

Data Monetization in Capital Markets

Leveraging the Opportunity in the Arab Region

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AFCM
ARAB FEDERATION OF
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Table of Contents

List of Figures	5
Introduction	6
Message From the Secretary General of the AFE	6
Message From the Managing Partner of Ntsal	6
List of Abbreviations	7
Executive Summary	8
1. Global Trends Influencing the Market	9
Changes In Customer Behavior Drive Demand for New Services	9
Changing Trading Characteristics	9
Access to Technology and Global Markets	10
2. Creating a Baseline	11
Global Success Stories	11
The Arab Region is Eyeing the Opportunity	13
3. A Prosperous Future Lies Ahead	15
Data Monetization is Going to Play a Larger Role in the Region	15
Unpacking The Components of a Business Model	18
4. Crafting a Holistic Monetization Framework	21
Data Sources for Monetization	21
Practical Use for Data Sources	21
A Holistic Monetization Strategy is Key	22
Monetization Governance	23
Customer Typology	23
Data Evolution	24
Commercial Model	24
5. The Roadmap to Success	26
Swift Building Up of Internal Capabilities	26
6. Works Cited	28



List of Figures

List of Figures

Figure 1: Data Services Percentage Share of Total Revenue Per Stock Exchange, 2020	11
Figure 2: Percentage Share of ICE's Revenues Less Transaction-Based Expenses Per Segment, 2019	12
Figure 3: Data Revenues From 2010 To 2020, \$ Million	13
Figure 4: Ntsal Market Study – Arab Region Digitization Maturity	13
Figure 5: Ntsal Market Study – Financial Services Growth In The Arab Region	15
Figure 6: Ntsal Market Study – Percentage Contribution of Data Revenue	16
Figure 7: Ntsal Market Study – Importance of Data Strategy	16
Figure 8: Ntsal Market Study – Current Data Monetization Strategy	17
Figure 9: Ntsal Market Study – Value Creation Potential	17
Figure 10: Ntsal Market Study – CEO Involvement	18
Figure 11: Business Model Dynamics	18
Figure 12: Monetization Targets and Drivers	19
Figure 13: Data Monetization Matrix	22
Figure 14: Data Monetization Strategy	22
Figure 15: Customer Types	23
Figure 16: Data Evolution and Value-Chain Maturity	24
Figure 17: Ntsal Market Study – Capabilities and Capacities	26
Figure 18: Ntsal Market Study – Strategic Outlook for Capabilities	27



Introduction

Message From the Secretary General of the Arab Federation of Capital Markets

Data has always been an underutilized asset in many institutions. Data mining and forming them into valuable strategy tools, whether for decision making or for creating more valuable data-based products, did not have enough attention in the Arab region.

In many instances, exchanges believe that quoting stock prices is the only form of revenue generation. Many other data sources could be used and utilized, such as behavioral analysis for traders or sentimental analysis for news and social media updates.

We have joined forces with Ntsal to begin this journey together with our members, and to draw everyone's attention to the value of the data they generate, in comparison to other regional and global players. During the preparation of this paper, Ntsal conducted several interviews with C-suite executives in different exchanges and brokerage houses.

The findings are interesting to read. We hope you enjoy and benefit from this report, and perhaps encourage you to cooperate with us on enhancing your data monetization strategy.

Rami El-Dokani, Secretary General AFCM

Message From the Managing Partner of Ntsal

We would like to thank the Arab Federation of Capital Markets for the opportunity to conduct this study and whitepaper. While monetization and pricing excellence are not new topics, little has been done in the field of data monetization globally, as of present. The fear of restrictive regulation and the lack of customer focused use cases led to a situation where only few companies can execute on the promise to deliver revenues and profits from data and insights.

Having worked for more than 14 years across more than 20 countries in the field of data monetization, we know about the related challenges and reservations. However, being based and rooted in the region, we see a tremendous opportunity for capital markets in the Arab region to grow and establish sustainable and customer focused data revenue streams and offerings.

During this study we had very engaging discussions with most of the CEOs of the region's stock exchanges. We would like to thank all participants for these fruitful discussions and are looking forward to continuous growth of capital markets in the region.

Martin Janzen, Managing Partner, Consultancy, Ntsal

List of Abbreviations

API	Application Programming Interface
CAGR	Compound Annual Growth Rate
HKEX	Hong Kong Exchanges and Clearing
ICE	Intercontinental Exchange
IP	Intellectual Property
IPO	Initial Public Offering
IR	Investor Relations
JPX	Japan Exchange Group
KPI	Key Performance Indicator
LSE	London Stock Exchange
MENA	Middle East and North Africa
ML	Machine Learning
NLP	Natural Language Processing
OTC	Over-the-counter
p.a	Per Annum
PE	Private Equity
TMX	Toronto Stock Exchange
USP	Unique Selling Point
VC	Venture Capital

Executive Summary

Digital transformation is changing the financial service sector globally. Incumbent financial service institutions in capital markets invest significant resources in adapting to new technological possibilities. Blockchain, advanced analytics, natural language processing (NLP), speech recognition and machine learning (ML) algorithms to detect and prevent fraud are at the center of the aforesaid discussion. At the same time numerous FinTech companies and service providers, which are focused on selected use cases, accelerate the disruptive trend resulting in a wider and more customer focused offering.

This has also been true for capital markets and stock exchanges in the Arab region, where innovative offerings were created, and more and more customers have access to said markets on the consumer and institutional side.

With increasing access and engagement, more information and data can be gathered. Globally this has led to serious investments in harnessing the value of this data. The world's leading stock exchanges diversify their revenue streams and generate up to 40% of their total revenue base from data.

This tremendous revenue opportunity for security exchanges and financial service providers is still untapped in the Arab world, where the average revenue contribution from data, information and digital services is only 6%.

Few successful use cases exist due to a lack of holistic commercial capabilities that combine user experience with pricing know-how, deeply rooted dependence on a solely technology-based approach and a still developing regulatory environment.

According to CEOs in the Arab region, stock exchanges plan to triple the revenue contribution from data and information over the coming 3 years, to build partnerships with providers and to acquire firms enabling acceleration of growth.

This white paper shows the potential of data monetization and introduces a framework for capital market firms in the Arab region on how to successfully create a sustainable data monetization strategy, productize advanced analytics and create digital business models that optimize customer experience.

1. Global Trends Influencing the Market

Changes In Customer Behavior Drive Demand for New Services

Customers have a growing demand for data and transparency. Nowadays, customers are seeking more data and transparency. They prefer the integration of software solutions that display different types of data on a laptop, mobile, smartphone, etc., to help them in their decision-making process. As a result, brokerage firms are headed towards building their own interfaces and their own user experiences rather than white labeling. Previously, it was simply all about providing market data such as prices and volumes to clients; nowadays, brokerage firms are eager to incorporate news, corporate announcements and dividend information on their platforms.

