



Jordan's Startup Economy

Assessing the economic contribution and potential of tech and tech-enabled startups

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Abbreviations

AI	Artificial Intelligence
B2B	Business to Business
B2C	Business to Consumer
BVI	British Virgin Islands
CAGR	Compound Annual Growth Rate
CCD	Jordan Companies Control Department
DOS	Jordan Department of Statistics
FTE	Full-time Equivalent
GDP	Gross Domestic Product
GEM	Global Entrepreneurship Monitor
GFCF	Gross Fixed Capital Formation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GVA	Gross Value Added
ICT	Information and Communications Technology
int@j	Jordan Information & Communications Technology Association
ISIC	International Standard Industrial Classification
ISSF	Innovative Startups and SMEs Fund
JEDCO	Jordan Enterprise Development Corporation
LP	Labor Productivity
MoICT	Jordan Ministry of Information and Communication Technology
MoITS	Jordan Ministry of Industry, Trade and Supply
NLP	Natural Language Processing
SDGs	Sustainable Development Goals
SMEs	Small and Medium Enterprises
SNA	System of National Accounts
SSC	Social Security Corporation
TBSs	Technology Based Startups
TRC	Telecommunications Regulatory Commission
VC	Venture Capital

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Jordan's Startup Economy:

Assessing the economic contribution and potential of Tech and Tech-enabled startups

The challenge: Understanding and steering Jordanian startups' economic impact

The promise of jobs, growth and innovation through tech and tech-enabled startups has attracted the attention of policymakers and stakeholders around the globe. This is also true in Jordan, e.g. with the government's plans for adopting a reform plan for digital entrepreneurship development (Startup Act initiative). Successful home-grown enterprises such as Maktoob have shed light on the potential of the Kingdom's tech startup scene. Particularly for young and tech-savvy countries with a small domestic market like Jordan, technology can be a source of innovation and serve as an enabler for increased efficiency, market access and rapid growth with comparatively little investment.

Nurturing home-grown startups to unfold their potential has become a priority especially with Jordan's economic growth falling short in creating sufficient job opportunities for those entering the labor market.

Alarmingly, however, the total entrepreneurial activity in Jordan has been declining.

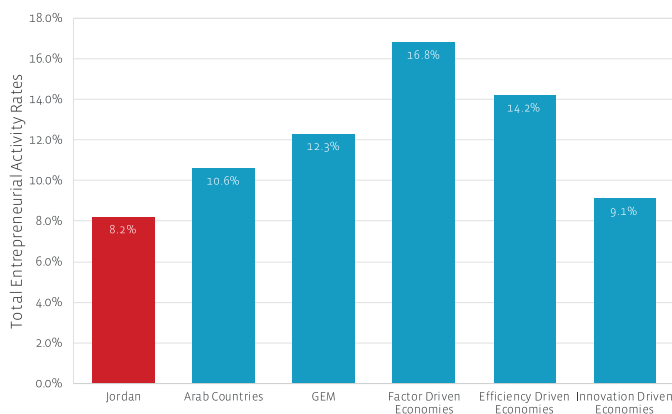


Figure 1: Total Entrepreneurial Activity Rates in Jordan compared with other economies, GEM Jordan Report 2016/2017

According to the Global Entrepreneurship Monitor (GEM) reports, Jordan's total entrepreneurial activity rate has been decreasing from 18.3% in 2004, 10.2% in 2009, to 8.2% in 2016. Similarly, the rate of established business ownership has decreased from 5.3% in 2009 to 2.7% in 2016. Discontinuation of business has significantly increased from 15.3% in 2009 to 21.2% in 2016, ranking Jordan second highest in global comparison.

Anecdotal evidence also shows that many Jordanian entrepreneurs decide to grow their businesses abroad. They hope to benefit from more supportive ecosystems. According to a 2019 World Bank survey of 200 Jordanian entrepreneurs, startups face numerous barriers to

establishing their business in Jordan, ranging from inadequate policies and finance instruments to limited access to talent. The Global Entrepreneurship Index 2018 underlines that Jordan's entrepreneurship ecosystem lags in high growth, risk capital, risk acceptance, networking, and human capital indicators.

While indicators suggest a decline in the entrepreneurial ecosystem in Jordan, data on the economic impact of early stage companies in Jordan has not been assessed to date. Therefore, a sound assessment of the characteristics of startups' impact on the Jordanian economy as well as whether their contribution is increasing or declining and conclusions on how this impact can be improved are needed.

In order to nurture a better understanding of the dynamics of Jordan's startup ecosystem, the GIZ MSME Project in partnership with int@j and Orange Jordan commissioned Impact MENA with a study on the economic contribution of tech startups in Jordan. Developing a clearer understanding of startups' role in the economy, the study provides decision-makers, sector leaders and key stakeholders with important insights of startups' contribution to national economic development. This in turn shall enable stakeholders to better plan and contribute to an enabling environment for startup growth and development.

The insights: Jordan's tech startups help drive economic growth and inclusion

The total GDP contribution of TBSS to the Jordanian economy is estimated to reach US\$ 168 million. This takes into account US\$ 109 million in direct contribution in addition to over US\$ 59 million in indirect and induced contributions. With this, TBSS contributed 0.5% of Jordan's nominal GDP in 2016, of which 0.3% constituted a direct value added. The economic impact of TBSS also expands to indirect and induced effects through TBSS' investments, value chain effects, employees' spending and last but not least product and process innovations also tackling social and environmental challenges. TBSS' more qualitative contributions on the economy and society span the inclusion of disadvantaged groups, improved quality of life through enhanced products and services, increased competitiveness through innovation and positive effects on the environment.

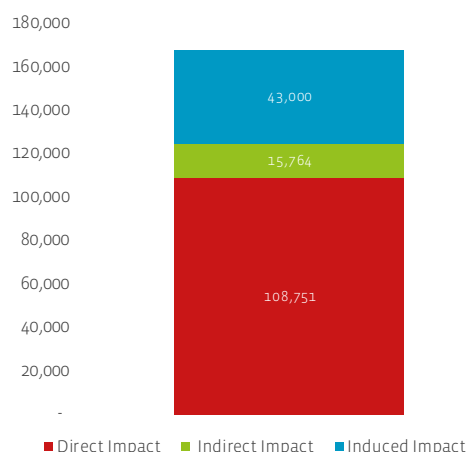


Figure 2: Total Economic Impact for TBSS for 2016 (1000s US\$), Impact MENA Researchers

Despite challenges due to economy-wide and regional economic difficulties, Jordanian TBSs enjoy high performance potential in terms of export intensity, female employment, high-wage job creation, and technology transfer and diffusion. Due to its skill-intensity, the value added of Jordan's ICT sector is markedly high compared to the national average across sectors and other key activities. The average value added generated by the ICT sector reached 64% of its total output as compared to an average of 40% for the manufacturing activities and an average of 52% for all Jordanian economic activities.

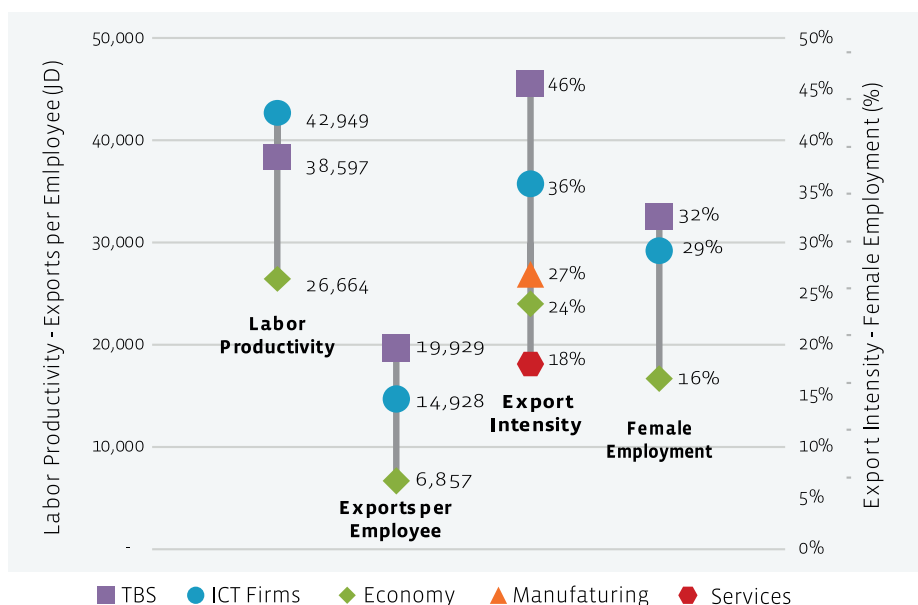


Figure 3: Direct Contributions of TBSs Comparison with Sector & Economy (2016), Impact MENA Researchers

Tech and tech-enabled startups bear further potential for the Jordanian economy. Given the limited Jordanian market and the need to promote Jordan's export capabilities, TBSs are particularly promising due to their high export performance compared to both mature ICT firms as well as other sectors of the Jordanian economy.

Also, the high percentage of female employment in TBSs is promising. Likely, the combination of ICT being a sector more accessible for women in Jordan, a sector with extensive linkages to other economic sectors, and a sector with a relatively high female participation allows leveraging the sector as guidance for other sectors in Jordan.

Another untapped potential is that of "Jordanian" startups abroad. Anecdotal evidence shows that a number of startups - although owned by Jordanians and operating in the Jordanian market - are registered outside of Jordan. Several of Jordan's main success stories chose to register abroad as they or their investors consider the business and investment environment in Jordan less conducive than in other economies in the region and beyond.

The opportunities: Concerted efforts of the government and further stakeholders to tap startups' potential for Jordan

Nurturing TBSs generally as well as specifically with regards to their export performance can help establish Jordan as a digital service hub in the region and beyond.

Research revealed a number of entry points for policy makers to enhance the business and investment climate for startups. This includes legal (e.g. startup act and venture capital by-law), regulatory (e.g. regulatory guillotine), incentive (stable tax inducements), institutional and policy frameworks (e.g. the National Entrepreneurship and Micro & SME Development Strategy) aspects.

An overarching strategy addressing the needs of startups should consider recommendations proposed by startups. An effective public-private dialogue will allow addressing the most promising interventions on the one hand as well as those possible to be addressed with little resources at short notice ("low hanging fruit") on the other hand. One reference entity within the government coordinating or dealing with policies related to startups could help to facilitate the interaction between entrepreneurs, related government agencies and support organizations. Further measures to consider including are the introduction of exemptions / grace periods for taxes and social security for the first years of operation, provision of tax exemptions for production inputs, establishment of a process for escalation for startups regarding other issues in terms of public service provision.

The need: Effective management and promotion of startups' impacts requires a common language and a review of Jordan's relevant data sources

Jordan still lacks a formal definition and unified policy framework for startups in general, and tech/tech-enabled startups (TBSs) in particular. This inhibits coherent implementation and synergic impact of government and non-government interventions for supporting such firms. This study proposes an operational definition for TBSs based on international best practices and consultations with Jordanian key stakeholders.

Proposed definitions for startups as key for effective data collection and analysis

- General definition for a startup in Jordan: A new, typically small firm, at its early phase of operation, which seeks a sustainable, scalable, profitable, and potentially high-growth business model.
- Operationalized definition for a startup in Jordan: A legally independent active company, not older than ten years since formal registration, and operating in one or more high potential / growth sectors.
- Operationalized definition for technology and technology-enabled startups (technology-based startups, TBSs): A knowledge-based, legally independent active company, not older than ten years since formal registration, and operating in one or more ICT commodity or service sectors.

Statistical data, analytical research, and promotional reports of investment opportunities have substantial potential for improvement. Unifying the classification of business activities according to international classification (ISIC) among the different government entities involved in the registration, licensing and tracking of businesses (e.g. Ministry of Industry and Trade, Companies Control Department, Municipalities, and Department of Statistics) and business support organizations (e.g. chambers of industry and commerce as well as associations) will be crucial to improve data quality. Furthermore, providing a classification of firms on a more detailed level (e.g. beyond four digit ISIC codes) in the establishment census and in sector surveys would allow for more in-depth analysis of priority economic activities. Such sector-specific analysis may be bolstered with a regular tracking of internationally comparable indices such as the Global Entrepreneurship Monitor that would allow for crosschecking developments in Jordan in terms of entrepreneurship and startup development.

