other economic sectors and thus create new jobs (e.g., agricultural sector).

Nevertheless, GCC countries are full of natural resources, which, through sound exploitation, can create large and diverse wealth. GCC countries should first diversify sources of income and create jobs for citizens to reduce unemployment rates and limit the use of robots and automation systems to highly complex technical jobs. If that is achieved, then we

can mimic the developed countries in their approach to robots and automation systems. It is not wise to compare GCC countries with developed countries in terms of economic and technological advancements in the last 50 years.

Fourth Industrial Revolution

The Fourth Industrial Revolution is considered to start with the use robots and automation systems more widely in all fields, such as drones, self-driving cars, intelligent production lines, nanotechnology, and scientific innovations that the world is enjoying these days.

Many initiatives are currently being implemented, such as industrial automation systems, which result in reducing the number of workers so that the human role in the industry is limited to monitoring and auditing only. One advantage of this revolution is that it will provide numerous opportunities for companies to achieve high profits by reducing production costs to the lowest possible level. The Fourth Industrial Revolution will erode the role of small and medium-sized companies, and they will be replaced by large companies.

As for the negatives, the most dangerous is the spread of unemployment. Economists estimate that automation of industry will reduce employment opportunities by 50%, mainly affecting the middle and lower categories of labor that do not require scientific and technical expertise.

Prior to the Davos Conference in 2015, Klaus Schwab, founding president of the World Economic Forum, called on world leaders to reconsider current economic policies in order to accommodate future changes. He said, “We are not prepared enough to deal with this Fourth Industrial Revolution and its changes in all aspects of life.” He added, “I am afraid that if we are not prepared, we will create a world in which the middle class will be frozen, which would lead to the emergence of a new social problem.”

On the other hand, observers believe that the “Fourth Industrial Revolution” will create more jobs, albeit of another kind (design, control, and monitoring through software). These will require new types of education and training and might not be suitable for all.

For GCC countries, the Fourth Industrial Revolution, which involves the use of robots and

automation systems instead of labor, is not important in my opinion. We cannot arbitrarily jump to the stage of the developed countries. GCC countries still have much to do to reach this target.

Advanced Robots and 4IR: Opportunity or Impending Doom?

Author: Osama Saleh Al-Alawi

Disclaimer: The opinions and statements expressed hereunder explicitly reflect the author's view based on reasonable research and analysis of the topic. These do not reflect, in any way possible, the direction or position of any governmental or non-governmental entity.

In this rapidly evolving world, there is no denial that automation and digitalization, which are synonyms for what to expect from the Fourth Industrial Revolution (4IR), are the way forward. We just have to brace ourselves.

"The second industrial revolution has yet to be fully experienced by 17% of the world as nearly 1.3 billion people still lack access to electricity."

Klaus Schwab, The Fourth Industrial Revolution

As the Third Industrial Revolution slowly becomes obsolete in some parts of the world, the fourth one is evolving exponentially. We live in an age where AI, robotics, and nanotechnology is a thing of modern-day society. The pace at which new technologies are being rolled out is unprecedented; in essence, new developments fuse the physical, digital, and biological gaps, thereby impacting our lives and economies as a whole. As the late Steve Jobs once said, "The most compelling reason for most people to buy a computer for the home will be to link it to a nationwide communications network. We're just in the beginning stages of what will be a truly remarkable breakthrough for most people - as remarkable as the telephone." His statement has truly contextualized our expectations.

"It has become appallingly obvious that our technology has exceeded our humanity."

Albert Einstein

Further emphasizing on robotics, it is obvious that there are countless merits for automating and using robotics in some of our daily activities for sake of convenience and maximizing productivity. On the other hand, human nature will always prevail when feelings of insecurity and resistance to change kicks in. According to the World Economic Forum's (WEF) Future of Jobs Report, approximately five million jobs will be lost by the year 2020. The report also pointed out the fact that 35% of core skills will change between 2015 and 2020, which will require radical change and adaptation to keep pace and navigate through the advances taking place in the business world.

Based on the latest projections by the US Bureau of Labor, jobs such as agriculture workers, mail sorters, data entry, and core banking clerical jobs will disappear in the medium term. Probably a more optimistic argument would be that robots will not actually steal people's jobs but rather help create new ones. Human resources professionals envisage that technology will lead to a change in roles, allowing workers to focus on other key areas of their jobs. This will require people to retrain for their evolving roles; instead of being displaced by technology, they can develop new skills to complement their current competencies. This is where HR functions will play a pivotal role in ensuring that the available human skills are capitalized upon.

Before we delve into the impact such changes will have on GCC countries, let us first examine some statistics. The WEF's report estimated that in the year 2020, the financial services industry will be facing the greatest disruption by the 4IR at a rate of 43%. More notably, the report estimated that the GCC as a whole will be disrupted by 21%, which is considered below average according to the said report's indicators. Nonetheless, analysts view this as a threat and argue that the impact on labor markets will be far greater than projected. It is believed that the concentration of jobs in GCC labor markets will be the leading cause of disruption because some GCC countries already struggle with unemployment issues and growing pressure on pension funds.

To a certain extent, a good percentage of fresh GCC university graduates who are injected into the job market fall within the pool of "potentially expendable jobs," i.e., the financial services sector. Although robots will decrease operational expenditures (OPEX) for businesses, businesses will inevitably start making expensive investments in new skillsets for a swift transition that aims to balance the divergence in jobs creation versus jobs lost.

Considering the above, the GCC will may face multiple threats, ranging from talent shortages, mass unemployment, growing inequality, and the need to recalibrate existing skillsets. Moreover, there are indirect impacts that require GCC governments to launch reform projects pertinent to education and overall infrastructure. The question of how GCC governments, businesses, and individuals will react to such threats will remain dependent on how well we plan for the future to mitigate some of the risks before they materialize.

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