Stock exchanges are required to accommodate customer needs by enhancing transparency and disclose an increasingly greater amount of information to customers. According to industry experts, this is one of the challenges that stock exchanges are currently facing. However, this simultaneously presents a huge opportunity to stock exchanges: data monetization.

Loai Bafaqeeh, Head of Securities at SNB Capital, corroborates the notion regarding customer behaviour shifting: “The new generation of investors are not after personal advisory sessions and luxurious lounges, but are rather looking for virtual and on-the-go services. In fact, they are much faster in consuming content.”

Barriers to enter stock markets and switch providers are diminishing. Technological advancements have revolutionized how financial assets are bought and sold. Currently, a vast majority of trading is executed electronically. This has, in part, led to cheaper and more convenient investing. In parallel, switching costs and account opening durations have been diminishing. At present, retail customers use multiple channels and providers in parallel and compare products and services.

Increasing influence of social and business networks. In a connected world, the influence of networks is on the rise. Customers are not only looking for product and service recommendations to select a broker, asset class or product. Customers want to be able to follow and copy influencer trading patterns, also known as social trading. Recent history has shown that if the said social trading information is not provided by stock exchanges in a structured form, then traders organize themselves on different channels. This, potentially, leads to herd behavior causing effects related to uncontrolled volumes and volatilities.

Changing Trading Characteristics

Margins for trading commissions are continuously under pressure due to transparency and competition. The trend of commission-free and online trading platforms has been increasingly apparent for the past few years. As competition has been heating up, brokerage firms and investment advisors have lowered and, even, removed account minimums to attract more investors.

This is not only true for individual clients. Similarly, institutional investors are looking to exploit services for free or for lower fees. The willingness to pay for standardized products decreases concurrently with expectations of increasing convenience through digital services.

Smaller ticket sizes. Given the simplicity of trading, new customer segments have the chance to enter the market. These, often young and experimental customers, trade in smaller tickets, but with a higher frequency. Traditional fee models do not cater for these types of traders. Stock exchanges must rethink their traditional business models to address those trading characteristics.

Increasing involvement and complexity for regulators. Given the changing narrative for investments in capital markets, regulators face multiple challenges. Initially, the speed of change in behavior and development of new type of offerings is accelerating, which makes it harder to keep up with the respective pace. However, new asset classes that promise to bring more transparency might increase the complexity for compliance checks. Often these technologies and asset classes are offered and used in the grey market pushing regulators that don't have sufficient capabilities and capacities to shut down services. Nevertheless, this often leads to an increase in grey market channels. A delicate balance between supporting the overall market growth and ensuring the individual and national safety with the right compliance measures in place is essential.

Access to Technology and Global Markets

New and alternative asset classes and products increase complexity and diversification. Financial assets which do not fall into the conventional categories of equities, fixed income or cash have been holding an ever-increasing part of investors' portfolios. Institutions and retail investors are increasingly seeking alternative opportunities and are diversifying away from traditional asset classes. One alternative asset class that has shown exceptionally high potential returns is cryptocurrencies. Despite their high level of risk, these investment vehicles have become an extremely popular choice of retail investors as well as some institutional investors. These changes in customer preferences present stock exchanges with unique opportunities to increase their product and service offerings.

Increasing number of young companies going public. Due to the uptake in venture capital (VC) and private equity (PE) investors in companies that have a technology focus, the number of internal public offerings (IPOs) is set to increase. These new listings frequently come with a great amount of publicity, attracting retail traders from a very early stage. Simultaneously, increased number of listings provide capital market firms with more access to data and information that can be used to create value to institutional investors in the form of indices, market data, etc.

Markets going global. A corporate's listing location has always been an important strategic decision to reach a sufficient base of demand, but market dynamics are changing. An increasing number of corporates, especially from developing countries, opt for a double listing to attract international institutional investors while still benefiting from the local market advantage.

In parallel, retail investors are attracted by global corporates, in particular technology firms. Stock exchanges in other jurisdictions need to develop offerings that give their customer base access to global markets, ensuring a secured customer relationship.

2. Creating a Baseline

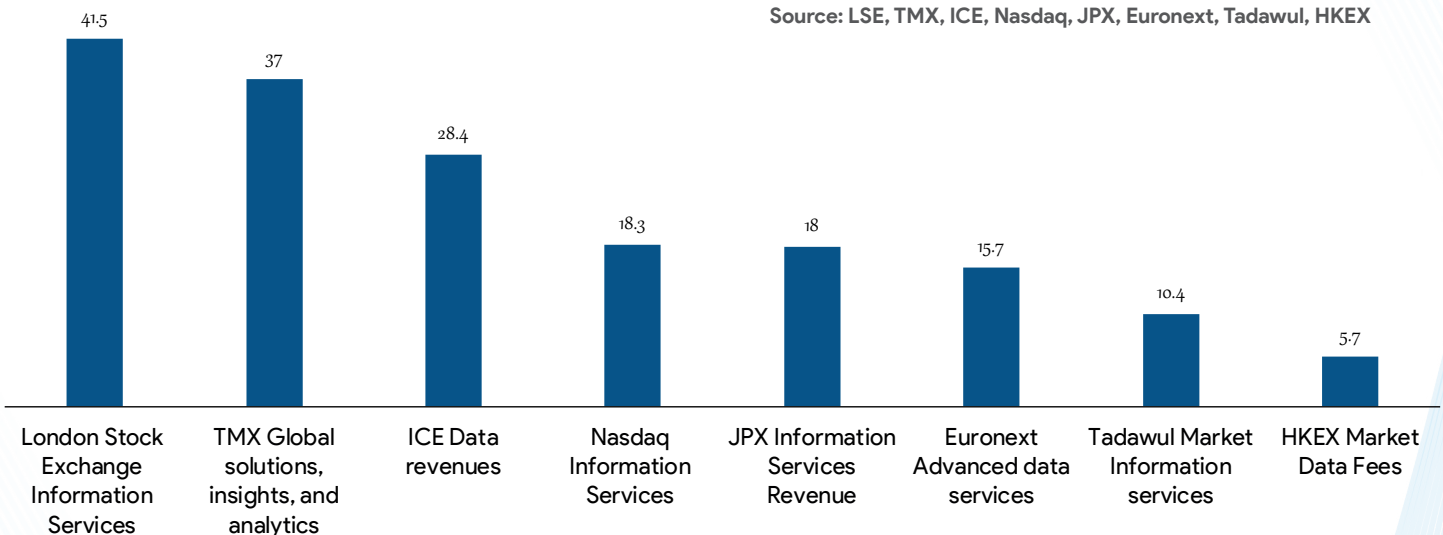
Global Success Stories

Revenue and profit growth driven by alternative revenue streams. According to research from Ntsal, around 28% of stock exchanges' revenues were generated by data and information services globally. Top exchanges reach up to 45% of revenue share, particularly in more mature capital markets. Moreover, this number is expected to grow by around 20% per annum (p.a.) globally and is, hence, gaining significant importance.

