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IT Products and Services Research Report

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Table of Contents

Introduction	3
History	3
The Problem	3
Purpose of Report	4
Artificial Intelligence	4
Overview of Technology	4
Use Cases	6
Market Size	7
Maturity	9
End Products/Services	9
Blockchain	10
Overview of Technology	10
Use Cases	10
Market Size	10
Maturity	10
End Products/Services	10
Digital twins	10
Overview of Technology	10
End Products/Services	10
IoT	11
Overview of Technology	11
Use Cases	11
Market Size	11
Maturity	11
End Products/Services	11
Immersive experience.....	11
Overview of Technology	11
End Products/Services	11
Augmented analytics	12
Overview of Technology	12
Use Cases	12
End Products/Services	12

#

Empowered edge	12
Overview of Technology	12
Use Cases	12
End Products/Services	12
Cloud computing	13
Overview of Technology	13
End Products/Services	13
Cyber security	13
Overview of Technology	13
End Products/Services	13
Virtual modeling for decision making	13
Overview of Technology	13
End Products/Services	14
Mobile application development	14
Overview of Technology	14
Use Cases	14
End Products/Services	14
Smart cities	14
Overview of Technology	14
Use Cases	14
End Products/Services	15
Conclusion	15
References	15#

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Introduction

This project is for a medium size Information Technology (IT) company in Saudi Arabia. In recent years, the Company has been struggling to maintain business and make profits. The Company decided to change the whole business model and product offerings. This report is required to provide product alternatives based on a scientific study of IT trends & Saudi market statistics. Together with a corresponding marketing plan. The company will start marketing and selling the new products by executing the provided marketing plan.

History

The Company started in 2003 as a Saudi IT establishment. It started business by mainly providing data network cabling services including supply and installation. Then the Company grew and started providing data center setup services which includes supply and installation of raised floor, fire alarm, cabling, building management, racks, power, and cooling systems. In recent years, the Company started providing manpower outsourcing; this is achieved by providing technical experts to fully work under the management and supervision of the customer. In the year 2016, the establishment was legally converted to become a Limited Liability Company (LLC). The average size of the Company's projects is SAR 200,000.

The Problem

Most of the Company's activities are very similar in nature to civil construction projects. This kind of projects has several disadvantages:

1. It requires big initial project capital investment. Because the company usually has to deliver a significant amount of work and material before collecting the first payment.
2. The financial requirement is mostly in the form of salaries. Unfortunately, this cannot be done on credit terms.
3. The business heavily depends on manpower.
4. The company's fixed cost is very high. So, it's very sensitive to any decrease in demand.
5. In recent years the government of Saudi Arabia represented in the ministry of labor (MOL) deployed several new regulations which resulted in increasing the cost of labor manpower. Although this affects all companies in this market, which means that cost would increase for all, most competitors abuse employees & manage to give minimum wages and benefits, sometimes even nonhuman, taking advantage of a loosely put labor law. Our company on the other hand deals fairly with its employees and provide them with all their entitlements whether legal or ethical. This increased the cost on the Company which in turn caused inability to compete on lower price basis.
6. The government is the major market segment. But the de facto for their bid selection process is the price.
7. As used technology became more mature. It became commoditized, and a lot of new competitors came into the market including micro-companies who almost doesn't have fixed costs.
8. This kind of projects has been monopolized by foreigners from certain countries working under the name of a Saudi citizen in an illegal manner. But those foreigners come from countries where purchasing power of the dollar -economically Saudi Riyals are tied to the dollar- is very high causing those people to accept very low income which again decreases fixed costs.

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9. Oil prices caused negative impact on government projects and the Saudi economy in general which added more pressure on prices.
10. New strict regulations makes it very hard to set healthy margins which the customer would otherwise appreciate and is willing to accept.
11. MOL is deploying a strategic plan to nationalize manpower in this market aggressively. But Saudi skill is very rare in this field, especially that it requires hardmanship.

Purpose of Report

The CEO decided to transform the business by moving from high competition, low profit, labor intensive, low growth products to new products/services which are less labor intensive, produce high profit margins, fast growing and have minimal competition, especially that the CEO and founders are IT experts.

Before the Company puts strategic transformation plans, it has to find an alternative line of products to deliver. So market research has to be conducted to gain insight. The idea is to get a successful product/service in the U.S. and/or Europe and bring it to the Saudi local market by partnering with the company making it. Our company will then market and sell the product with the support of the mother company.