Regularly tracking the evolution, challenges and policy impacts of the Jordanian ICT sector, including its startups, will be beneficial for effective measurement and thus management of support activities. Effective measurement, however, requires next to a common language an effective statistical system. Study research has found locally available sources of information that are somewhat regularly updated and locally available, thus not dependent on ad hoc surveys. However, the study revealed that only three secondary data sources provide immediately relevant data sets. Also, those data sets need to be reviewed and refined to ensure their scope, depth and focus sufficiently answers key questions on startups' growth paths.

Jordan's statistical system holds potential for further refinements to generate official, micro-based, and age-sensitive data on the contribution and performance of startups in general and TBSs in particular. Of particular importance for assessing the indirect and induced effects of ICT and other sectors are the Input-Output Table and related statistics. It is recommended to initiate a new and more detailed Input and Output model for the Jordanian economy. Int@j provides sector-specific and a regularly updated, well-developed data set for the ICT sector in terms of industry coverage and quality. Nonetheless, there is a need to benefit from DOS international methodology in covering more standard and detailed variables (e.g. value added, real investment), as well as other key variables, such as ICT exit or discontinuation rates (by age group), geographical concentration of ICT firms, and firm skill intensity (ratio of employees with Bachelor degree or higher). Adopting a unique identification number for each ICT firm would facilitate the systemic tracking of startup firms over time.

1

INTRODUCTION

- 1.1 Study Rationale
- 1.2 Status Quo in Jordan
- 1.3 Study Objectives



1.1 Study Rationale

Jordan's economy is dominated by a strong services sector in terms of contribution to GDP¹ and large public sector in terms of employment. Traditionally the largest employer, accounting for 41% of the workforce, the public sector has seen a major decline in recruitment in recent years. Latest official statistics indicate an unemployment rate of 18.7% in 2018². Currently, Jordan's economic growth does not create enough job opportunities to compensate for this change. In 2016, there were only 49,600 newly created job opportunities while the number of job seekers grew by more than 100,000.

Across the world, policymakers and stakeholders at large are increasingly recognizing the importance of entrepreneurship as an enabler of growth and employment³. A study on startups' contribution to economic growth in the United States recently found that while "technology-based startups still account for a relatively small share of all businesses, they have an outsized impact on economic growth, because they provide better-paying, longer-lasting jobs than other startups, and they contribute more to innovation, productivity, and competitiveness."⁴ Similarly, a study by PwC on the Australian tech startup sector suggests that it has "the potential to contribute \$109 billion or 4% of GDP to the Australian economy and 540,000 jobs by 2033 with a concerted effort from entrepreneurs, educators, the government and corporate Australia."⁵

Furthermore, there are indirect or spillover effects of entrepreneurship and flourishing entrepreneurship ecosystems. This includes disruptive innovations, i.e. the creation and offer of products or services that help create new markets or new supply chain networks that disrupt existing markets, or the 'knowledge spill-over theory of entrepreneurship'⁶. This theory sustains that knowledge created endogenously through entrepreneurship results in knowledge spillovers that allow other entrepreneurs to identify and exploit new opportunities.

Notwithstanding, entrepreneurship remains a relatively new field of research, especially in developing countries. Beyond anecdotal evidence, we know little about the contribution of startups to economic growth, structural transformation, productivity growth, innovation and employment, as

well as about entrepreneurial and firm characteristics or policy instruments and packages of support that are most effective at enabling startups to flourish, grow and reach scale.

The GIZ 'Employment-oriented MSME promotion' project, int@j and Orange believe in the potential and already existing contribution of startups to the development of the Jordanian economy. Therefore, they joined forces to undertake a study on the impact of technology and technology-enabled startups have had on the Jordanian economy.

Developing a clearer understanding of the startup ecosystem and of startups' growing role in the economy, the study shall provide decision-makers, sector leaders and key stakeholders with a comprehensive overview of startups' contribution to national economic development, enabling in turn relevant stakeholders to better plan and contribute to an enabling environment for startup growth and development.

1.2 Status Quo in Jordan

Jordan has always been viewed as a country with high levels of entrepreneurial activity. Several dedicated startup support programs (e.g. in incubation, mentoring and Investment) were launched already in the late 1980s and 1990s before many other countries in the region started establishing such programs.

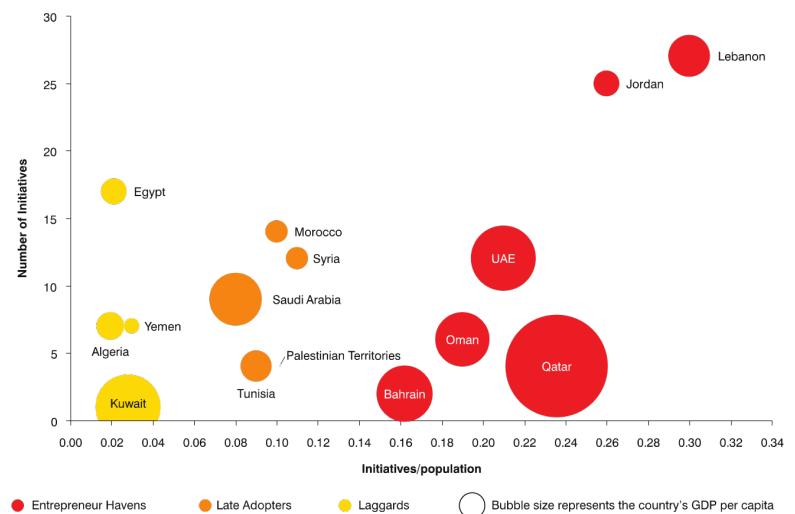


Figure 4: Number of entrepreneurial Initiatives in the MENA region by Country (1974-2010), Booz & Company

¹ According to the Central Bank of Jordan Annual Report (2017), the total service-producing sectors relative importance to GDP is 66.6% which includes government services with a relative importance of only 13.2% of GDP

² Jordan Department of Statistics, Q2 2018.

³ The World Bank Group (2016), 'Growth entrepreneurship in developing countries: a preliminary literature review,' working paper.

⁴ Information Technology and Innovation Foundation (2017), 'How Technology-Based Startups Support U.S. Economic Growth.'

⁵ PwC (2013), 'The startup economy: How to support tech startups and accelerate Australian innovation.'

⁶ Acs, Z.J., Braunerhjelm, P., Audretsch, D.B. et al., 'The knowledge spillover theory of entrepreneurship,' Small Bus Econ (2009) 32: 15.

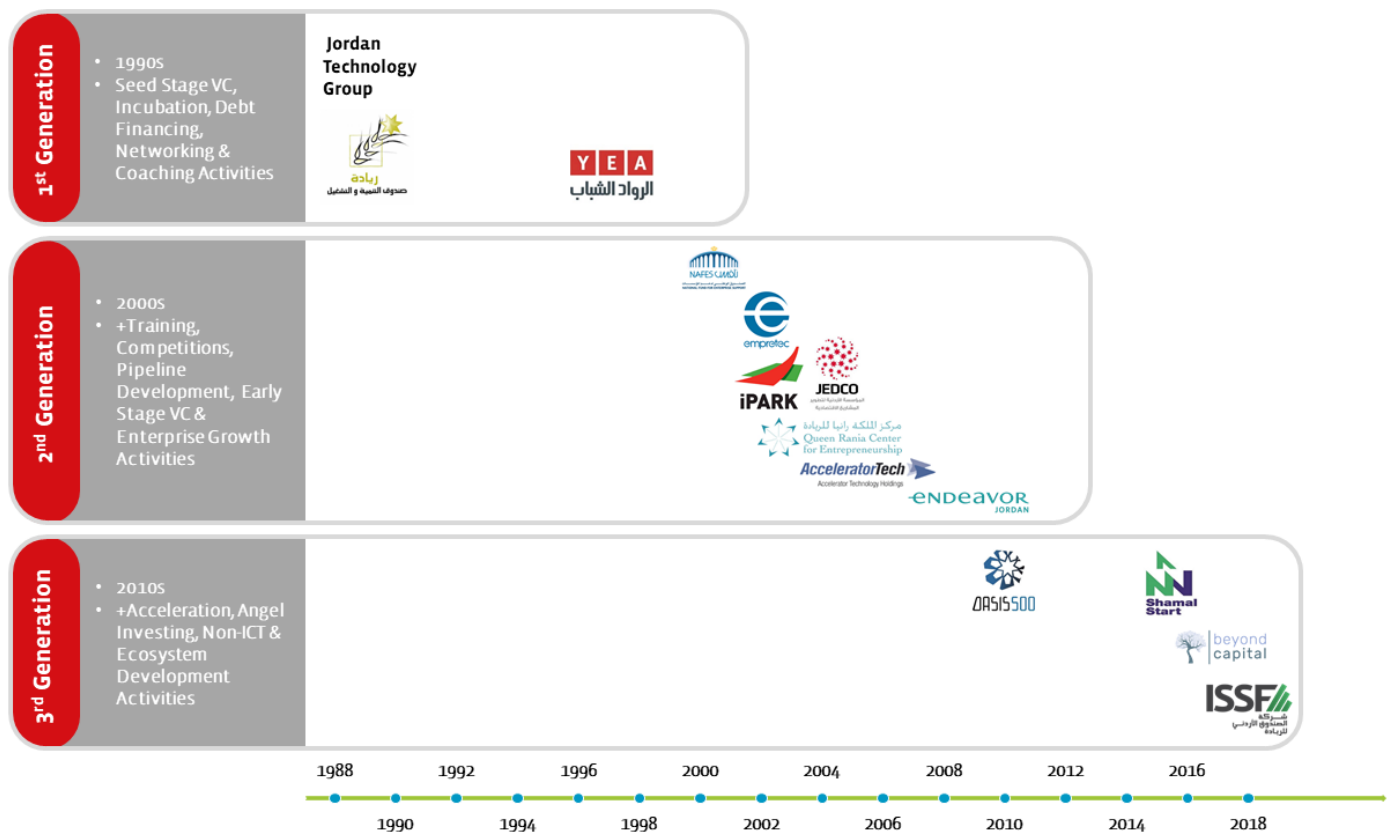


Figure 5: Evolution of the Jordanian entrepreneurship ecosystem over the last 30 years (1988-2018)

The above figure presents examples of various entrepreneurship programs and support organizations established in Jordan over the last thirty years. In each generation, new offering was introduced, helping the ecosystem as a whole to evolve to become one of the leading regional hubs for startups. This is not an exhaustive list, but created to showcase prominent examples of Jordanian programs and support organizations fully focused on developing entrepreneurship and supporting startups in Jordan, launched in the last 30 years.

But when the size and quality of enterprise creation and growth are assessed, a number of issues surface, and a major paradox emerges: Data suggests that the total entrepreneurial activity in Jordan is declining rather than increasing.

As per the latest Global Entrepreneurship Monitor (GEM) National Report for Jordan⁷:

- **Jordan's total entrepreneurial activity⁸ rate has been decreasing** over time from 18.3% in 2004, 10.2% in 2009, to 8.2% in 2016.
- **The rate of established business ownership⁹ has decreased** from 5.3% in 2009 to 2.7% in 2016.

- **Discontinuation of business¹⁰** has significantly increased from 15.3% in 2009 to 21.2% in 2016, ranking Jordan second highest in global comparison.

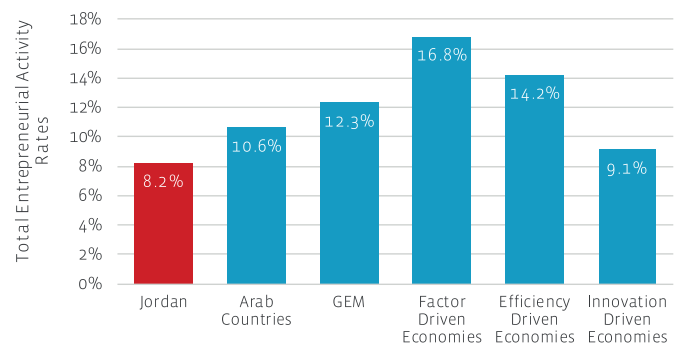


Figure 6: Total Entrepreneurial Activity Rates in Jordan compared with other economies, GEM Jordan Report 2016/2017

While these indicators suggest a decline in the entrepreneurial ecosystem in Jordan, data on the economic impact of early stage companies in Jordan has not been assessed to date to explore this trend further. Therefore, a sound assessment of the current contribution of startups and whether the contribution of startups to the Jordanian economy is increasing or decreasing and conclusions on how this impact can be improved are needed.

