Towards a Data Driven Lebanon: The Why, The How and a Case Study

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Introduction

In a world where technology is advancing at an unprecedented pace, it is becoming clear that data is valuable for making educated decisions efficiently and for optimizing operations. Organizations, whether public or private, are increasingly becoming data driven. Most people believe that Lebanon is far from tapping into this revolution. After all, the past years were characterized by instability and uncertainty on a socio-economic level. In this article, we examine the benefits and challenges of Lebanon becoming data driven. Then, as a case study, we look at the progress made by Zaka, a Lebanese startup that is democratizing data science in the middle east. After drawing on the example of Zaka, we rethink the data revolution in Lebanon and how a data innovation can occur.

Why is it important for Lebanon to be more Data-Driven?

Importance of data science

It is well established that technology is advancing at an exponential rate. More and more devices are collecting data. For example, your phone records your location, number of steps you take per day and the moments that you deem worthy enough for a picture. We're witnessing a deluge in data on a worldwide scale (DataFest, 2018). To cope with this very large amount of information, tools are being developed to analyze it effectively and arrive to actionable insights. This advancement positions data at the center of business relationships. Data is becoming increasingly essential for the operations of companies across industries. Companies need to utilize the data they collect effectively for them to stay relevant. For example, the taxi business got disrupted by the innovative model that Uber employs. By using map data, Uber connects drivers to riders. This app has millions of users online. In turn, the data generated is growing exponentially.

From the Uber example, we observe the need for talented people, who can utilize data collected from the millions of users. However, a gap exists between the needs of industries and the talent pool. Investment is needed to train the workers, and especially when industries are looking for more data literacy. Banks have electronic records, hotels are keeping a database of their customers, and the list of examples grows.

In a nutshell, making sense of a large amount of complex data needs the right **tools** and **skills** to be effective.

Data Science in the Benefit of Lebanon

Generally, Data Driven Decision Making (DDDM) has many advantages: Greater transparency and accountability, continuous improvement and innovation, faster decision making, and clear feedback for market research (Vidjikant, 2022). Let's examine those advantages in the case of the organizations that operate in Lebanon. The benefits extend to assist both the public and private sectors.

Frequent and accurate records of operations ensure greater transparency and accountability. In a nation where the people demand more accountability for a certain ruling class, it gets hard to collect facts about certain miscalculations; intended or not. The lack of transparency makes it harder to hold decision makers accountable for mistakes. Data driven

organizations keep an accurate record that helps everyone stay in line with the goals in place. This benefit is highly needed in Lebanon.

Moreover, analyzing the data captured allows multiple stakeholders in Lebanon for continuous improvement and innovation. When something fails, instead of wondering how it can be improved, recorded data can be used to examine the root cause and determine how to improve a product or service. For example, road traffic data can be used to analyze the best practices that ensure driver safety. Countless lives can be saved by implementing safety measures that are adequate to the roads and traffic.

Being data driven allows for faster decision making. By having a collection of well-presented data at hand, decision makers can easily decide where to go next. This efficiency in decision making opens the possibility for more decisions in the same amount of time. Which, in turn, renders leaders more responsive to changes happening in business and daily lives.

Being data driven also enables organizations to formulate new products and services (Vidjikant, 2022) that will be sold. This is highly needed in Lebanon, where most of the desired products on the market are imported. By analyzing customer feedback data and historical data, organizations can accurately determine the demands of the market. This, in turn, ensures that the products designed will be, most likely, sold. Gradually and through this iterative process, the Lebanese production is empowered as local products compete fiercely with imported ones.

Data driven Lebanon: Challenges

We have briefly examined the benefits for Lebanon being a data-driven nation. Let's explore what the road to becoming data-driven includes.

To become a data driven country, Lebanon has two main challenges to overcome: having the right technologies available and knowing how to use them (Dell et al., 2022). For instance, in Lebanon, payments and transaction are more easily carried out through cash, rather than using a credit card. This method of transaction makes it harder to record transactions. In turn, individuals get less chance to develop their talents in data science and improve the technologies related to banking. This is because organizations need to develop the right technologies to gather data before they are processed and analyzed. We see that this looks like a chicken and egg problem where a problem is conditional on another problem, and vice versa. In our case, data literacy is conditional on the existence of the right technologies and vice versa.

So, both **technologies** and the **right skills** are essential to build a data driven society.