This report will provide research on new IT trends and emerging products/services. The report will analyze market status, supply and demand, etc. and identify specific products and services resulting from any of the following technologies.

Artificial Intelligence

Overview of Technology

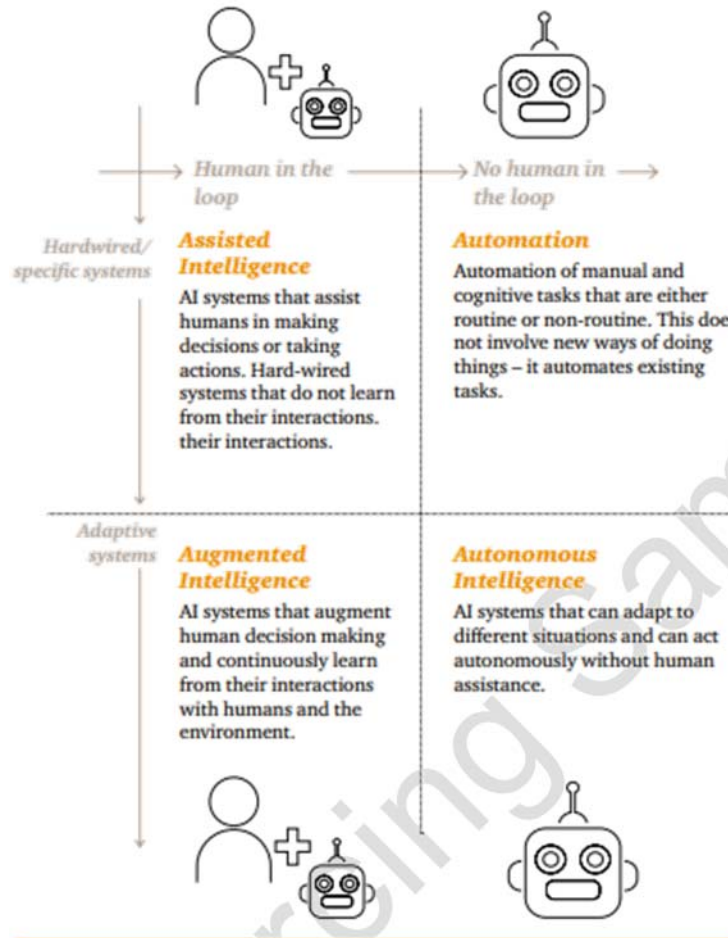
Artificial intelligence (AI) technology makes it possible for machines to learn, adjust to input, and perform human-like tasks. It has been called the “most important technology of the 21st century” by Forbes Magazine.

In our broad definition, AI is a collective term for computer systems that can sense their environment, think, learn, and take action in response to what they’re sensing and their objectives.

Forms of AI in use today include digital assistants, chatbots and machine learning amongst others. In the table, we discuss the types of AI which include:

- Assisted intelligence: Helping people to perform tasks faster and better.
- Automated intelligence: Automation of manual/cognitive and routine/non-routine tasks.
- Augmented intelligence: Helping people to make better decisions.
- Autonomous intelligence: Automating decision making processes without human intervention.

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(PwC, 2018)

As humans and machines collaborate more closely, and AI innovations come out of the research lab and into the mainstream, the transformational possibilities are infinite.

Recent products using AI include: speech recognition programs, natural language generation, content creation modules, decision management, and biometrics analysis.

As use of the technology becomes more commonplace, the need to protect AI data has greatly increased. With AI research and development being interconnected with other technologies, Gartner says this creates new and significant challenges for information security teams.

(PwC, 2018)

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Use Cases

3 examples

The potential for AI adoption varies by industry. Research conducted by the International Data Corporation (IDC)¹¹ finds that the biggest opportunity for AI in the Middle East and Africa region is in the financial sector where it is estimated that 25% of all AI investment in the region predicted for 2021, or \$28.3 million, will be spent on developing AI solutions. This is followed by the public services, including education and healthcare, and the manufacturing sector.

The potential gains at the industry level is likely to depend on two broad factors:

The ability to automate processes: labor-intensive sectors, such as retail and health, with greater scope for automation, are likely to see the largest initial gains from AI. These industries are expected to see significant labor productivity benefits from AI adoption.