⁷ Global Entrepreneurship Monitor Jordan National Report, 2016/2017

⁸ Total entrepreneurial activity rate assesses the percent of working age population both about to start an entrepreneurial activity and that have started one from a maximum of 3 years and half.

⁹ Percentage of working age population who are currently an owner-manager of an established business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 3 years and half.

¹⁰ Discontinuation of businesses indicates the percentage of nascent entrepreneurs or owner-managers of a new business, who have, in the past 12 months, discontinued a business, by either selling, shutting down, or otherwise discontinuing an owner/management relationship with the business.

In order to understand the dynamics of Jordan's startup ecosystem, intensive research is required. However, limited empirical work has been done till now in Jordan to tackle this information and knowledge gap.

This study serves to provide a first assessment of startups' actual and potential impact on the national economy. With this, the study aims to help identify ways to increase the quantity, quality and impact of enterprise creation and growth in Jordan.

1.3 Study Objectives

This empirical study is the first in Jordan to quantitatively assess the contribution of technology and technology-enabled startups (technology-based startups or TBSs) using firm-level data. TBSs for the purpose of this study are defined as young firms in Information and Communication Technologies (ICT) and in related services (e.g. call centers), covering ICT services, manufacturing and trade activities.

Previous studies focused on the ICT sector as a whole, covering all firms (i.e. both startups and mature firms). By

disaggregating data, this study aims to shed light onto the particularities of TBSs and their actual and potential contribution to a thriving economy.

Specifically, the study will focus on the following areas:

- **Definitions:** Develop locally relevant definitions to key entrepreneurial process-related concepts such as startup, tech/tech-enabled startup, startup lifecycle and stages.
- **Case studies:** Customize the startup life cycle model for Jordanian tech/tech-enabled startups (i.e. technology-based startups, TBSs) and apply it to selected case studies.
- **Impact assessment:** Estimate quantitatively the overall economic impact (direct/indirect) of Jordanian TBSs.
- **Research:** Propose suggestions on how to conduct future studies especially related to improvement of data availability and quality.
- **Policy:** Identify challenges, barriers and opportunities that hinder / encourage enterprise creation and growth in Jordan and identify potential policy changes.



2

APPROACH AND METHODOLOGY

- 2.1 Overview
- 2.2 Data Collection and Analysis
- 2.3 Stakeholder Consultation Process
- 2.4 Data Collected and Sources
- 2.5 Validity, Reliability & Limitations



2.1 Overview

For the first time in Jordan, firm-level data is used to quantitatively assess the contribution of TBSs in Jordan's digital economy, namely in ICT, e-commerce and related services. The secondary firm level data, classified according to activity categories as defined by the International Standard Industrial Classification (ISIC 4), is used to explore key features and impacts of TBSs in the Jordanian economy. This includes their value added, employment, investment, taxes, and startup-age distribution in Jordan.

Both current performance and inter-temporal evolution of TBSs are explored using different methodologies. Firm-level databases from int@j and the Jordan Department of Statistics (DOS) were utilized to track the growth and contribution of TBSs in Jordan using the same ISIC 4 classification. More specifically, data analysis was conducted using both time-series and cross-section approaches.

The research built also on an extensive literature review and adopted an interpretive approach including in-depth interviews and focus groups to better understand the various factors influencing startup creation, growth, and economic impact in Jordan.

A comprehensive literature review was conducted initially to identify related definitions, models and studies. The review aimed to identify related studies to benefit from their findings and identify information gaps for appropriate and effective focus on the present assessment. This was later complemented by consultations done with key stakeholders including the national validation committee.

2.2 Data Collection and Analysis

This study adopted multiple approaches and utilized different databases to track the contribution and evolution of Jordanian TBSs. It follows, amongst others, Ernst and Young (2017) "Determining the Contribution of the ICT / Telecommunication Sector to GDP in Ghana", but with a focus on TBSs.

The study uses the Supply Side Satellite Account method, a re-classification and re-arrangement of the System of National Accounts (SNA) in macroeconomic statistics. The SNA is the internationally agreed standard set of recommendations on how to compile measures of economic activity. This approach re-organizes the national system of accounts to identify the contribution of a specific industry to a state or national economy. The advantage of the satellite accounting approach is that it uses existing economic data and links ICT economic activities with an accepted system of accounts.

The following approaches were used in this study based on its objectives and type of available data:

- **Special Cross-Section Surveys:** Primary micro data for technology-based startups (int@j 2016).
- **Extended National Accounting Method:** ICT Supply Side Satellite Account method (DOS 2012-2016).
- **Input-Output Modeling:** Tracking linkages among various sectors of an economy; assessment of indirect and induced impacts (DOS 2006 & 2010).
- **Stakeholder Consultation Method:** Validation of findings through expert consultations and complementary qualitative assessment.

Other approaches that can help assess economic impact were identified. These may be considered for future studies to shed light on areas beyond the scope of this initial study:

- **Panel Study of Startup Dynamics:** Tracking same startups over time using panel data.
- **Growth Accounting:** Econometric or regression modeling.

In-depth interviews and focus groups were undertaken to discuss the factors related to enterprise creation and growth as well as their impact. A semi-structured interview approach was used to provide a balanced control of the discussion. This approach enabled the interviewer to gather necessary information and at the same time allowed respondents to enrich the discussion with first-hand experiences and examples.

The data from the in-depth interviews and focus groups were analyzed to derive themes and priorities considered of high relevance by the startup ecosystem at large. Firm-level quantitative data was analyzed using Excel.

Three focus groups, one with founders of new startups, one with founders of established startups and one with founders of mature startups were organized in collaboration with the Jordanian Ministry of Information and Communication Technology (MoICT) and the World Bank. The focus groups topics were selected based on a survey implemented by the World Bank amongst 200 Jordanian entrepreneurs in January 2019 to shed light on challenges and potential mechanisms to foster the establishment and growth of startups. The following were identified to be priority areas for potential interventions to improve the business and investment climate for startups:

- Government and Policy
- Financing and Support
- Human Capital

The results of the focus groups are presented in this study with issues, comments and recommendations analyzed and categorized based on:

- Agreement level on discussed issues/recommendations within same group/stage
- Agreement level on discussed issues/recommendations across all groups/stages
- Impact on the economic contributions

Table 1: Data Sources Assessed, Impact MENA Researchers

Study Indicators covered by the Data Source	Information & Communications Technology Association (Int@j)	Department of Statistics (DOS)	Companies Control Department (CCD) & KINZ	Social Security Corporation	Chambers of Industry / Trade	Global Entrepreneurship Monitor
Available (Fully)	9	9	3	3	2	2
Available (Partial)	2	2	1	0	2	0
Total	11	11	4	3	3	2
Rank	1	1	2	3	3	4

2.3 Stakeholder Consultation Process

The study was supervised and guided by a steering committee with high-level representatives from GIZ, Orange Jordan and int@j. In addition, a validation committee representing key stakeholders in the national entrepreneurship ecosystem was engaged to discuss the study approach and verify findings. The committee consisted of respected decision makers, experts, business and social leaders from various fields to provide advice and support to the study implementers. The committee validated the different stages and outcomes of the study. Two in-person committee meetings were held as well as one written feedback round.

- Taxes
- Local and international Investments
- Salaries
- Valuation
- Intellectual Property (patents, licensing, copyright)
- Employment (number of jobs, gender)

Based on this assessment, secondary data was collected from three top sources, namely Int@j, DOS and CCD/KINZ. Using multiple data sources provided an opportunity to assess such data and specify needed changes or improvements in the data sets in order to generate better reports in the future building on existing and regularly updated data.

2.4 Data Collected and Sources

A review was conducted to identify available data from national and international data sources. Each data source was evaluated in terms of its coverage for key study indicators including the following:

Indicators related to startup creation:

- Numbers created
- Motivation to start
- Market & industry focus
- Founder demographics (age, education, gender, location)
- Employees demographics (age, education, gender, location)

Indicators related to startup growth and impact:

- Numbers by lifecycle stage
- Numbers closed
- Revenues
- Exports
- Imports
- Value added

2.4.1 int@j ICT sector survey 2016

In a first step, cross-section analysis was conducted using the int@j database to measure the absolute size of the Jordanian TBS sector and its main components in 2016 (the latest year available for timely analysis). Surveys of previous years, unfortunately, did not allow for consistent time-series analysis.

int@j cross-sectional secondary data provided the base to measure startup contribution levels in 2016. The results are based on the responses by the companies that participated in the int@j annual survey covering both int@j and non-int@j member companies. This includes companies from different segments of the ICT sector, but naturally respondents do not cover all firms active in that space.

2.4.2 Jordan Department of Statistics (DoS) firm-level sectorial surveys

In a second step, the dynamics of the TBS sector using DOS firm-level sectorial surveys from 2012 and 2016 is assessed, focusing on changes in TBS performance and economic contributions over time.

Some challenges were faced to conduct analysis using DOS data due to issues related to the sampling frame. The sampling frame (i.e. the whole targeted population) of both the Annual Sectorial Surveys and the Employment Surveys (available till 2016) is based on the 2011 Establishment Census and has not been updated since. This means, unfortunately, that the sampling frame of DOS surveys does not cover newer firms established between 2012 and 2016.

Hence, DOS data can only be utilized to track changes in startup contribution (i.e. evolution of startup performance) but not to assess the current level of startup contribution. Strength points of the DOS database include the availability of firm-level value added, investment and tax data.

2.4.3 Jordan Companies Control Department (CCD) & KINZ databases

Data of the Companies Control Department (CCD) of the Ministry of Industry, Trade and Supply (MoITS) & KINZ was used to assess TBS business creation and exit over a 10-year period.

A challenge faced with CCD data is related to the classification of the firms, as it lacks standardization of the classification of the firms' economic activities as per international standards such as ISIC 4. For that reason, the research team conducted an intensive review of the full list of business objectives (over 24,000 objectives) to identify those related to ICT (especially tech-enabled) and to then identify firms using ICT and active across the country.

KINZ data was used also as it provided its own classification for firms based on ISIC 4.

2.5 Validity, Reliability and Limitations

The study focused on TBSs established between 2007 and 2016. Not all findings can be generalized to other startups from other sectors. Also, DOS and CCD data have some limitations as they are better suited for locally registered tech startups but have less coverage for tech-enabled startups or offshore companies. This is due to the fact that these official data sources classify tech-enabled startups in non-tech sectors on the one hand and that the data does not cover firms registered outside the country on the other hand.



3

FINDINGS

- 3.1 Startup Definitions
- 3.2 Startup Lifecycle
- 3.3 Economic Impact
- 3.4 Social and Environmental Impact
- 3.5 Tracking the Evolution of Jordan's TBSs
- 3.6 Inter-temporal Survivability of TBSs
- 3.7 ICT Firm Entry
- 3.8 Startup Growth Barriers



3.1 Startup Definitions

Locally relevant and accepted definitions to key entrepreneurial process-related concepts help to create a common language among ecosystem stakeholders. This is an important basis for a common understanding of challenges and opportunities in the startup ecosystem as well as for defining startup segments, their needs, and the type of policies and further interventions needed to tap startups' impact potential.

To be able to develop a comprehensive definition accepted and applied by different stakeholders in Jordan, the below aspects will be discussed before proposing a definition:

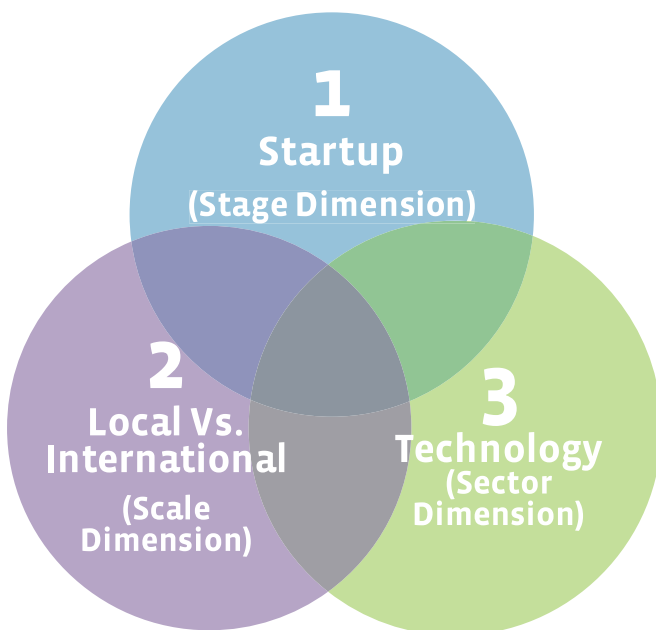


Figure 7: Startup Definitions Dimensions, Impact MENA Researchers

3.1.1 Stage Dimension: Key definition criteria

The research conducted indicated that there is no universal definition for a “startup”. Only general definitions are agreed-upon by most academics, practitioners and policy-makers. Below is a compiled definition that includes the most commonly used attributes in defining a startup:

“A new, typically small firm at its early phase of operation, that seeks a sustainable, scalable, profitable, and potentially high-growth business model.”