Throughout the past years, international stock exchanges have resorted to organic and inorganic growth strategies, such as mergers and acquisitions, partnerships, and collaborations, and have made data monetization a primary focus. Hardly any of the successful companies have built their complete service offering in-house leveraging only internal capabilities.

Figure 1: Data services percentage share of total revenue per stock exchange, 2020

Source: LSE, TMX, ICE, Nasdaq, JPX, Euronext, Tadawul, HKEX



Global markets growth in revenue from data services and success stories underpin the importance of data monetization. Western stock exchanges such as the London Stock Exchange, Nasdaq, ICE and Deutsche Börse have made big bets on data providers and analytics companies to bolster their data businesses, drive revenues and maintain growth. For example, London Stock Exchange acquired Refinitiv, one of the world's largest providers of financial markets data and infrastructure, during January 2021 and Nasdaq acquired Quandl, a Toronto-based provider of core and alternative financial data, in December 2018. Deutsche Börse Group expanded its portfolio with a newly created growth company, Qontigo, which is a financial technology company that was created in 2019. These acquisitions turned the stock exchanges into massive financial data companies in a short period of time.

Taking a closer look at Tadawul, Saudi Arabia's chief stock exchange, the criticality of a reliance on data services becomes even more salient. Tadawul's revenue model can be segmented into five main services: trading commission, securities depository services, market information services, listing fees and other services. Aside from the typical revenue streams of trading commission and securities depository services, the market information services segment represents about 11% of total revenue, in 2019. Thus, the utilization of data services becomes evident, both globally and regionally.

ICE has been successful at creating a clear framework for data monetization for driving its revenues. The Intercontinental Exchange, Inc. operates regulated exchanges, listing venues, and clearing houses for commodity, financial, fixed income and equity markets in the US, the UK, the EU, Singapore, Israel and Canada. While the ICE has historically been trading commissions, the company has also been able to monetize the data generated by its exchanges in a very meaningful way. In fact, ICE has been so successful at monetizing its data assets that revenue generated by data and subscription-based software now accounts for around half of the company's business. The growth in ICE's data business has been consistent over time. In the second quarter of 2020, the revenue for data services rose %4 year-over-year at a record high of 574\$ million. A large portion of this growth is inorganic, because of a series of critical mergers and acquisitions by the ICE throughout the last decade. This includes the acquisitions of SuperDerivatives in 2014, Interactive Data Corporation in 2015, Standard & Poor's Securities Evaluations, Inc. and Credit Market Analysis in 2016, the Global Research division's index platform from Bank of America Merrill Lynch in 2017, and mortgage software provider Ellie Mae from PE firm Thoma Bravo in 2020.

For ICE to benefit from this growing trend in the market, the company restructured its business model. ICE entered the data services business in 2003 with the launch of ICE Data to cater the information needs of the energy markets. One year after the acquisition of Interactive Data and Trayport in 2015, ICE diversified its business into two broad segments: Trading and Clearing, and Data Services and Listing. Since then, the Data Services and Listings segment has maintained its contribution of around %50 of total revenues.

Figure 2: Percentage Share of ICE's Revenues Less Transaction-Based Expenses per Segment, 2019

Source: ICE

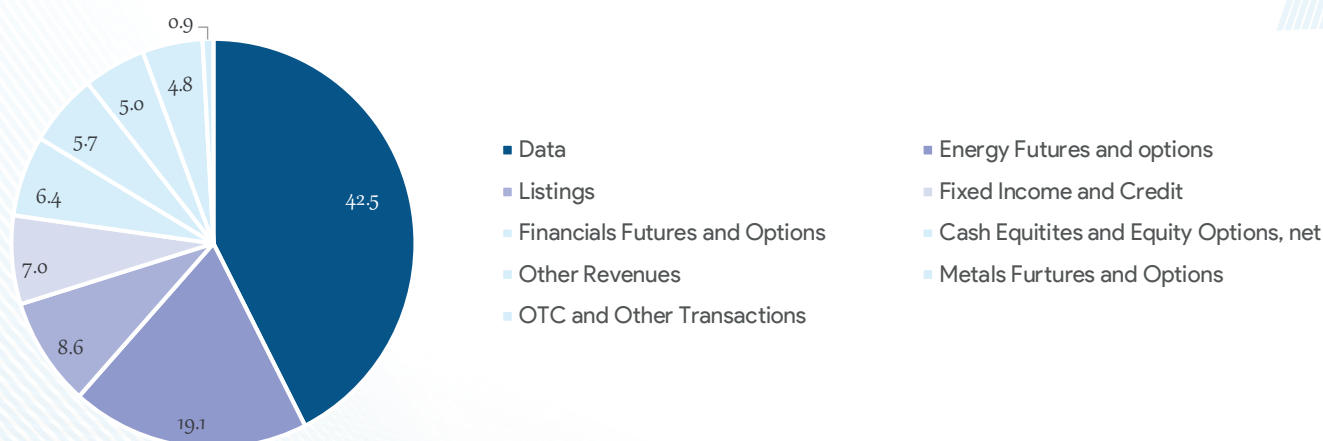
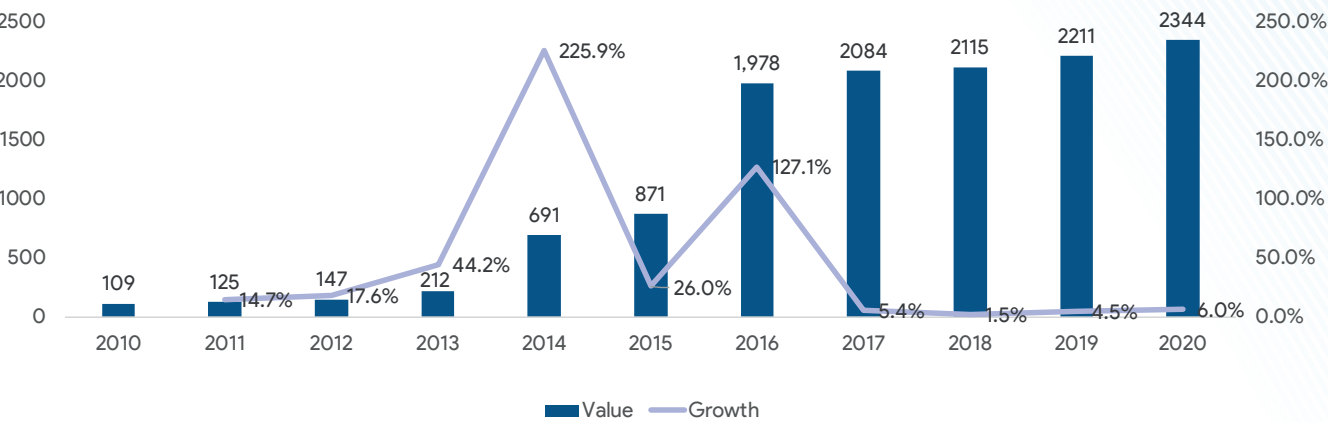