Sector-level use cases for product enhancement: sectors with compelling use cases in AI applications are more likely to innovate in early stages of AI development. PwC's Data Analytics team in the US have developed an AI Impact Index¹² through conducting a qualitative assessment to estimate the scale of product enhancements we will expect to see by 2030. The index indicates the highest potential for product enhancements in the health, automotive and financial services sectors.

Despite the greater potential for direct gains in specific sectors, the gains are unlikely to remain concentrated in these sectors which develop and adopt AI technologies. As these sectors experience growth through the direct effects of AI, their demand for inputs from other sectors of the economy will also grow. Similarly, the increased wages associated with higher labour productivity in these sectors will also increase consumer demand in all sectors of the economy. These indirect and induced impacts of AI are likely to be felt by firms and consumers throughout the economy and will add to the total economic impact of AI.

(PwC, 2018)

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	Absolute contribution in 2030 (US\$ billions)	Contribution of AI to Middle East GDP by industry
Construction and Manufacturing	\$99	12.4%
Energy, Utilities & Resources	\$78	6.3%
Public sector, including health and education	\$59	18.6%
Financial, Professional, Administrative Services	\$38	13.6%
Retail, Wholesale Trade, Consumer Goods, Accommodation and Food Services	\$23	19%
Transport and Logistics	\$12	15.2%
Technology, Media, Telecommunications	\$10	14%

(PwC, 2018)

Market Size

In the wake of the fourth industrial revolution, governments and businesses across the Middle East are beginning to realize the shift globally towards AI and advanced technologies. They are faced with a choice between being a part of the technological disruption, or being left behind. When we look at the economic impact for the region, being left behind is not an option. We estimate that the Middle East is expected to accrue 2% of the total global benefits of AI in 2030. This is equivalent to US\$320 billion.

In absolute terms, the largest gains are expected to accrue to Saudi Arabia where AI is expected to contribute over US\$135.2 billion in 2030 to the economy, equivalent to 12.4% of GDP.

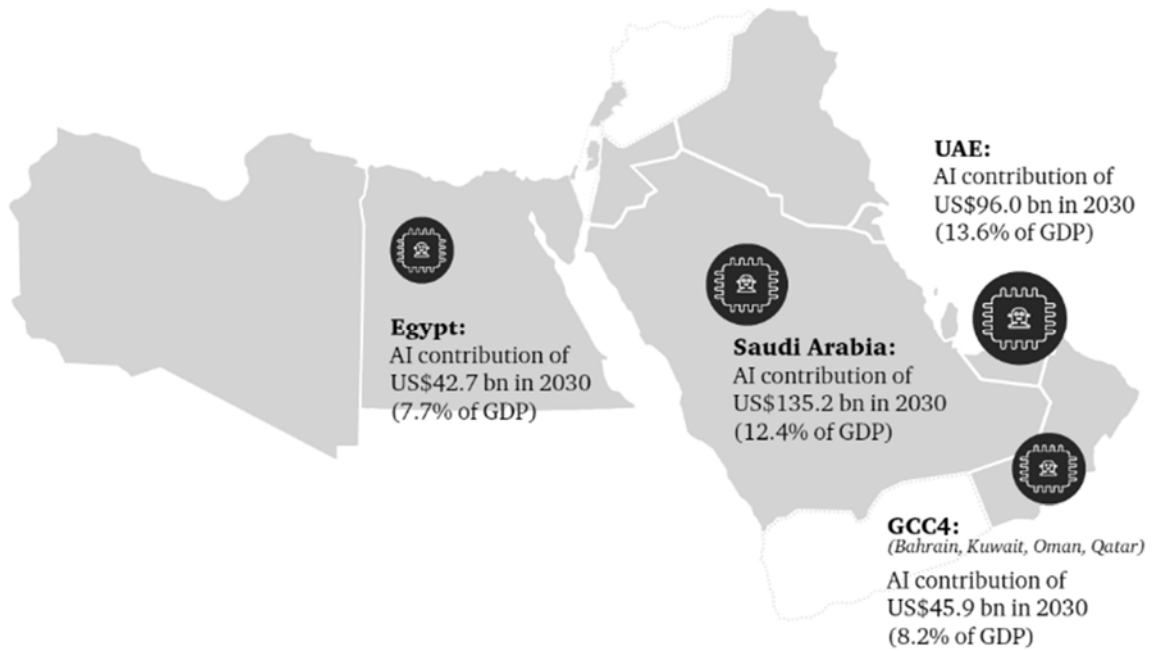
The annual growth in the contribution of AI is expected to range between 20-34% per year across the region, with the fastest growth in the UAE followed by Saudi Arabia.