The main problem of such a general definition is that it is not operational for economic research purposes: high-growth startups are “difficult to identify ex-ante”¹¹, but the

practice of a startup public policy requires a more concrete and operational definition for startups.

One of the leading research studies published on startup definitions was done by Luger & Koo¹². In their research on Defining and Tracking Business Startups, Luger & Koo have proposed three main criteria to qualify startups that will help differentiate startups from other new businesses, and improve the impact assessment process by focusing mainly on relevant firms:

New: Firm did not exist before during a given time period

Most studies on startups use “new” as the main discriminator. This refers to the creation of an entirely new enterprise that did not formerly exist as an organization. This excludes firms created by changes in name, ownership, location, or legal status.

Active: Firm starts hiring at least one paid employee during given time period

In reality, some registered companies exist only on paper. That is why it is important to add “active” as a second criterion. Thus, to be considered a startup a firm should not only be new but should also engage in the trading of goods or services. Dun & Bradstreet, for example, define startups as “newly opened active establishments.” Excluding in-active companies will not impact the results of economic impact studies, as most “paper” firms do not create value added, hire people or invest, creating little economic impact.

Independent: Firm is neither a subsidiary nor a branch of an existing firm

New firms can be established by one founder or a group of individual founders, but also non-founder new firms (branches) created by existing businesses. It is imperative to differentiate between non-founder new firms and new firms established by original founders in terms of size, capitalization, and economic stimuli. Considering non-founder firms would skew the picture in terms of startups' needs and performance, as these companies depend on support from parent companies in resources and capabilities, whereas startups have to start from zero and have limited access to such support. Any proposed startup incentives and support should target founder startups, whereas non-founder firms can benefit from other incentive and support schemes targeting established and mature firms planning to grow in specific sectors or geographies.

The three criteria (new, active, independent) will be used to qualify new entities as startups, helping to develop a more practical definition for the purpose of this study.

¹¹ Primi, Annalisa (2015) Start-Up Latin America 2016- Building an Innovative Future. Startup Nations Summit 2015.

¹² Luger, M.I. & Koo, J. Small Bus Econ (2005).

3.1.2 Scale Dimension: Local vs. International

Local Definitions for Startups

In Jordan, several national policy documents attempted to clarify what is meant by startups, tech startups, and tech-enabled startups.

The 2018 by-law on venture capital (VC) companies does not define tech or innovative startups, but refers to high-risk and promising high-growth SMEs as investment aim of VC companies in Jordan:

Regulation No. (143) of 2018 Regulation for Venture Capital Companies

Article 4 - The following are required in the Company:

- a. Its objectives shall be in the direct investment or the establishment of funds to contribute and invest in the capital of **small and medium-sized companies with high risk and significant growth potential**.

The Jordan Economic Growth Plan 2018–2022 issued by the Economic Policy Council defines startups as **those companies younger than three years for the purpose of allowing tax deductions on entrepreneur investments**.

The 2014-2018 National Entrepreneurship and SME Growth Strategy for Jordan, led by the Jordan Enterprise

Development Corporation (JEDCO), does not define startups or tech startups, but proposes a definition for an early-stage startup (ESSU): **“a new business that has been in operation for no more than two years”**. Within the updated but still draft 2016-2020 National Entrepreneurship and Micro & SME Development Strategy, JEDCO explicitly defines startups as **“new and registered enterprises not exceeding 2 years of operation”**.

The World Bank Innovative Startups Fund Project (2017) for Jordan identifies companies for the purpose of finance provision as **“firms with less than 5 years of activity”**. The newly established Innovative Startups and SMEs Fund (ISSF)¹³ aims to increase private early stage equity finance for innovative small and medium enterprises (SMEs). For the fund purposes, a startup was defined as: **“Any SME in the process of becoming operational or any existing SME that has yet to sell its product or service commercially”**. SMEs were defined as: **“Formally established innovative companies (new or existing) less than 5 years old”**. Innovative was defined as: **“new or improved products, goods or services; new or improved processes and/or business models”**.

In summary, no local common definition exists for startups in Jordan. However, various organizations and initiatives propose different relevant definitions with one common factor, namely the age class of a company.

International Definitions for Startups

Below is a comparison for startup definitions in selected countries:

Table 2: Startup Definitions in Selected Countries, Impact MENA Researchers

Country/ Country group	Age class	Other operational criteria	Source of definition	Focus of definition
Tunisia	Not older than 8 years	Number of employees; total assets; revenues	Startups Law (2018)	Technology-based and high-growth SMEs
Latvia	Not older than 5 years	Income; profits has not been distributed as dividends and is re-invested in startup company's development; Tax arrears; and at least 70% of employees hold Master or PhD	Law on Aid for Startup Companies (2016)	Innovative and scalable business with high growth potential
Philippines	Not older than 5 years	R&D expenses (as a percent of total operation costs); gross annual revenues	Innovative Startup Act (2017)	Firms with innovative product, process, or business model that are not a mere end-user of innovation
EU	Younger than 10 years	Significant employee and/or sales growth	European Startup Monitor (2015)	Startups that feature (highly) innovative technologies and/or business models
Italy	Not older than 4 years	Turnover; company subject to taxation; owned directly for at least a 51% share by individuals	Startup Act (2012)	Innovative startups
India	Not older than 7 years (10 years for biotechnology startups)	Turnover; startup has not been established through splitting up or reconstruction of an existing business	Startup Law (2018)	Entity working towards innovation, development or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment or wealth creation

13 The World Bank Project Operations Manual for Innovative Startups Fund Project in Jordan, 19 May 2017

The above comparison allows drawing a number of conclusions:

- The specific and formal definition of a “startup” varies across countries.
- Several operational but different criteria do exist.
- All definitions focus on new innovative and technology-based firms.

A common feature is the identification of an age class. The company’s age is an enduring and pivotal factor in identifying startups in all of the definitions. The minimum is 4 years (Italy), the maximum is 10 (EU), with an average of 6.5 years for this group.

Most local experts consulted during this study recommended moving the threshold age to the high end (such as applied by EU, Tunisia, and India) as the startup development process in Jordan is likely to take longer due to a small size of the domestic market, limited access to finance or advanced support services, barriers to export and other barriers to growth.

At the same time, policy makers and other players in the ecosystem need to be cautious not to create a new generation of Jordanian startups fully dependent on support schemes in such a way that these companies will fail after such support is stopped or significantly reduced. One solution could be gradually reducing selected benefits after a 5-years period, for example, allowing the startups to be less dependent on such benefits, and creating a sense of urgency to start developing an operational model similar to mature firms.

Other accompanying features of standard definitions of “startups” do exist (such as turnover) but seem to vary by country. Furthermore, all considered countries envisage “startups” as analogous to high-tech, knowledge-based or innovative startups. This is likely due to the fact that these firms are considered to be capable of generating more economic impact compared to other startups. According to Müller¹⁴, there is a wide variety of startups, but only some of them have a noticeable positive effect on economic development. New technology-based firms and opportunity-based startups are the type of new firms that are most likely to generate a large number of jobs and to grow quickly. On the other hand, copycat startups that copy established business models and firms created to escape unemployment (necessity-based entrepreneurship) are likely to have lower growth rates and potential economic impact.

3.1.3 Sector Dimension: Technology

To cater to the sector dimension and define more specifically tech and tech-enabled startups, tech businesses in general (that includes startups and mature firms) need to be defined.

The California Small Business Development Center system defines a technology enterprise **“as a business in which research and development bring forth an innovative product, process or service. The innovation typically involves intellectual property that contributes to a strong competitive advantage in the marketplace and serves as a foundation for a high rate of growth”**.



Spotlight: Defining startups for targeted policy support: The Indian Startup Law

The Indian Government in the Indian Startup Law (2018) defines a Startup as an entity, incorporated or registered in India not prior to five years, with annual turnover not exceeding 25 crores (USD ~3.5 Million) in any preceding financial year, working towards innovation, development, deployment or commercialization of new products, processes or services driven by technology or intellectual property.

As for the legal registration, the entity should be a Private Limited Company registered under The Companies Act, 2013 or a Registered Partnership Firm under The Indian Partnership Act, 1932 or Limited Liability Partnership registered under The Limited Liability Partnership Act, 2008. For the offering, the entity should develop and commercialize a new product or service or process; or

a significantly improved existing product or service or process, which will create or add value for customers or workflow.

Finally, the business is considered to be a Startup Business (eligible business to benefit from preferential policies) if supported by any of the below:

- Recommendation letter of an incubator in Post-Graduation Indian College
- Recommendation letter of an incubator funded or recognized by the Government of India
- Should be funded by a private equity fund like Angel or venture capital
- Has a patent grant on the product

14 Müller, Bettina (2012) Start-up promotion instruments in OECD countries and their application in developing countries, giz, Germany.

According to Bailetti¹⁵, the definitions found in the literature suggest that technology entrepreneurship is about:

- Operating small businesses owned by engineers or scientists;
- Finding problems or applications for a particular technology;
- Launching new ventures, introducing new applications, or exploiting opportunities that rely on scientific and technical knowledge
- Working with others to produce technology change.

Technology entrepreneurship is also strongly linked with a resource-based view of a sustainable competitive advantage, which is concerned with how to create and capture value. Both concepts pay explicit attention to how resources that embody technology and scientific advances create and capture value. The resource-based theory of a sustainable competitive advantage links firm performance to firm resources and includes concepts such as capabilities, dynamic capabilities, and core competencies, and how a firm can create and capture more value than its competitors on a sustained basis.

Identifying and Defining Tech Sectors

To quantitatively assess the economic contribution of TBSs in Jordan, this study adopts a sector-based approach in tracking TBSs in Jordan. It will be based on the ISIC 4 classification of all economic activities describing relevant sectors. Furthermore, the study focuses on ICT manufacturing and services as other high-tech industry groups are considered minimal in terms of numbers and activity size.

Though many economists would suggest that a larger share of the technology-based economy, sectors, and startups is a revealing sign of a superior competitive position, the term “Technology Sectors” defy

Tech and tech-enabled sector: General and study-specific scope

A general and customized classification of knowledge-intensive activities (tech sectors) in Jordan comprises the following:

- High-tech and medium-high-tech manufacturing including:
 - Pharmaceuticals
 - Computers
 - Electronics
- Community, social and personal services, specifically:
 - Health Services
 - Higher Education
- ICT:
 - 5 services sectors (including communications and maintenance)
 - 2 wholesale trade sectors
 - 5 industrial sectors
- E-commerce
- Publishing activities (Information Economy sector, ISIC4=58)
- Motion picture, video and television program production, sound recording and music publishing activities (Information Economy sector ISIC4=59)
- Programming and broadcasting activities (Information Economy sector ISIC4=60)
- Knowledge-intensive business services:
 - Activities of head offices and Management consultancy activities ISIC4=70
 - Architectural & engineering activities and Technical testing & analysis ISIC4=71
 - Scientific research and development (R&D) ISIC4=72
 - Advertising and market research ISIC4=73
 - Professional, scientific and technical activities ISIC4=74

Based on the study scope and objectives, the focus is mainly on the digital economy, and thus the tech and tech-enabled sectors covered in measuring the contribution and performance of TBSs are:

- ICT:
 - 5 services sectors (ISIC4=5820, 61, 62, 631,951)
 - ◊ Software publishing
 - ◊ Telecommunications
 - ◊ Computer programming, consultancy and related activities
 - ◊ Data processing, hosting and related activities; web portals
 - ◊ Repair of computers and communication equipment
 - 2 wholesale trade sectors (ISIC4=4651, 4652)
 - ◊ Wholesale of computers, computer peripheral equipment and software
 - ◊ Wholesale of electronic and telecommunications equipment and parts
 - 5 industrial sectors (ISIC4=2610, 2620, 2630, 2640, 2680)
 - ◊ Manufacture of electronic components and boards
 - ◊ Manufacture of computers and peripheral equipment
 - ◊ Manufacture of communication equipment
 - ◊ Manufacture of consumer electronics
 - ◊ Manufacture of magnetic and optical media
- E-commerce
- Call Centers (ISIC4=8220)
- ICT Training

15 Tony Bailetti. Technology Entrepreneurship: Overview, Definition, and Distinctive Aspects. Technology Innovation Management Review, Iss February 2012.

easy or standard definition^{16 17}, especially in the service sectors¹⁸. Thus, the extent to which a particular activity (sector) whether in the manufacturing or service sector is “technology-based” is one of degree rather than an exact binary distinction of yes or no¹⁹.