Figure 3: Data Revenues from 2010 to 2020, \$ Million

Source: ICE

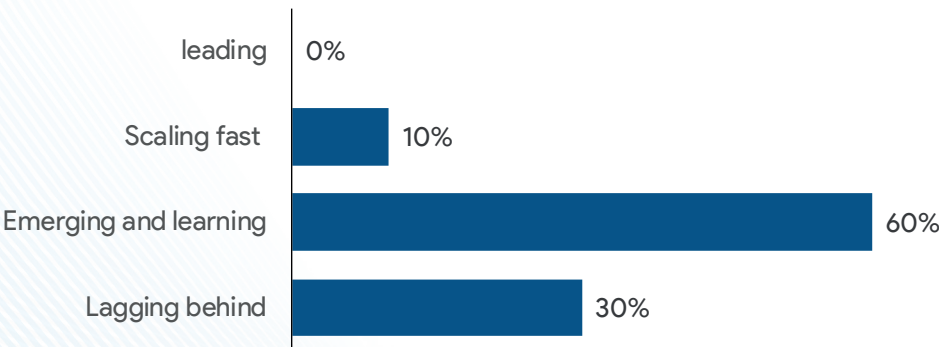


The Arab Region is Eyeing the Opportunity

The Arab region is still emerging in the field of digitalizing financial services. During previous decades, the financial service industry in the Arab region has been lagging in the capital markets domain. Stock exchanges in the region were characterized by low numbers of listed companies, little privatization and a legacy regulatory framework. However, this has changed over the last decade dramatically. Stock exchanges in most Arab countries have invested heavily in expanding their digital infrastructure and have, in many cases, partnered with the world’s leading stock exchanges to leverage international systems. In addition, regulatory bodies have started to review their frameworks and legislations to lower potential investor barriers. New services are offered to institutional investors and incentives to attract more listings of companies.

Figure 4: How mature is the Arab region when it comes to digitization in financial services?

Ntsal Market Study



As displayed by the preceding figure, 60% of executives see stock exchanges in the Arab region currently being in a phase of emerging and learning, on the transition to scaling fast. In general, it is clear that there is still notable effort required to reach the maturity of global markets.

NI Capital's CEO, Mohamed Metwally, proclaims, "Our markets are characterized by a stronger demand of fixed income products rather than equities. This might be influenced by the traditional low number of listed companies." It becomes clearer that Arab region financial services' digitization maturity obtains several implications on stakeholders.

Privatization drives supply. Previously, only a very limited number of corporates were publicly listed and, in many cases, access was mainly available for a selected number of investors. Consequent privatization strategies of governments in the region have led to an increasing number of listed corporates. In parallel, governments and executives understood the growing importance of a healthy retail investor base to create sufficient demand as well as widen the input of enhanced data collection.

Fixed income market dominates in the Middle East and North Africa (MENA) region. Low yields in developed markets have helped ensure a steady stream of investors in search of higher returns. Emerging markets fixed income funds have enjoyed a flood of money over the past couple of years. According to industry experts, the fixed income market has the largest share of MENA capital markets, far exceeding equity markets.

Fertilizing drivers for growth in place. With modern systems and upgraded infrastructures, stock exchanges are well geared for the next growth wave. As such, ambitions not only encompass growth of traditional revenues from transactions, listing commissions and other corporate services, but also growth of revenue in the field of data and information services. Despite this, there is still a clear lack of capabilities as well as capacities to collect, process, structure and monetize innovative data streams.

Data monetization generally represents only 6%, on average, of total revenues of stock exchanges in the MENA region. Although stock exchanges in the region are aware of the potential of data monetization, only a few have formulated a holistic monetization strategy. As a result, most regional stock exchanges' contribution of data services to their overall revenue streams is in the single digits. Tadawul stock exchange is at the top of the list generating roughly 11% of revenue from data services. Contrastingly, Bourse de Tunis falls at the other end of the spectrum approximating 5% of revenue from data services.

3. A Prosperous Future Lies Ahead

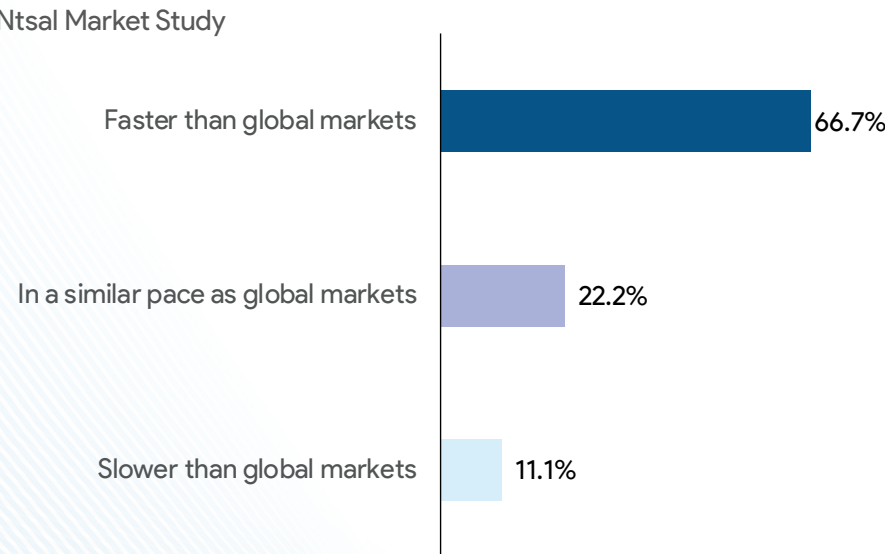
Data Monetization is Going to Play a Larger Role in the Region

The market for data monetization is expected to grow by over 20% per year. Data monetization is an umbrella term that encompasses additional revenue an organization generates from the data it holds. It is a vital component to any organization’s revenue model as it focuses on upselling services and can potentially contribute to a large percentage of revenues. The market for data monetization is expected to grow with a compound annual growth rate (CAGR) of approximately 20% throughout the next decade. The main growth drivers are rising enterprise data volume, increasing reliance on external data sources, growing usage of data processing and artificial intelligence, adoption of data-driven decision-making approaches, advancements in big data analytics, increasing volumes of data generation and lower cost of data storage.

Financial services in the Arab region are expected to grow faster than those in global markets in the next 5 years. Two-thirds of the executives interviewed forecasted the regional financial services to grow with a faster rate than those in global markets, throughout the next 5 years. Around 20% of executives expected the growth to match the growth of financial services in global markets.

CEO at Dubai Gold & Commodities Exchange (DGCX) show positive outlook on Arab region growth: “In the Arab Region there is a clear vision and aspiration. Executing on this vision, we expect capital markets in the region to grow faster than global peers.”