The magnitude of the impact expected in these two economies is unsurprising given their relative investment in AI technology compared to the rest of the Middle Eastern region - both countries place within the top 50 countries in the world on the Global Innovation Index 2017 in terms of their ability to innovate and the outputs of their innovation.

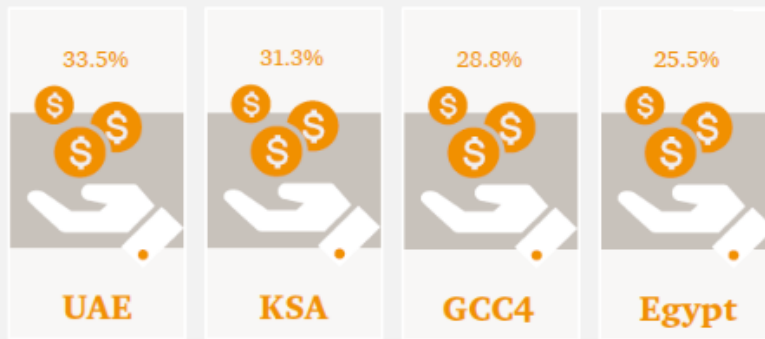
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US\$320 billion Potential impact of AI for the Middle East.	14% In relative terms the UAE is expected to see the largest impact of close to 14% of 2030 GDP.	US\$135.2 billion In absolute terms, the largest gains are expected to accrue to Saudi Arabia economy in 2030.	20-34% Expected annual growth in the contribution of AI per year across the region.
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(PwC, 2018)



The average annual growth in the contribution of AI by region between 2018-2030



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(PwC, 2018)

Parts of the region have already embraced AI and the new digital age. Analysis conducted by the International Data Corporation (IDC)⁴ estimates that spending on cognitive and artificial intelligence (AI) systems in the Middle East and Africa (MEA) region will grow from \$37.5 million in 2017 to over \$100 million by 2021, representing a growth rate of 32% a year.

The UAE, Saudi Arabia and Qatar, in particular, have demonstrated strong commitment towards the development and implementation of AI technologies. Businesses in these parts of the region have been investing heavily in new technology, supported by governments as early consumers of the technology. Outside the gulf economies, however, adoption has been slower. The differences in adoption levels are driven by differences in, for example, infrastructure and access to skilled labor, key enabling factors for AI development.

Saudi Arabia holds a clear vision for the future which points towards the development of AI-based technologies.

Saudi's Vision 2030 and National Transformation Program 2020 identify digital transformation as a key goal to activate economic sectors, to support industries and private sector entities, to advocate for the development of public-private business models and to ultimately reduce the country's dependence on oil revenues through a diversification of the economy. Strategic objectives as part of this vision include for example:

- To improve the efficiency and effectiveness of the healthcare sector through the use of information technology and digital transformation. To achieve this, it has set itself a target to increase the percentage of Saudi citizens who have a unified digital health record from 0 to 70% by 2020.
- To provide citizens with knowledge and skills to meet the future needs of the labor market. To achieve this, it has set itself a target to increase the percentage of internet users in Saudi from 63.7% to 85% by 2020.

(PwC, 2018)

Maturity

End Products/Services

At least 5 examples (name of company)

IBM's Watson line of AI products promises to make more accurate predictions, automate decisions, and optimize employee's time to focus on other things.

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Blockchain

Overview of Technology

Blockchain in its most basic sense is literally just a chain of digital information (“blocks”) stored in a public database (the “chain”). Originally used in cryptocurrencies, uses for the technology has expanded in such divergent uses as smart contracts, supply chain, video games, and various financial services.

Use Cases

3 examples

Market Size

According to the 2019 Gartner CIO Survey, 60% of CIOs expect some kind of blockchain deployment in the next three years. In terms of industries that have deployed blockchain or will in the next 12 months, financial services comes in first (18%), followed by general services (17%), and transportation (16%).

Maturity

End Products/Services

At least 5 examples (name of company)

IBM’s Blockchain Platform, with its flexible deployment options across multi-cloud, hybrid cloud, and on-prem environments, has many advantages in supply chain management. With its increased use potential, its popularity has also increased.