Apparently, the lack of consensus on the nature of technology sectors can inhibit the quest for a consistent measurement and monitoring mechanism. In principle, a technology sector is one in which “knowledge is a prime source of competitive advantage”²⁰ and characterized by “rapid technological progress.”²¹

In practice, technology sectors can be identified by “an above-average spending on research and development (R&D), above-average employment of scientists and engineers, or both”²², but innovation in services is less dependent on R&D efforts²³.

Even the last operational definition (Tyson) does not ensure international or inter-temporal comparability of the term, particularly in the cut-off point (industry averages). The concept is even more blurred in the case of developing countries where:

- Indicators of innovativeness (e.g. R&D expenditure and patents statistics) are either absent or insignificant to record, at least at the detailed level of industrial disaggregation;
- Technological content of a product may differ between developing and industrial countries²⁴, with much emphasis on imitation or assembling imported parts in developing countries.

Consequently, statistics on technology transfer, such as licensing payments, technical agreements and joint ventures, might be more relevant to the case of Jordan.

In general, technology sectors are distinguished by two main characteristics:

- Involves significant learning²⁵ as well as
- Involves high risk and possibly high returns, and a high rate of change²⁶.

High-technology products are also differentiated products, distinguishing an offering from others to make it more attractive to a particular target market through different design, features, delivery, quality and price. High-technology startups generally adopt a differentiation strategy, at least in the early stages of the product-life cycle. This enables them to compete with larger firms and charge a premium price, thus recouping their often high R&D expenses.

Technology-based startups and sectors do exist in service sectors (e.g. e-commerce) as well as in manufacturing industries (e.g. computers). Service sectors can be labeled technology-based because they are users of technology techniques or inputs. Manufacturing industries are primarily technology-based if they are producers of technology²⁷, but services are increasingly moving from intensive technology use to becoming technology producers²⁸, so some technology is becoming part of the offering instead of being only used in the back-end to deliver the service.

3.1.4 Proposed Definitions

Taking into account the three basic requirements discussed above (new, active, independent), the various dimensions and definitions identified, and the study objectives, below definitions have been developed for the purpose of the study:

A **general definition** of a startup in the context of Jordan:

“A new, typically small firm, at its early phase of operation, which seeks a sustainable, scalable, profitable, and potentially high-growth business model.”

16 Stern, Nicholas (1991) The Determinants of Growth, *Economic Journal* 101, January, 122–133.

17 Grupp, H. (1995) Science, high technology and the competitiveness of EU countries. *Cambridge Journal of Economics*, 19: 209–223.

18 OECD (1999) OECD Science, Technology and Industry Scoreboard 1999: Benchmarking Knowledge-based Economies, pp. 1–178.

19 OECD (1999) OECD Science, Technology and Industry Scoreboard 1999: Benchmarking Knowledge-based Economies, pp. 1–178

20 Tyson, L. (1992) Who’s bashing whom? Trade conflict in high-technology industries. Washington, DC: Institute for International Economics.

21 Nelson, R. (1984) High-technology policies: A five-nation comparison. Washington and London: American Enterprises Institute for Public Policy Research.

22 Tyson, L. (1992) Who’s bashing whom? Trade conflict in high-technology industries. Washington, DC: Institute for International Economics.

23 Abdal, A. et al. (2016) Rethinking sectoral typologies: A classification of activity according to knowledge and technological intensity. *RAI Revista de Administração e Inovação* 13, 232–241.

24 Lall, S. (1998) Exports of manufactures by developing countries: Emerging patterns of trade and location. *Oxford Review of Economic Policy*, 14(2): 54–73.

25 Jacquemin, A. and Sapir, A. (1993) Competition and imports in the European market, in L. Winters and A. Venables *European integration: Trade and industry*. Cambridge: Cambridge University Press.

26 Macdonald, S. (1987) High technology industry in Australia: A matter of policy, in M. Breheny and R. McQuaid (eds.) *The development of high technology industries: An international survey*. London: Croom Helm.

27 OECD (1998) *Technology, productivity and Job creation: Best policy practices*. Paris.

28 Hatzichronoglou, Thomas (1997) *Revision of The High-Technology Sector and Product Classification*, OECD, STI Working Papers, OCDE/GD(97)216

A more focused, **operational definition** of a startup in the context of Jordan is:

“A legally independent active company, not older than ten years since formal registration, and operating in one or more high potential/ growth sectors.”

To cater to the narrower scope of this study on technology and technology-enabled startups, a **technology-based startup (TBS)** in the context of the study is defined as:

“A knowledge-based, legally independent active company, not older than ten years since formal registration, and operating in one or more ICT commodity or service sectors.”

3.2 Startup Lifecycle

Any business goes through specific stages to grow from inception to maturity. The focus and length of stages

depend on the type of business. For technology and technology-enabled businesses, the focus is more on the business model development and validation, creating a competitive advantage, and managing growth. Each stage presents specific issues and challenges.

3.2.1 Startup Lifecycle Models

The literature review conducted identified the following startup life cycle models focused on technology startups. The models varied from four-stage models (Partanen²⁹, Muhos³⁰ and Autio³¹) to a six-stage model (Buss³²).

In this study, we are adopting the below business lifecycle adapted and used by Kauffman Foundation and many other leading organizations, similar to the Buss model. It divides the journey of any business into seven stages and describes in detail the journey of building and growing a technology business. This model covers and details all the related steps, activities, changes, developments and issues that a typical technology startup goes through.

Each stage is characterized by specific developments related to the offering, sales, financials and growth rate.

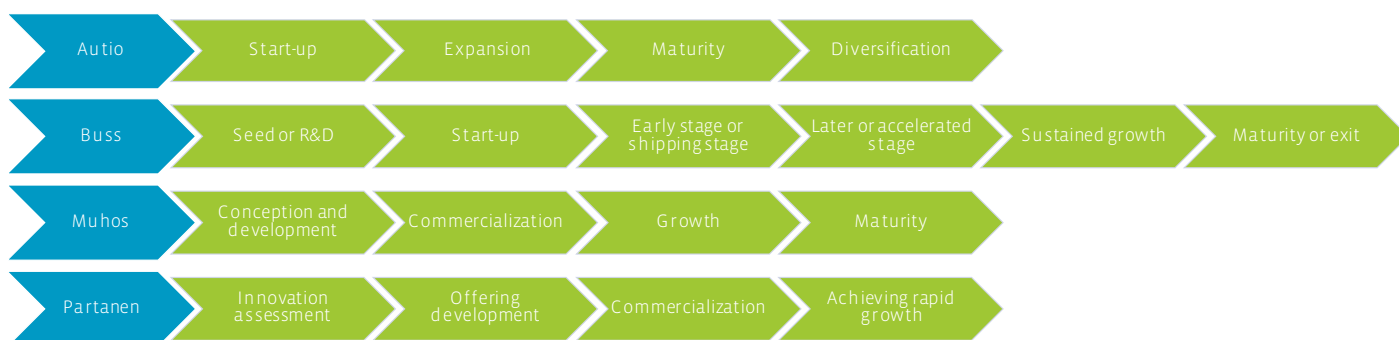


Figure 8: Related Models for Startup Life cycle



Figure 9: Business Lifecycle, Kauffman Foundation

29 Partanen, Jukka – Möller, Kristian – Westerlund, Mika – Rajala, Risto – Rajala, Arto (2008) Social capital in the growth of science-and-technology-based SMEs. Industrial Marketing Management, Vol. 37, No. 5, 513- 522.

30 Muhos, Matti – Piila, Laura – Iskanius Päivi (2008) Dimensions of Growth – A Case Study in Finnish Technology Intensive SMEs. In: Proceedings of ERBF 2007, ed. by M. Hannula – M. Koironen – M. Maula – M. Seppä – M. Suoranta – J. Tommila. Tampere University of Technology (TUT) and University of Jyväskylä (JUY).

31 Autio, Erkko – Kronlund, Mathias – Kovalainen, Anne (2007) High-Growth SME Support Initiatives in Nine Countries: Analysis, Categorization and Recommendations. MTI (Ministry of Trade and Industry) Publications 1/2007: Helsinki.

32 Buss, Terry F. (2001) Capital, Emerging High-Growth Firms and Public Policy: The Case Against Federal Intervention. Green Wood Publishing Group Incorporated: Connecticut, USA.



Figure 10: Business Lifecycle Stages detailed, Kauffman Foundation



Spotlight: Startup lifecycle, A Different Model

To show another related model, GIZ guide to **Startup promotion instruments in OECD countries and their application in developing countries** presents another approach in analyzing the process to start a new business and establish it in the market, in which the business goes into four stages:



Each stage has its own specific activities and challenges:

- The idea stage: entrepreneurs identify opportunities for a business and decide to engage in entrepreneurial activity.
- The seed stage: entrepreneurs assess the market in terms of competition, demand levels, potential

substitutes, the prices of inputs and the willingness of potential customers to pay; they develop a business model and identify the key assets needed to run the business (e.g. human capital, technology, location and marketing strategy). This stage may also include the research activities needed for the development of the products the firm wants to produce.

- The startup stage: establishment of the business, including the official set up of the enterprise, hiring of employees, renting of office or production space, and procurement of equipment. The need for financing is particularly high during this phase.
- The expansion stage: the period following the successful launch of a product on the market: if the market responds positively, the volume of production is increased to an optimal scale.

3.2.2 Proposed Startup Lifecycle

Below stages are proposed to reflect the Jordanian startup lifecycle, where the startup stages are divided into three separate stages, providing the firms with a longer time frame to be able to prepare for later growth stages. This is a process that typically takes longer in Jordan than in other countries due to factors discussed before in the definitions (limited domestic market size; limited access to finance or advanced support services; barriers to export and other barriers to growth).

3.2.3 Startup Case Studies

The next tables present examples of Jordanian startups at different stages of growth, each impacting the Jordanian economy in a unique way.