Case Study: Zaka, democratizing data science in the Middle East

Zaka: origin and vision

Zaka is an Artificial Intelligence company founded by three young and passionate Lebanese students. The company is on a journey to democratize Data Science and AI in the MENA Region and globally (See: https://zaka.ai/about-us/). The team is thriving to deliver an impactful market transition in the MENA region and in the world. The word "Zaka" is a transliteration of the Arabic word "ذكاء" in the Lebanese dialect. "ذكاء" is Arabic for "Intelligence". Those four letters convey to the world that the field of AI and Data Science should be an accessible one.

I had the chance to interview Zaka's founder and CEO Christophe Zoghbi about the company's origins, vision, and possible directions in the future.

Before Zaka came to life, Chris was working in the field of Artificial Intelligence and Machine Learning for over eight years. He worked on many projects such as building chatbots, developing face recognition systems and data management of big systems. Those projects gave him experience across many industries that rely on the emerging technology of Artificial Intelligence. Back in 2017, he noticed that the AI scene in Lebanon was lacking; both in industry adoption and in community literacy. To push this ecosystem forward, he founded a community called Beirut AI. Beirut AI's main goal is to spread awareness and get people involved in the different aspects of Artificial Intelligence. In this community, Chris met many interesting people. He met Reem and Larissa, who later became the co-founders of Zaka alongside Chris. The community grew rapidly and the three realized the need for AI education. For instance, their workshops were always fully packed, and students requested more workshops. They noticed the high demand for such education, so they started their first ever AI bootcamp.

Again, fully booked.

The massive success of the bootcamps meant that people were keen on learning Artificial Intelligence concepts and know-how. Zaka was born to scale the education efforts to the whole MENA region.

Zaka was born!

Zaka: Current Core Programs

At its core, Zaka is an AI education company with different programs that help students and professionals in the MENA region get the right education in Artificial Intelligence. It offers

multiple innovative programs, and the two main ones are: the Artificial Intelligence Bootcamp and the Artificial Intelligence Certification.

The Artificial Intelligence Bootcamp is a four-week hands-on course that introduces participants to the world of Artificial Intelligence, and the Artificial Intelligence Certification is a 16-week intensive training that aims to graduate market-ready Machine Learning Engineers and Data Scientists. The graduates are, then, connected with hiring companies for job placement.

Thriving (not just surviving!) in the face of challenges

Back in 2018, workshops were being held across universities in Lebanon. These workshops were held in classrooms and in person. This method of delivery soon had to change when lockdowns were being held regularly to stop the spread of COVID-19. Seminars became webinars hosted on Zoom and posters became Slack channels, where community members get the latest updates of Zaka's activities. This is an innovative communication model that answers the needs present in Lebanon. Internet is not always reliable. So, the slack channel serves as an asynchronous form of communication; while the Zoom webinars are a synchronous way where participants get to experience the different concepts hands-on. This model proves to be robust with the increase of the social uncertainty fueled by the Lebanese revolution, the economic collapse, and the Beirut port explosion. Webinars were being held while other facilities were closed. And when the internet got slow, the notes were posted on the Slack channel and follow up sessions were available for participants who request a clarification.

Zaka's operations proved to be scalable, too. Participants from over ten countries were able to join the community. They joined the webinars and the slack channels. The success of Zaka's webinars positioned the company as a leading AI education company.

Results so Far And Future Plans

Zaka has been delivering AI bootcamps and training programs for over two years now. To date, they have trained more than 1500 participants from 16 countries and graduated Machine Learning Engineers with 60% finding a job within 3 months.

Community First Approach

Zaka uses a community first approach. In the context of the Beirut AI community, the founders met back in 2018. They were excited to push the AI scene in Lebanon. In the process, they realized that the mission of spreading knowledge and skills in AI is bigger than they'd

anticipated. This community-based start is at the center of the company's operations. Many gatherings run by graduates take place. Participants in these gatherings get to know each other on a deeper level and develop a sense of camaraderie.

How Can Lebanon Achieve a Sustainable Data Innovation?

Data Driven Lebanon: Where to Go from Here?

Zaka is a great example of how the passion of young Lebanese talent is contributing to a positive impact locally and regionally. It is a sign that a data-driven Lebanon is closer than we might think. Let's examine what Lebanon needs to become a data driven nation.