Digital twins

Overview of Technology

Digital twins are virtual replicas of physical devices that data scientists and IT professionals can use to run simulations before actual devices are built and deployed.

The technology gives manufacturers and businesses an unprecedented view into how their products are performing. A digital twin can help identify potential faults, troubleshoot from afar, and ultimately, improve product performance and customer satisfaction. IT can help increase reliability, reduce risk, and lower maintenance costs. The technology has expanded to include large items such as buildings, factories, and digital mock-ups even cities.

End Products/Services

At least 5 examples (name of company)

General Electric uses digital twin technology to predict, describe, and prescribe the behavior of an asset or process via both physics and artificial intelligence models. The company found a 40% reduction in reactive maintenance in just 1 year.

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IoT

Overview of Technology

The Internet of Things" (IoT) is a concept that not only has the potential to impact how we live but also how we work. According to Forbes Magazine, simply put, IoT is the concept of connecting any device with an on and off switch to the Internet (and/or to each other). This includes not only large computing devices but also such commonplace devices as coffee makers, washing machines, lamps, wearable technology, and almost anything else you can think of.

Use Cases

3 examples

Market Size

According to Gartner, by 2020 there will be over 26 billion connected devices.

Maturity

End Products/Services

At least 5 examples (name of company)

Sprint offers IoT products that include fleet tracking and management solutions, fleet safety monitoring, high value asset tracking, smart buildings and cities, and wireless sensor monitoring. Sprint's IoT offerings allow for increased efficiency, preventative maintenance, and threat mitigation.

Immersive experience

Overview of Technology

Immersion enhances everyday experiences, making them more realistic, engaging, and satisfying on all our devices—whether we are playing a video game on our smartphone, video conferencing on our tablet, or watching sports on our virtual reality headset.

Qualcomm says there are three pillars to successful immersive experiences: 1) visual quality (color accuracy, brightness, and contrast); 2) sound quality (high resolution audio and sound integrity; and 3) intuitive interactions (natural user interfaces and contextual interactions).

Full immersion can only be achieved by simultaneously focusing on these three pillars.

End Products/Services

At least 5 examples (name of company)

Qualcomm's Snapdragon platforms are designed to provide a heterogeneous computing solution by taking a holistic system approach. The company works closely with customers to make everyday experiences on devices as immersive as possible for users.

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Augmented analytics

Overview of Technology

First introduced by Gartner in 1917, augmented analytics is the use of machine learning and natural language processing to enhance data analytics, data sharing, and business intelligence. It assists with data preparation, insight generation, and insight explanation to augment how people explore and analyze data in analytics and business intelligence platforms. It automates many aspects of data science, machine learning, and artificial intelligence model development, management, and deployment.

Use Cases

3 examples

The Tellius Genius Insights Engine uses augmented analytics. It analyzes data automatically to reveal hidden insights in a fraction of the time it would take manually and eliminates guesswork from analysis. It enables users to ask questions and receive answers in natural language and automatically discover insights across multiple data sources at scale.

End Products/Services

At least 5 examples (name of company)

Empowered edge

Overview of Technology

Empowered edge refers to empowering computing centralization that is distributed toward the edge of a network, toward the end user and the end user's device. It is also known as "device democracy." Empowered edge came in at number 5 on Gartner's top 10 tech trends for 2019. According to Gartner, edge devices will become more advanced in the next five years, with specialized artificial intelligence chips, for example. Furthermore, 5G technology will enhance edge computing with its lower latency and faster data transfer rate.

Use Cases

3 examples

AT&T embraces edge computing in its 5G network, in the form of Multi-Access Edge Computing (MEC). MEC brings cloud computing its the data centers to the network 'edge,' at the central offices, cell towers, and small cells. The company will equip its edge locations with graphic processing chips and computers to handle and process the massive amounts of data that both industrial and consumer IoT applications will generate.

End Products/Services

At least 5 examples (name of company)

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Cloud computing

Overview of Technology

Cloud computing is the delivery of computing services, including servers, storage, databases, networking, software, analytics, and intelligence, over the Internet to offer faster innovation, flexible resources, and economies of scale. Typically subscription-based arrangement, the customer pays only for cloud services they use. Rather than owning their own computing infrastructure or maintaining their own data centers, companies can rent access to applications or storage space from a cloud service provider.

End Products/Services

At least 5 examples (name of company)

Popular public cloud offerings, such as Amazon Web Services (AWS), Salesforce's CRM system, and Microsoft Azure, all exemplify this familiar notion of cloud computing. Today, most businesses take a multicloud approach, which simply means they use more than one public cloud service.