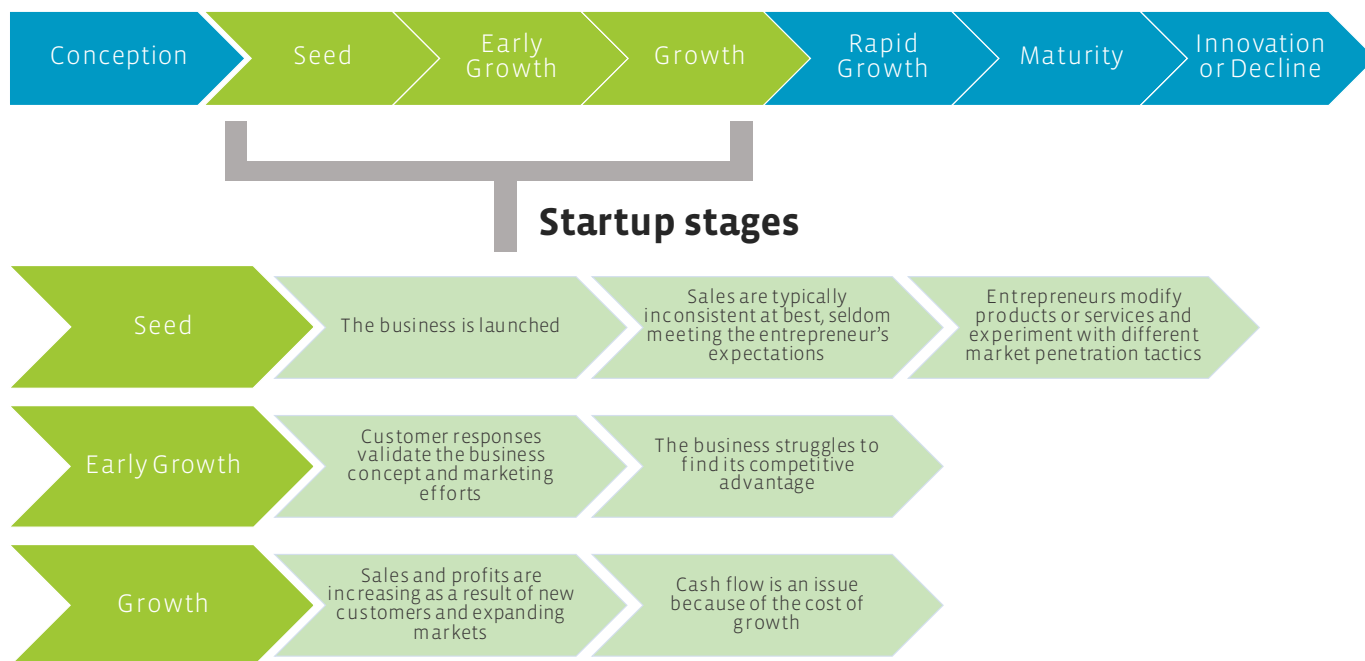


Figure 11: Proposed Startup Lifecycle

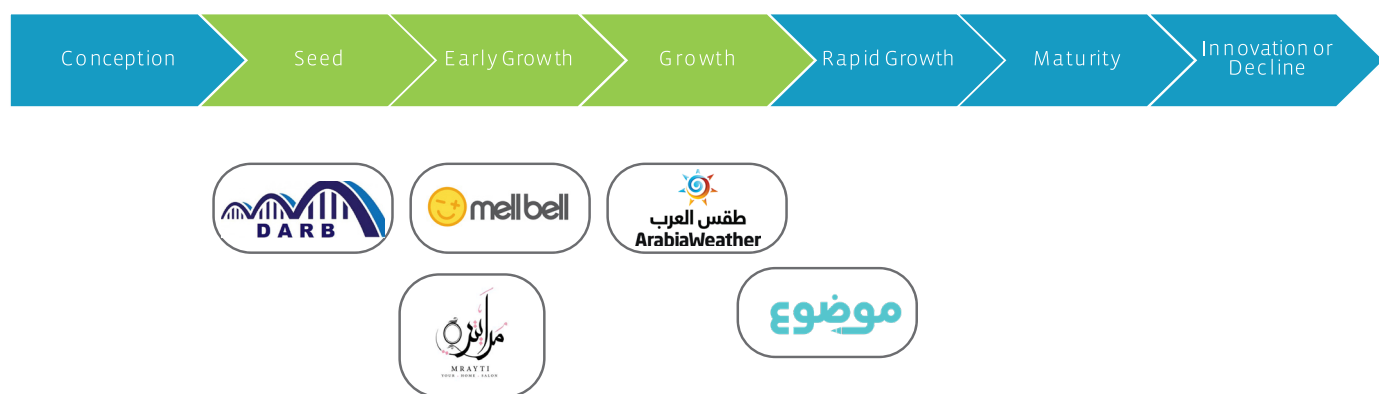


Figure 12: Startups Case Studies per life cycle stage

Table 3: Tech Startups Vs. Tech Enabled Startups, Impact MENA Researchers

	Tech startup	Tech-enabled startup
Offering	Develops new technology-based products, tools, or platforms to provide a new or improved offering, could be B2B or B2C	Utilizes/Leverages already developed technologies to provide a new or improved offering, usually B2C
Product development activities	Strong focus	Limited activities, focused mainly on customizing existing technologies to fit the offering requirements
Duration	Longer cycle as more time is spent on R&D activities	Shorter cycle as it takes less time to start providing products and services
Business Model	Business model is entirely dependent on the development of unique (novel) and valuable technology products	Business model is enabled and significantly improved by using technology, and overall performance will be severely impacted if technology is not used
Jordanian Case Studies in this report	DARB, Mellbell, ArabiaWeather, MAWDOO3	Mrayti

Table 4: Startups Case Studies

Startup	Short profile
DARB	DARB has developed Jordan's first automated solution for solar panels cleaning. The system has been tested on a large scale and provided significant improvement in efficiency.
MRAYTI	Mrayti is Jordan's first specialized mobile beauty salon. Mrayti was launched with a vision that beauty should be accessible, affordable, and non-time consuming. With Mrayti, haircuts, hair styling, makeup and much more are now available to women in their houses, offices, and gatherings wherever they are and whenever they want.
MellBell Electronics	MellBell Electronics is a regional leader in open-source electronic prototyping kits, and designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control both physically and digitally.
ArabiaWeather	ArabiaWeather Inc. is the first local provider of on-demand Arabic weather forecasts for consumers and businesses in the Middle East and North Africa region. ArabiaWeather publishes five-day hourly to 14-day hyper-local forecasts in Arabic through web, mobile, and social media. Their forecasts aim to not only benefit citizens, but also media, aviation, and oil and gas companies as changing weather conditions significantly impact profit margins.
Mawdoo3	Mawdoo3 is a comprehensive online Arabic content publisher that uses the wiki system similar to Wikipedia, and provides premium quality Arabic content. Mawdoo3 provides the largest Arabic-language content platform in the world. Its 84 million site visits and 42 million unique visitors a month makes the online encyclopedia the most visited site in the region. There are currently more than 140,000 articles live on the site.

3.3 Economic Impact

This empirical study focuses on quantitatively assessing the contribution of technology-based startups (TBSs) in Jordan using firm-level data. The economic impact of early stage companies in ICT has not been measured before to assess the share of TBSs in the economy and whether the contribution is increasing or declining, and how this impact can be improved. Assessing such impact will help

to identify ways to increase impact quantity and quality of ICT enterprise creation and growth in Jordan.

3.3.1 ICT Startup Economic Impact Model

The following economic impact model was adopted for the purpose of this study focusing on quantifiable contributions of TBSs in Jordan:

Table 5: ICT Startup Economic Impact Model

Direct impact	The direct economic impact of TBSs' operations and activities in Jordan
Indirect impact	The economic impact and employment supported in the TBSs' supply chain as a result of their procurement of goods and services
Induced impact	The wider economic impact that arises when employees within TBSs' and their supply chain's employees spend their earnings

Quantifiable economic contributions include:

- GDP, or more specifically, TBSs' gross value added (GVA)³³ contribution to GDP;
- Employment, as the number of people employed (male/female), measured on a full-time equivalent (FTE) basis; and,
- Government revenues, focusing on sales taxes paid by TBSs to the Jordanian Government.

The below operational model for quantifiable economic contributions of TBSs to the Jordanian economy was applied:

The model focuses on quantifiable economic impact. It is important to note that there are a number of non-quantified effects including social and environmental impacts. These include:

- Product and process innovation with positive social impacts (see ArabiaWeather and Mawdoo3 case studies)
- Product and process innovation with positive environmental impacts and contributions (see DARB case study)
- Female employment and reduced gender inequality (see MRAYTI case study and see Employment subsection under Direct impact on female employment)

3.3.2 Total Economic impact

Using the ICT Supply Side Satellite Accounts method, the overall impact of TBSs on the Jordanian economy in 2016 is estimated to be JD 119 million consisting of JD 77 million direct impact in addition to over JD 41 million in indirect and induced contributions.

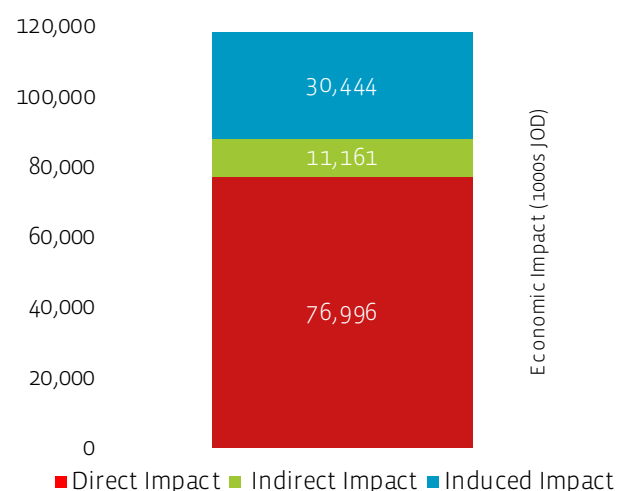


Figure 14: Total TBSs Impact (1000s JOD), Impact MENA Researchers

3.3.3 Direct Impact

Gross value added

The chart below summarizes the total estimated value added impact using firm level data for TBSs after adjusting for indirect and induced contributions for value added.

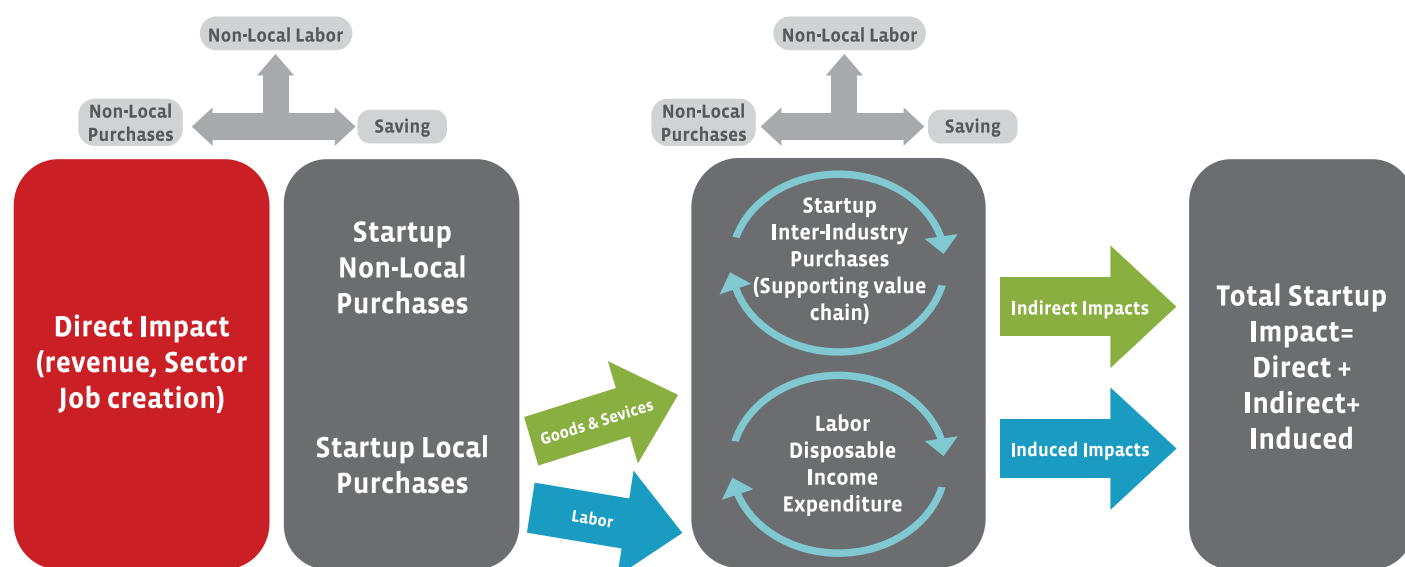


Figure 13: TBS Operational Economic Impact Model

³³ Gross value added is the measure of the value of goods and services produced in an area, industry or sector of an economy. It is calculated as output minus intermediate consumption.

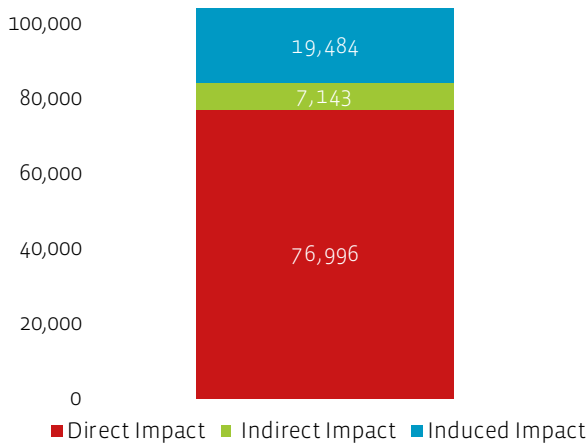


Figure 15: Total TBSs Impact (Adjusted for Value Added, 1000s JOD), Impact MENA Researchers

TBSs overall contribution to nominal GDP in 2016 reached 0.4%, or JD 104 million. Of this, the direct contribution of TBSs accounted for 0.3% of nominal GDP or JD 77 million. This impact is to be further expanded later in the study (4.3.6) using Multiplier Analysis.