Low-End Disruptive Innovation

Before we take the specific example of the data innovation in Lebanon, let's look at innovations and how they happen. According to the Harvard Business School professor Clayton Christensen (HBS, 2020), there are three types of innovation: Sustaining innovation, low-end disruption and new-market disruption.

A sustaining innovation is an improvement on an existing product. Businesses benefit from this kind of innovation because they can leverage their current processes to reduce the cost of production. A striking example of this kind of innovation is the semiconductor revolution in India highlighted by Moore's Law "which has led to the exponential growth in computing power and exponential drops in costs" (Rannabauer, 2022). A new entrant to the computer hardware industry would be eaten by more established players on the market.

A low-end disruption is when a product comes in at the bottom of the market, at a cheaper cost, with a product that is "good enough". The product is improved gradually, moves upmarket, and ultimately captures the incumbent's customers. Take Toyota's example. Until 1957, General Motors (GM) sold to 50% of the U.S. market. Toyota, a Japanese manufacturer, released its first model the Corona in 1957. The Corona was a "good enough" vehicle, at a reasonable price, while GM had models that targeted the wealthier customers. Gradually, Toyota released new models appealing to higher market segments and pushing GM further upmarket. Toyota released it's Lexus in 1989, a high-quality luxury car, which competed directly with GM. GM lost billions of dollars and, in 2009, filed bankruptcy. A new entrant to this kind of industry might make high profits.

A new-market innovation is when a company creates a new segment in an existing market where the customers are underserved. Through a new measure of performance, they turn products and services that were once expensive into something more affordable and accessible to a wider range of customers. Google is a good example of this with its introduction of Google maps. What was company that only dealt with web search, penetrated the GPS navigation market

successfully. Google used its talent in tech to turn GPS navigation into something more accessible to a wider range of customers, who are willing and able to use a smartphone.

From this quick overview of innovation, it looks like a low-end disruption is particularly achievable in Lebanon. The talent and the entrepreneurial drive of the youth can generate multiple products or services that are "good enough". And their discipline and passion enable them to follow through, and to gradually improve their offerings.

Uncertainty: Dealing with the external uncertainty

Any innovation comes with uncertainty, and the data innovation is no different. Many decision makers get overwhelmed when working in an uncertain environment; as most businesses are built to optimize existing operations, instead of innovating. Fortunately, uncertainty can be divided into three types according to INSEAD professor Nathan Furr (Furr et al., 2014):

- Demand uncertainty (do the customers want it?)
- Technological uncertainty (Can we build it?)
- External uncertainty (Are there any other macroeconomic factors that might affect it?).

Let's examine those three types of uncertainty in the case of a data-driven Lebanon. The demand for data driven solutions in Lebanon is high. This fact makes it plausible that, with the right marketing, data-driven companies are profitable. In terms of the technological uncertainty, new technologies and business models, such as cloud computing and open-source software, are enabling companies to operate with little overhead costs. For example, Zaka used Jupyter Notebooks, which is an open-source software, and Google Drive to run its initial bootcamps successfully. Many other Lebanese startups are using similar tools.

The real challenge lies in the external uncertainty. First, we look at the local currency, the Lebanese Lira. As of today, October 2022, the Lebanese Lira is exchanged at 40,450LL to a US Dollar (Lira Rate, 2022). In July 2019, it was exchanged at 1,500LL to a US Dollar. This means that the Lebanese Lira got devaluated by 30 times its original value. This devaluation of currency leads businesses to conduct their operations in another currency, namely the US Dollar. To stay sustainable, and eventually profitable, companies can't rely on revenues in the local currency and are pushed to either take on outsourcing jobs virtually or move to another countries. The different solutions to the external uncertainty in Lebanon deserve an article on its own. One

appealing solution to this external uncertainty is to restrict the scale of the innovation at first; and then, when there's more certainty in the environment, to scale the operations. This approach has been used by many emerging tech companies in Lebanon.

Conclusion

It's clear that data is the way forward for Lebanon. Not only does data have many benefits for business and society, but Lebanon is not far from achieving a data-driven future. Zaka is a perfect example of how passion can develop into a human-centered company that makes an impact. The founders didn't wait for anyone to educate the world about AI, and to democratize it. On a larger scale, a low-end disruptive innovation to the whole tech scene is possible to Lebanese organizations. The macroeconomic challenges can lead to an external uncertainty. However, it can be solved through many ways, one of them is to start small. Adopting an innovative mindset is a promising way to improving Lebanon.

Join us in this effort.

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