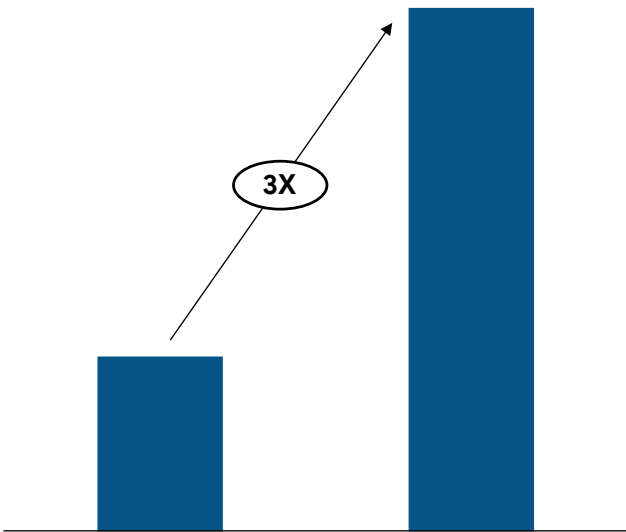
Figure 5: How do you see the growth in Financial Services in the Arab region compared to global markets in the next 5 years? The Arab region will grow



Data monetization share expected to triple. The abovementioned growth is strongly reliant on data monetization. While the current state of data monetization varies significantly across countries, most of the respective stock exchanges expect that share to triple over the next 5 years. This is a gigantic leap.

Figure 6: How do you see the % contribution of data revenue developing in 5 years from now?

Ntsal Market Study

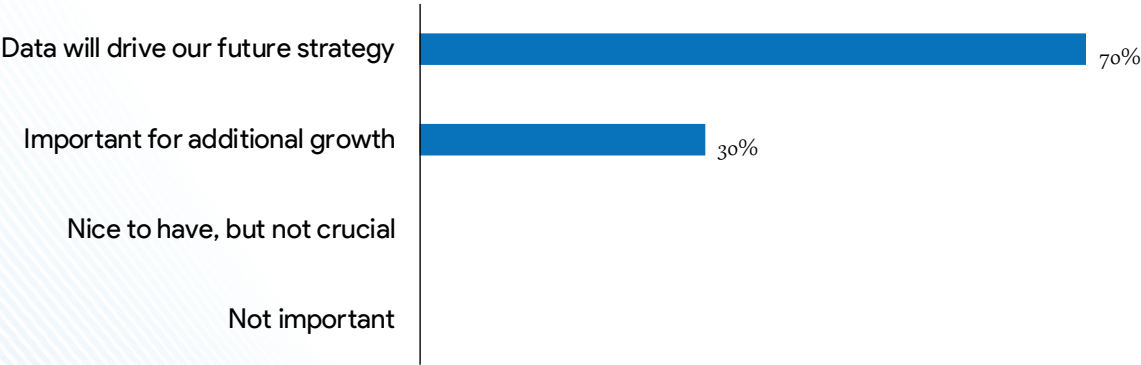


A clearly formulated data strategy is crucial for growth. Unanimously, all 21 senior executives and capital market experts from 10 major financial institutions across 7 Arab countries emphasized the importance of having a clearly formulated data strategy. Around %70 of said executives and experts identify data and data monetization to be the main driver of their future strategies.

Providing further insight, Tarik Senhaji, the CEO of the Casablanca Stock Exchange highlight the need for a customer-centric approach to creating a data strategy in the region: “In our region, trading volumes and counts are not as high as in developed markets. To grow the number of trades, we need to focus stronger on customer experience, supported by data & insights.”

Figure 7: How important is a clearly formulated data strategy for your future business model?

Ntsal Market Study

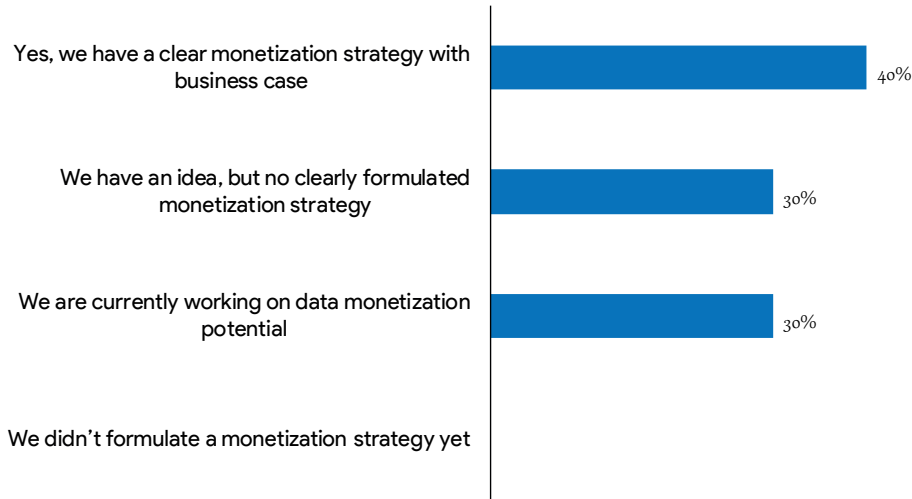


The need to develop a dedicated data monetization strategy is obvious, yet not fulfilled in most of the participant exchanges. Only 40% of the respective stock exchanges have a data monetization strategy in place. Nevertheless, all stock exchanges state that they are currently developing or upgrading the preceding data monetization strategy.

Rashid Al Mansoori, the CEO of Qatar Stock Exchange (QSE), sheds light on the importance of a data strategy to the company: “A clearly formulated data strategy is important for us to diversify our revenue, as trading commissions are under margin pressure.”

Figure 8: Do you have a concrete data monetization strategy and governance framework in place?

Ntsal Market Study



The biggest value creation potential for data monetization is on the top-line level. 45% of participants view the biggest value creation for data monetization to be direct revenue generation, while roughly 40% believe it to mainly contribute towards indirect revenue generation. Direct revenue generation includes application programming interface (API) monetization among other revenue streams, while indirect revenue generation comprises product and sales optimization. Only 15% of participants view the biggest value creation for data monetization to be cost reduction, which includes but is not limited to internal process optimization.

Figure 9: Where do you see the biggest value creation potential for data monetization?

Ntsal Market Study

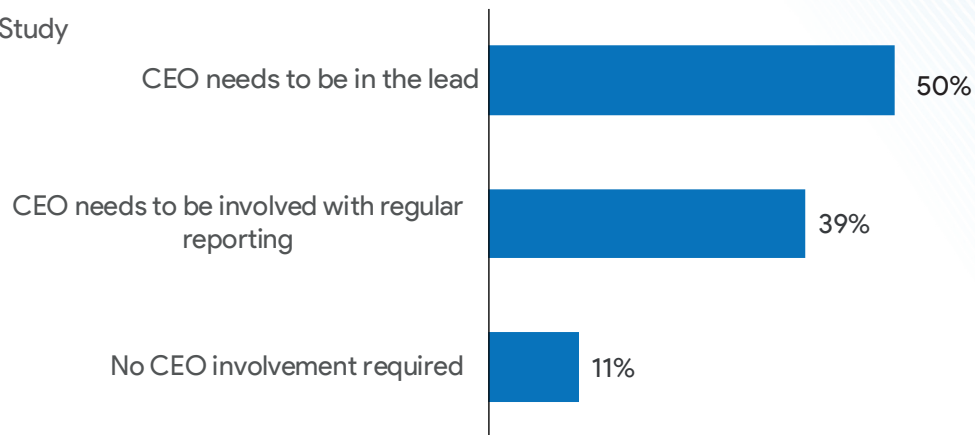


The CEO needs to be in the lead when it comes to data excellence and data monetization. Half of the participants emphasized the importance of the CEO being in lead when it comes to data excellence and data monetization, especially considering the current lifecycle of the topic in most Arab markets.