The largest five value added (VA) generators in terms of ISIC activities were:

- Software development (6201)
- Other IT activities (6209)
- Telecommunications value added services (VAS-6311)
- Software licenses sale (4651)
- IT Hardware & infrastructure wholesale (4651)

When assessing the 0.4% of GDP contribution, the following facts should be taken into consideration:

- In general, the VA contribution of smaller firms is typically lower than their employment contribution, and noticeably lower than their relative numbers.
- The 0.4% figure does not include the additional rounds of effect generated by indirect/induced impacts of TBSs to be estimated later using multipliers analysis. This is generated by the impact of the firm or its employees spending through second-round or 'ripple' effects in the economy that can be measured by applying multipliers to expenditure.
- The estimate does not include the contribution of large telecommunication and of mature IT companies (firms established before 2007).

Value added by firm age is rarely published for most countries, and in particular for startups, as they are typically small firms and thus often exempted from many reporting requirements. However, some studies were identified and estimates shared below.

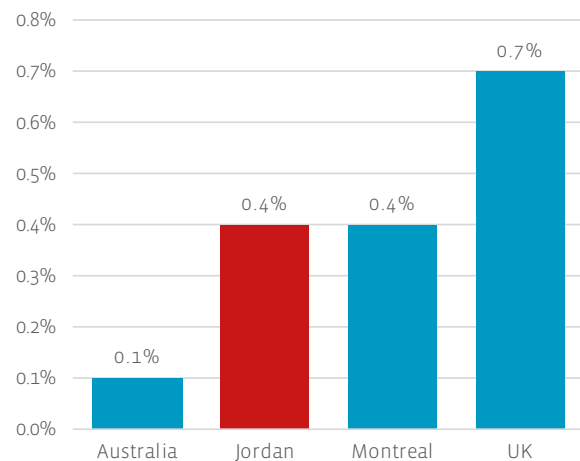


Figure 16: ICT Startups share in GDP for selected countries, Impact MENA Researchers ³⁴



Spotlight: ICT contribution to GDP in Jordan

Previous studies vary widely in their estimates and methodology of assessing the contribution of the ICT sector to the Jordanian GDP:

- **DOS Input-Output Study (2006):** The share of telecommunication services sector in GDP reached 5.12%. The share of the IT sector in GDP was 0.31%.
- **MolCT sponsored Study of Dajani & Y-Consult (2009):** Using a regression or econometric approach, ICT contribution to the GDP in 2008 reached 14.1% of Jordan's economy. This figure comprises of 9.5% as a direct contribution by the ICT sector and 4.62% by enabling other sectors, considered as indirect contribution to GDP.
- **Booz & Company Study (2013):** Concluded that the share of ICT total revenues to GDP reached 8.2% in 2012 down from 13.9% in 2006.

Utilizing int@j and Telecommunications Regulatory Commission (TRC) databases, covering large

telecommunication and mature IT companies, a new estimate for the ICT sector's contribution to GDP in Jordan reached 3.9% for 2016.

This is a plausible estimate taking into account:

- The narrow base of ICT manufacturing in Jordan
- The ICT employment contribution in 2016 does not exceed 1.5% of total number of employees in Jordan
- Sharply lowered revenues of large telecommunication companies in the last five years
- DOS data revealed an estimate for the OECD-definition of the ICT sector amounted to 3.4% of nominal GDP in 2016
- Previous estimates of the ICT sector's direct impact (value added) reaching 8% to 9% of GDP are based on regression or sometimes less accurate estimation methods

The below two charts help put the Jordanian ICT sector's contribution to the GDP into perspective by comparing it to other economies. The estimated 3.9% GDP contribution in Jordan seems realistic comparing it to 3.0% for Lebanon, 3.8% average for the EU, 6.0%

average for OECD countries, and 7.1% for the USA, noting that the estimates for the OECD and the United States encompass “media and content industries” thus covering a broader scope leading to inflated numbers.

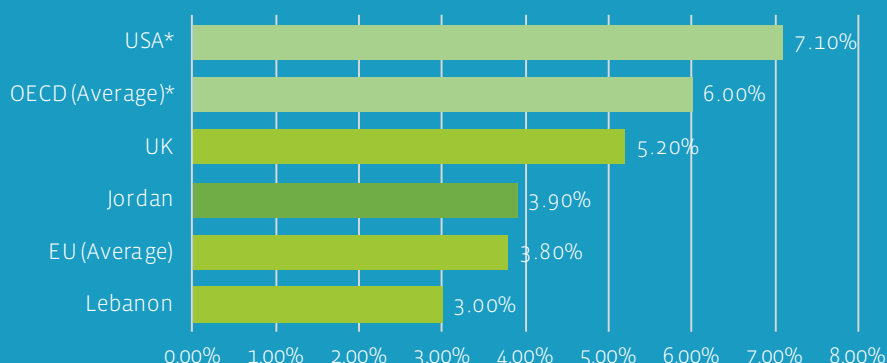


Figure 17: ICT share in GDP in selected economies, Impact MENA Researchers

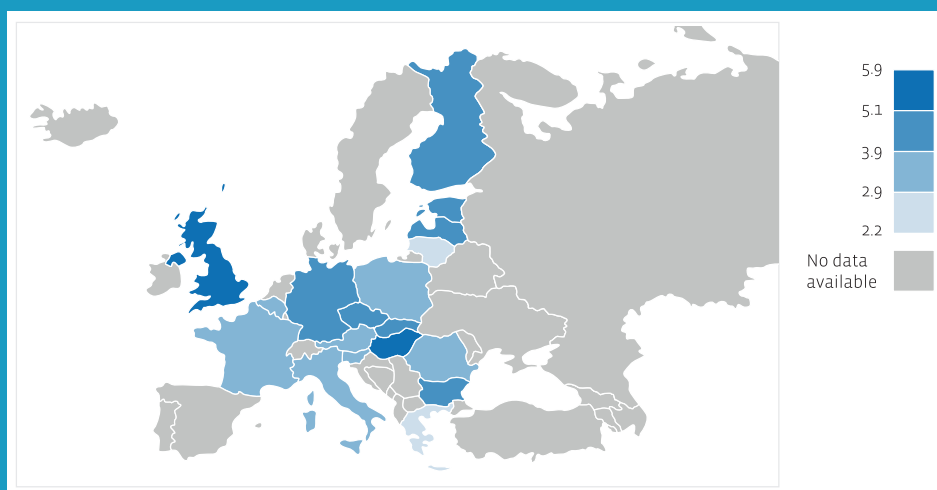


Figure 18: ICT sector share in GDP (EU, 2015), Eurostat

Labor Productivity

In 2016, TBSs' average labor productivity (LP) as measured by total revenues divided by total employment, reached approx. JD 39,000 in comparison with JD 43,000 for all ICT firms. This result, however, is sensitive to outlier data. Such outliers include TBSs with above-average LP:

- Telecommunications value added services (above JD 100,000)
- IT Hardware & infrastructure wholesale (above JD 100,000)
- Software licenses sale (JD 81,000)
- Telecommunications equipment and telephones wholesale (JD 63,000)
- Telecommunications equipment installation (JD 50,000)

Employment

TBSs accounted for 36% of total employment in the ICT sector (startup and non-startup firms). TBSs are estimated to have employed 5330 full time equivalents in 2016.

Notably, TBSs employ relatively more female employees compared with average ICT companies.

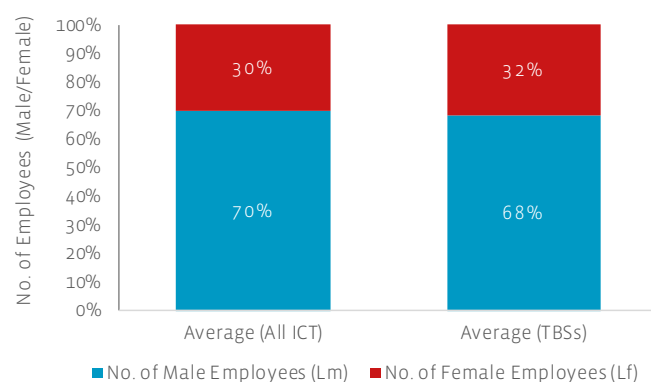


Figure 19: No. of Employees, Impact MENA Researchers, based on int@j firm-level database

The largest five TBS employers with respect to ISIC activities were:

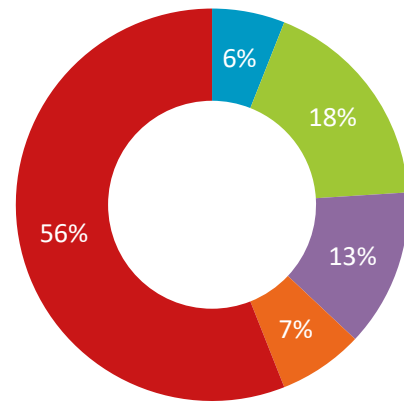
- Software development (1385 employees)
- Repair of computers and peripheral equipment (1010)
- Other IT activities (559)
- Call centers (448)
- Telecommunications wireless services (293)

TBSs accounted for 40% of aggregate sectorial female employment. TBSs are estimated to employ 1810 full time jobs for females in ICT and related services in 2016.

The top five female employers with respect to ISIC activities were:

- Software development (438 employees)
- Call centers (326)
- Other IT activities (251)
- Repair of computers and peripheral equipment (200)
- Data processing and hosting related services (150)

Over half of the jobs are created by TBSs employing over 100 employees, increasing the value of larger startups in economic impact.



■ 1-4 ■ 5-19 ■ 20-49 ■ 50-99 ■ 100-

Figure 20: Share of employment class between in 2016 for Information & Communication Sector, Impact MENA Researchers, based on DOS data.

Finally, TBSs create high-wage jobs. DOS data ranked ICT as 5th out of 22, compared with other economic activities for Household income from employment.

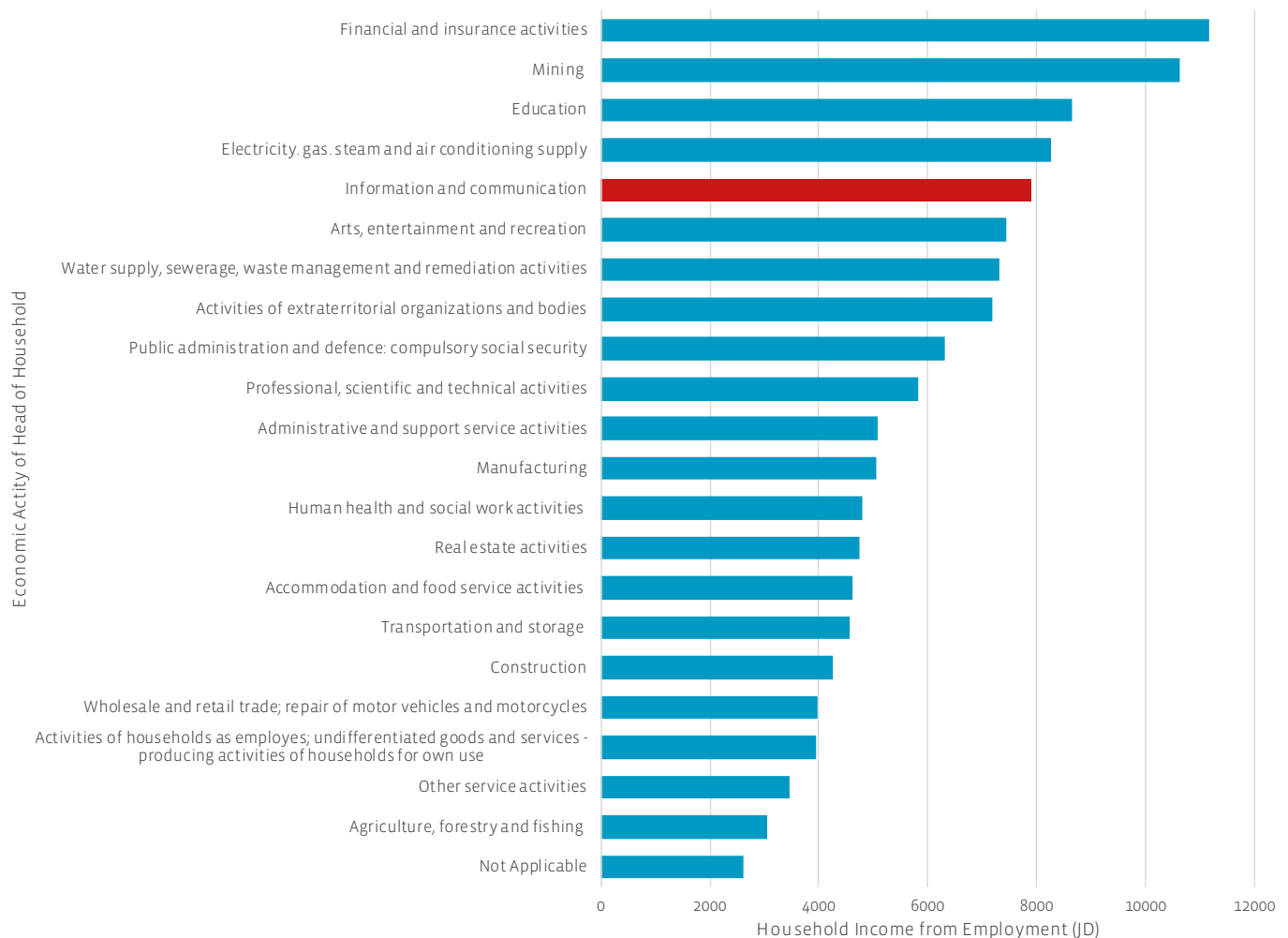


Figure 21: Average Annual Employment Income of Household by Economic Activity of Head of Household, DOS 2014



Case Study: MRAYTI – A tech-enabled shared economy startup with social impact



MRAYTI is an example of a new breed of shared economy platforms and startups emerging in Jordan, disrupting traditional business models, and creating at the same time a social impact model that was not possible before.