Cyber security

Overview of Technology

Cyber security is process of protecting and recovering networks, devices, and programs from any type of cyberattack. Cyberattacks are ever present danger to organizations, employees, and consumers. They may be designed to access or destroy sensitive data or extort money from users. They can destroy businesses and damage financial and personal lives, especially when involving identity theft.

The best defense to cyberattacks is a strong cyber security system with multiple layers of protection spread across computers, devices, networks, and programs. There are lots of players in this area, but the most recent advancements in cyber security involve artificial intelligence. These use consoles that help centralized management and leveraging artificial intelligence and machine learning to automate processes and provide protection that's more customized to a particular user.

End Products/Services

At least 5 examples (name of company)

Virtual modeling for decision making

Overview of Technology

In order to deal with an increasingly complex world, we need ever more sophisticated computational models that can help us make decisions wisely and understand the potential consequences of choices. Virtual modeling for decision making enables accurate decision-making for complex problems that involve

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millions of decision variables with optimization techniques. It requires its users and commissioners to understand more about the whole process, including the different kinds of purpose a model can have and the different technical bases.

End Products/Services

At least 5 examples (name of company)

IBM Decision Optimization is a family of optimization software that delivers prescriptive analytics capabilities to enable organizations to make better decisions and deliver improved business outcomes. It has uses in financial services, travel and transportation, manufacturing, retail, healthcare, and utilities.

Mobile application development

Overview of Technology

Mobile application development is the process of creating software applications that run on mobile devices. A typical mobile application utilizes a network connection to work with remote computing resources. The mobile development process involves creating installable software bundles, implementing backend services such as data access with an application programming interface, and testing the application on target devices.

Use Cases

3 examples

There are two dominant mobile application platforms. One is the iOS platform from Apple Inc. and the other is Android from Google. There are many companies focused on mobile application development and the tools they use include a wide variety of software for building, converting, and deploying cross-platform applications for mobile devices.

End Products/Services

At least 5 examples (name of company)

Smart cities

Overview of Technology

Smart cities bring together infrastructure and technology to improve the quality of life of citizens and enhance their interactions with the urban environment. According to Forbes Magazine, smart cities are the future of urban development.

Use Cases

3 examples

Traffic signal pre-emption assists law enforcement in getting to the scene of an emergency faster. And sensor technology to track and analyze foot, bicycle, and vehicle traffic patterns to determine which parks, bike trails, or roads need increased investment. The potential to improve many aspects of public service systems as well as quality of life and reduce costs has driven the demand for smart cities.

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End Products/Services

At least 5 examples (name of company)

Sprint offers smart cities products as part of its IoT solutions. These include sensor technology used to report traffic light outages, traffic patterns, water main breaks, chemical and gas leaks, and more.

Conclusion

Select 3 specific products/services that satisfies the following conditions:

- They are end products/services that are readily available e.g. from Microstrategy, Qlik, Workday.
- They are not products to be developed for certain purposes e.g. Oracle databases. But a product that uses Oracle is OK however.
- The IT companies owning the products still don't have partners/sales channels in Saudi Arabia. A visit to their website should not include Saudi partners. There are a lot.
- They are independent of each other i.e. not competing.
- Can be marketed and sold in the Saudi market to medium-to-large enterprises, both private and government segments B-to-B they should not be targeted for consumers
- They must be either a software or service. Hardware solutions are not accepted, unless there is strong justification. The justification would be for example Huge demand, high margins, etc.
- The IT companies owning the products are not among big market names like HPE, IBM, SAP, Oracle, etc. Those companies are not on the Fortune 500 list
- The companies are not from Israel
- The products/services can be sold in parallel. They must be based on totally different technologies on the list above. For example, AI, Cloud and digital modeling.
- Has a big expected market size and high expected growth in Saudi Arabia. The size should be at least SAR 100M and the growth at least 10%
- High expected profit margins. 20% Net. This is achievable in Saudi.
- The major target customer must not be defense, national security, nor tourism.

The author should study statistical data about the Saudi market. The figures provided in the KPIs should be based on this.

References

PwC. (2018). *The potential impact of AI in the Middle East*. Retrieved from PwC:
<https://www.pwc.com/m1/en/publications/potential-impact-artificial-intelligence-middle-east.html>