Experiencing this firsthand, CEO and Managing Director at Egypt for Information Dissemination (EGID) states, “I believe the CEO should be directly involved to drive data monetization.”

Figure 10: How important is the involvement of the CEO in the topic of data excellence and monetization?

Ntsal Market Study



Unpacking The Components of a Business Model

Information services is the most promising business segment of stock exchanges.
The traditional business model of stock exchanges is built on 5 pillars.

Figure 11: Unpacking components of a business model

Ntsal Market Study

Building block	Key services	Characteristic	Relevance now	Trend	Pricing power
Capital market services	<ul style="list-style-type: none"> Primary & secondary equities Derivatives, Fixed-income Foreign Exchange Commodities 	Highly volatile	Very high, decreasing	Under margin pressure	Low
Post-trading services	<ul style="list-style-type: none"> Clearing and settlement Custody services OTC 	Volatile	High, decreasing	Dependent on market volumes	Medium
Corporate services	<ul style="list-style-type: none"> Listing Corporate solutions 	Seasonal	Medium, stable	Low impact and market dependent	Medium
Information services	<ul style="list-style-type: none"> Indices Real-time data Data and analytics 	Stable and predictable	High, increasing	Unused potential	High
Other services	<ul style="list-style-type: none"> Technology Collateral management Etc. 	Occasional	Low	Highly competitive	Medium

Capital market services, post-trading services, corporate services, information services, and other services. Understanding the detailed dynamics of each of these is crucial to set the right strategic direction.

Capital market services, currently one of the main sources of revenue, are characterized as highly volatile due to a high correlation with market volumes. However, prices are under significant margin pressure. Moreover, capital market services have low pricing power.

Post-trading service revenues, which include clearing and settlement, custody services and over-the-counter services, are relatively volatile due to a dependence on market volumes. Post-trading service revenues have a medium pricing power. Corporate services, such as listings and corporate solutions, are considered less relevant than post-trading and capital market services. Their revenue stream is seasonal as it depends on market sentiment and momentum. Like post-trading services, corporate services obtain medium pricing power.

The largest potential lies in information services, which cover monetization of data and analytics, indices and real-time data. They generate a stable revenue stream as it mainly relies on a subscription model, a predictable source of revenue. Furthermore, information services are becoming increasingly relevant and offer high pricing power. Finally, other services such as collateral management, technology, etc., obtain the least amount of current and future relevance indicated by their high competition and unpredictability.

Figure 12: Monetization targets and drivers

Ntsal Market Study

Building block	Key services	Behavioral targets	Monetization driver
Capital market services	<ul style="list-style-type: none"> Primary & secondary equities Derivatives, Fixed-income Foreign Exchange Commodities 	Incentivize frequency and volumes of trading	Smart differentiation
Post-trading services	<ul style="list-style-type: none"> Clearing and settlement Custody services OTC 	Increase loyalty of volumes and trading frequency	Smart bundling and personalization
Corporate services	<ul style="list-style-type: none"> Listing Corporate solutions 	Attract new listings	Lower entry barriers
Information services	<ul style="list-style-type: none"> Indices Real-time data Data and analytics 	Incentivize subscription and advanced solutions	Monetization journeys Innovative pricing models Smart bundling Indirect monetization
Other services	<ul style="list-style-type: none"> Technology Collateral management Etc. 	Incentivize uptake	Precise segmentation and personalization

Also, it is important to note that these different pillars of revenues have a different function in driving customer behavior. For example, capital market prices should incentivize a higher frequency and volume of trading, which can be reached through a smart differentiation of the price model. In contrast, post-trading services should focus on increasing loyalty of volumes, which can be obtained via smart bundling and personalization of services.

Key monetization drivers for information services comprise smart bundling, subscription models and indirect monetization.

Understanding these dynamics of the different pillars of business models will help stock exchanges and capital market firms harness the power of data and monetization services.

Roland Bellegrade, Senior Advisor to the CEO of Tadawul, states, “We have realized the importance of data revenue streams. This is why we recently established a new entity, focusing mainly on innovation and data monetization.”

4. Crafting a Holistic Monetization Framework

Data Sources for Monetization

Stock exchanges and financial service providers should tap into different sources of data to create a holistic monetization strategy. Data could be classified into three broad categories namely market data, reference data and fundamental data. This classification is shown below.

A. Market data

- i. Real-time data
- ii. Historic data

B. Reference data

C. Fundamental data

First, market data refers to the relevant streamed data by stock exchanges. This can be real-time or historic and include data points such as prices, quotes, volatilities, and frequencies. Real-time market data feeds are used to provide intraday updating of market indices and intraday indicative values for exchange-traded funds. The existence of real-time quote data gives market participants updated information regarding prices and quantities available in the market before they make their trading decisions.

Additionally, historical databases of intraday trading and quoting activity are used by several market participants. Historical market data is used to compute execution quality metrics such as effective spreads, price improvement, and speed of execution—metrics that may be used to evaluate market quality at different trading centers or at different times. Historical data can be used by traders to back-test trading strategies before putting them into operation. The said data can also be used by brokers to help optimize their order routing strategies and to evaluate their compliance with best execution obligations.

Second, reference data are static entity identifiers and include timestamps and locations. This can be utilized for transaction-specific processing and could be leveraged while differentiating between customer groups to further understand customer group dynamics.

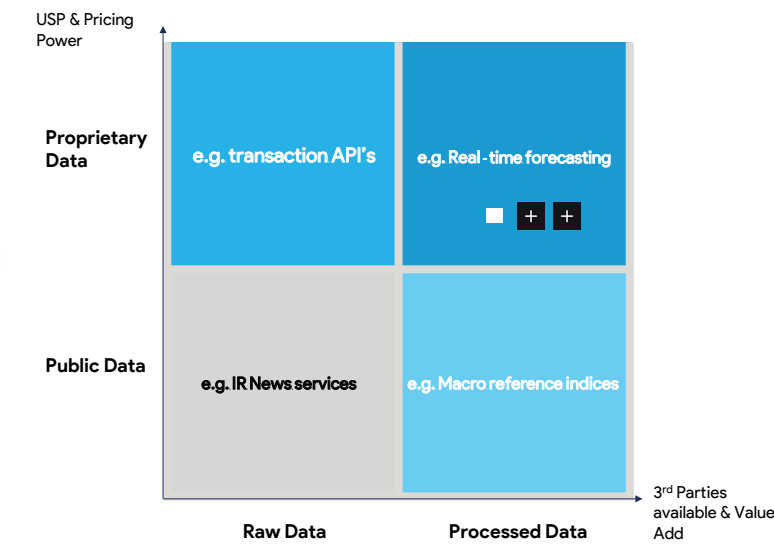
Third, fundamental data refers to corporate information, macroeconomic data, investor relation news and other relevant data which allow investors to determine a company's underlying value and potential for future growth.

Practical Use for Data Sources

Considering monetization practices, it is vital to differentiate data based on their unique selling points (public data vs. proprietary data) and their degree of processing to add useful value (raw data vs. processed data).

Figure 13: Our data monetization matrix provides structure

Ntsal Market Study



Structuring these data types in a simple matrix build a strong foundation for holistically building a monetization strategy.

A Holistic Monetization Strategy is Key

Our data monetization strategy framework consists of four pillars: Monetization governance, customer typology, data evolution and commercial model.

Figure 14: The 4 pillars of our data monetization strategy framework

Ntsal Market Study

Monetization Governance

Define rules on how to pay

Customer Typology

Define who is going to pay

Data Evolution

Scope value-chain on where to pay

Commercial Model

Define how, when and what to charge

A holistic data monetization framework that covers all products and services is key for institutions to reach their full potential. When building the monetization framework, it is necessary to consider different perspectives, such as who will pay, how will they pay, when will they pay and what will be charged, to be able cover all interlinked angles.

Monetization Governance

Monetization governance aligns key management and ensures a successful monetization approach. The monetization governance sets the framework and defines the rules. It entails setting clear targets for selected key performance indicators (KPIs). KPIs are quantifiable measurements used to assess a company's overall long-term performance and should include top-line and bottom-line growth targets among others.

Executive management alignment and support is necessary to drive the monetization framework forward and ensure its success. Key management should always be in the lead when it comes to the monetization framework. They set the company's risk appetite and define the operational model. Moreover, they identify and define actionable imperatives that need to be taken to advance business outcomes. Taking into consideration the abovementioned points will reduce redundancies, align key management, ensure a holistic monetization approach and maximum value creation, reduce market risk and provide clear performance targets.

Bilel Sahnoun, the CEO of the Bourse de Tunis (BVMT), recognizes that a concrete data monetization strategy should be resilient, in times of financial crises: "When Covid hit, we have proven that we have built a solid level of digitization as we insured business continuation based on telesales and remote advisory."

Customer Typology

Customer typology allows stock exchanges and financial service providers to focus on certain customer types and hence enhances operational efficiency. Customer typology defines who is going to pay. Identifying different customer types, based on practical use cases, is essential to offering suitable products and services to each customer.

Figure 15: Customer Typology - who is going to pay

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Payor	USERS	CUSTOMERS	SOLUTION PROVIDER	PRO-VIDER	DOWN-STREAM INSITUATIONAL PARTNERS	UP-STREAM INSITUATIONAL PARTNERS	PERIPHERAL
	Individual trading data	Pooled trading data	Individual behavioural data	All	Contextual trading and market data	Specified trading and market data	Behavioural data
Primary Beneficiary	B2C			Self-use			B2B
Use case types	<ul style="list-style-type: none"> Individual Preferences Trading behaviour and preferences Adaptive optimization Contextual guidance 	<ul style="list-style-type: none"> Purchasing preferences Social trading trends Behavioural benchmarking Swarm intelligence and warnings Ecosystem plays 	<ul style="list-style-type: none"> Advertisements Investment Solutions Robo Advisory Risk Management Solutions Infotainment Social networking 	<ul style="list-style-type: none"> Bottom-line: efficiency, cost reduction, Top-line: customer segmentation, channel optimization marketing, sales 	<ul style="list-style-type: none"> News and information Academic research Trading Strategies Descriptive and predictive tools 	<ul style="list-style-type: none"> Usage patterns Demand forecasting Persona preferences quantification Trend analyses Risk and rating information AI-tool development 	<ul style="list-style-type: none"> Regulators Social norm trends Central Banks

Our holistic framework starts from the payor type, classifies primary beneficiaries, then and only then creates individual use cases.

Many service providers fall into the trap of defining use cases without initially assessing payor and beneficiary dynamics. This trap leads to a superficial customer segmentation, unclear targeting and an unoptimized monetization approach.

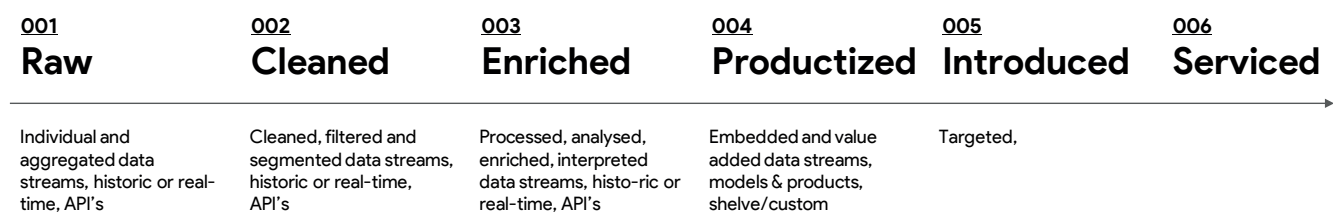
After assessing the said dynamics, the CEO of EFG Hermes Finance, Walid Hassouna, states “the most successful use case for data monetization will be driving efficiency in marketing.”

Data Evolution

The degree of data evolution inherently leads to different monetization potentials. Data evolution provides a comprehensive look at the complete value chain to determine the monetization power of the data. As shown below, levels of data “structure” exist on a spectrum from unstructured raw data to highly structured, serviced data.

Figure 16: Data evolution – value-chain maturity

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As we move away from raw data, the data becomes more valuable. This value refers to a higher monetization value but requires higher capabilities and skill to manipulate. Raw data refers to individual and aggregated data streams such as historic or real-time API's. After the data is cleaned, filtered and segmented it is called cleaned data. Subsequently, processed data refers to processed, analysed, enriched and interpreted data streams. Embedded and value-added data streams are even more processed and are commonly referred to as productized data. Targeted productized data that offers a go-to-market service propositions is called introduced data. Finally, serviced data refers to full-fledged reverse business models.

Generally, intellectual property (IP) protection increases as the complexity and sophistication of the data increases. Regulatory requirement, on the other hand, decreases as the data structure increases. As such, the type of data provided has a significant impact on the right commercial model.

Commercial Model

The optimal commercial model is selected based on the customer typology and product characteristics. The commercial model encompasses the different commercial models that the organization can offer its customers. Generally, there are two types of commercial models, sold and embedded.

Sold commercial models entail direct payment methods and deal with the immediate charge to customers.

A common example of a sold commercial model is the pay per solution model. The pay per solution model refers to the customer paying for a set amount of time/usage without owning the respective product or service.

Another illustration of a sold commercial model is the pay per stream/demand (APIs). This model refers to users paying for access to a data stream based on calls, volumes, time or number of users.

In revenue share models, the customer pays a percentage share based on generated down-stream revenue or cost savings. This sold commercial model could allow for an amount of flexibility between involved parties.

Embedded commercial models inherently implant commercial gains in a more indirect approach.

Bottom-line efficiency gains are evident archetypes of embedded commercial models. Bottom-line efficiency gain models focus on internal process optimization and enhanced capabilities to improve cost base.

In top-line impact enhancement models, internal optimization of segmentation, purchasing prediction and sales instances to boost top-line power are necessary. Similarly, insight generation models are solid examples of embedded commercial models. Insight generation models refer to the internal use to generate, power and enhance products and services.

As suggested by the Head of Institutional Business at GFM Mubasher, Abdo Khoury, the choice of commercial model is dependent on surrounding dynamics: “As a market data company, we create the biggest share with direct monetization.”

In culmination, it is apparent that there are a variety of business and commercial models that stock exchanges and financial service providers can potentially offer to their customers. To be able to identify the optimal commercial model, which can include a combination of models, it is necessary to match it to the mentioned customer typology and product characteristics selected.

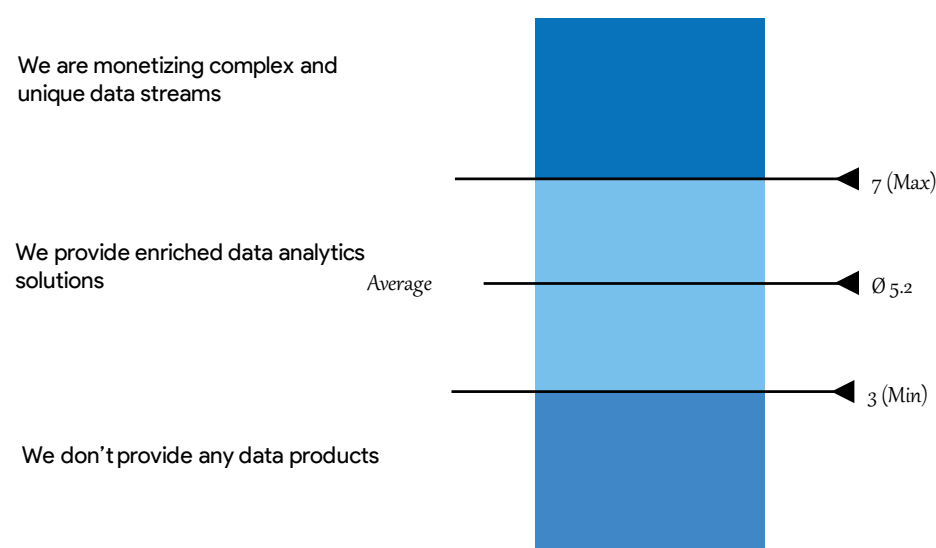
5. The Roadmap to Success

Swift Building Up of Internal Capabilities

Readiness is currently at medium level. To maintain pace with the global market dynamics, stock exchanges in the Arab region must build up their internal capabilities quickly

Figure 17: How well are you equipped to harness the power of data in terms of talent, technology and monetization capabilities?

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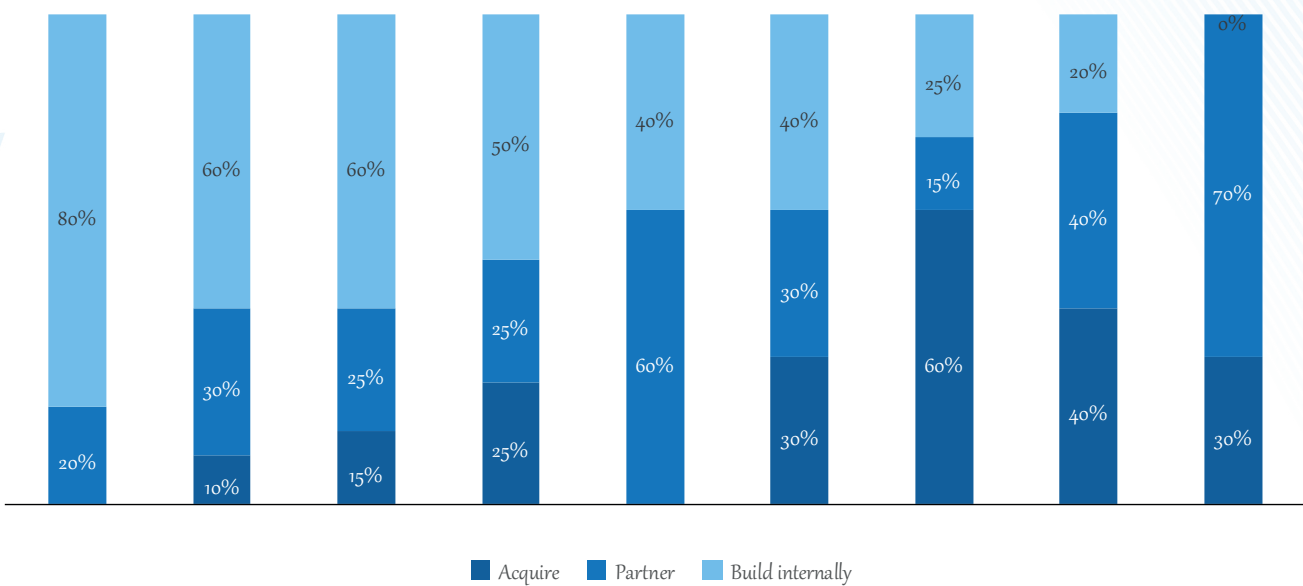


While some stock exchanges see themselves immature regarding offering innovative data and monetization services, others are more advanced. On average the Arab region is, on a scale from 110-, at around 5. Particularly concerning infrastructure, gaps exist. Another challenge is finding the right talent that is trained and experienced enough to create satisfactory data monetization products.

Organic growth alone will not be sufficient. While on average almost 80% of capability building will be done internally and through partnerships, only 20% is expected to happen through acquisition. This is below the global average and might potentially slow down the growth in this area.

The CEO of the Amman Stock Exchange (ASE), Mazen Wathaifi, recognizes the opportunity for data-driven growth and expresses, “We are confident to double our data revenues over the next 5 years.”

Figure 18: How would you describe your strategy to ramp up capabilities?
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The authors of this study recommend accelerating the internal buildup of capabilities. Simultaneously, it is crucial to involve the regulator to create an investor-friendly compliance climate.

Further education must be done to increase awareness of offered solutions and services as well as benefits for institutional and retail investors.

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