This startup is Jordan's first specialized mobile beauty salon. It was launched with a vision that beauty should be accessible, affordable, and non-time consuming. The startup provides services such as haircuts, hair styling, as well as makeup to women in their houses, offices, and gatherings wherever they are and whenever they want.

MRAYTI connects stylists with potential customers, allowing them to access markets that would have been difficult to reach otherwise. The majority of MRAYTI stylists are young women under 35, without a university degree, and facing many socioeconomic hurdles preventing them from having a full-time job. MRAYTI's facilitation services help females to overcome many security, cultural and logistical concerns that prohibit their access to decent sources of income.

MRAYTI's journey started after many years the founder spent working in senior positions at multinational companies and high growth businesses in Jordan. In 2016, the founder, as an aspiring female entrepreneur, wanted to start a business to serve other women in Jordan and the region that satisfies a large unmet need and has at the same time a unique social impact. She eventually identified beauty as a high growth industry with the Middle East beauty business growing double the global rate and with limited innovation in offering or business model.

The business started in offline mode where appointments were booked using calls. Then the service developed further by fully automating the booking process through mobile and web applications. Now, the business is starting to offer a full beauty experience through its services and products.

The startup employs four people including the founder – all of them females – and over 40 freelance stylists – all females as well. Many of them are the only provider for the family and have limited access to other job opportunities.



The business was initially funded through investment from the Jordanian accelerator Oasis500 (USD 27,000 in seed funding), then

through a grant from Jordanian incubator Shamal Start (~USD 10,500), and another grant by the international NGO Mercy Corp in Jordan (USD 15,500). MRAYTI recently secured USD 125,000 seed investment led by the Oman Tech Fund (OTF). This investment comes at a stage when the team is working on enhancing existing technology and preparing for expansion. It also opens the door to a better positioning for the GCC marketing as well as to collaborating with other OTF portfolio companies to create bigger value in the market. The startup received also in-kind services and support from Oasis500, Shamal Start and the incubator BIG by Orange.

The business model evolved from stylists being employed as full-time resources (three stylists, offline, B2C) to offering a comprehensive set of tools to the stylists online and offline to assist in the fulfillment of booking for a fixed commission (40 stylists, web/app, B2C). MRAYTI now also started providing services to media production projects in Jordan that include TV shows and cinema productions (B2B).

	Impact Themes	Sustainable Development Goals	Details
Primary Impact	Gender equality/Reduced inequalities	5 GENDER EQUALITY 10 REDUCED INEQUALITIES	<ul style="list-style-type: none"> Better pay Improving income through new business model
	Decent work and economic growth	8 DECENT WORK AND ECONOMIC GROWTH	<ul style="list-style-type: none"> Creating Necessity job opportunities
Secondary Impact	Innovation & Infrastructure	9 INDUSTRY INNOVATION AND INFRASTRUCTURE	<ul style="list-style-type: none"> Local innovation to regional problems

The social impact created is focused on job creation for women that otherwise are unlikely to be able to secure fairly paid job opportunities.

A key issue faced by this startup has to do with the direct and indirect efforts by competition to resist any positive disruption to the traditional business model of beauty salons, causing the founder to be legally perused and scrutinized in several occasions by local authorities related to licensing and other issues.

Key suggestions to reduce barriers to growth by the founder included providing startups with 5 years of exemption from taxes and social security contributions; helping local companies to expand to regional markets beyond the small local market; reducing the resistance to positive disruption to traditional business models by improving the role of regulating bodies to encourage new and innovative business models to flourish and grow, especially if more value is added to consumers through product and process innovation.

Exports

TBSs accounted for 31% of ICT total exports from Jordan. Average exports per startup equal some JD 225,000. With this, TBSs' export intensity is relatively high, reaching 46% of TBSs' total revenues in 2016. This is compared to an export intensity of only 36% amongst all active firms in the ICT sector. Average exports per employee in the TBS sector amounted to JD 20,000 in comparison with JD 15,000 for firms of all ages.

TBSs' export performance varies among activities:

- Out of 23 ISIC ICT activities with startup presence, 15 activities engaged in export activity, and only 9 activities engaged in sizable exporting equaling or exceeding JD 0.5 million.
- Furthermore, the 3 largest TBSs exporters account for 64% of total sample exports.

Further analysis for the start up-level database reveals the following export stylized facts:

- TBSs are estimated to have exported JD 54 million in ICT and related services in 2016.
- The top five ISIC exporters in the broad ICT sector are:
 - Other IT activities (JD 20 Million)
 - Telecommunications value added services (VAS-6311) (JD 15 Million)
 - Software development (JD 11 Million)
 - Call centers (JD 3 Million)
 - Wholesale of software (JD 1.3 Million)

TBSs' export intensity is relatively high compared to the services sector and the sizable manufacturing industries in Jordan. The total value has the potential to increase if more support is provided to TBSs to export products and services.

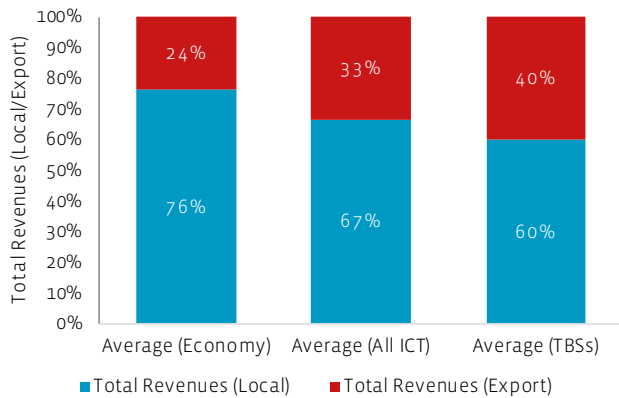


Figure 22: Total Revenues (Local / Export), Impact MENA Researchers, based on int@j firm-level database

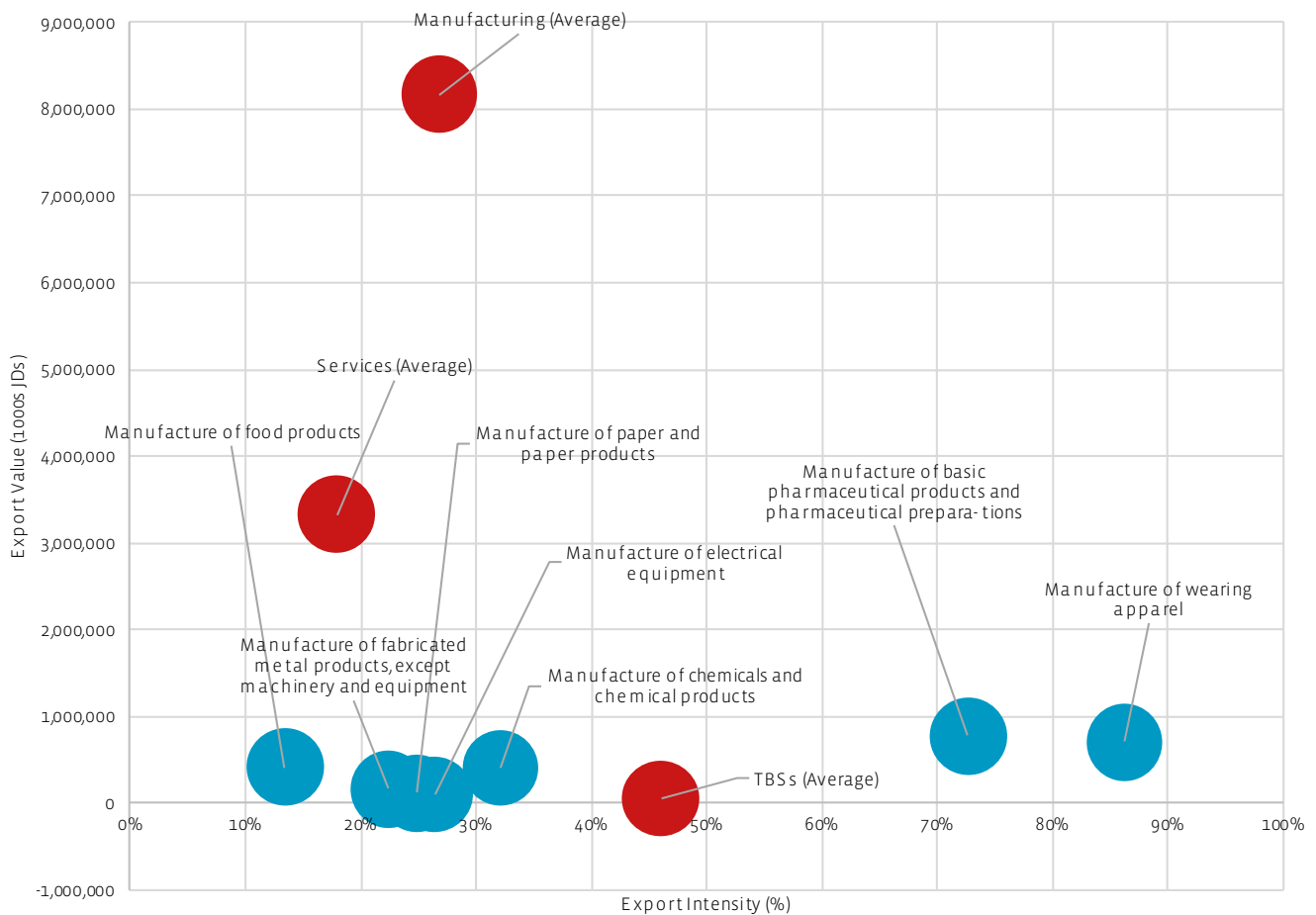


Figure 23: TBSs export performance compared with other High Export Sectors, Impact MENA Researchers



Case Study: MellBell Electronics

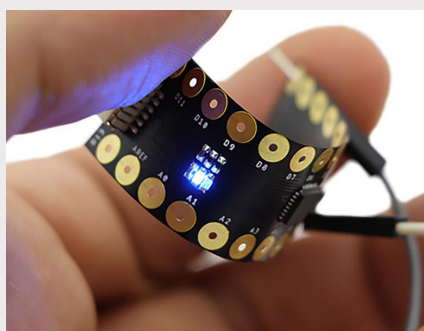


MellBell Electronics is an example of a high-potential Jordanian tech startup with a high export intensity as almost all of the company's revenue is coming from international markets (US, Europe, Japan and Middle East).

The startup is active in open-source electronic prototyping kits, and designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control both physically and digitally.

The company started as electronic solutions company developing customized offering for malls' parking lots (lots car parking sensor system) and pivoted later to developing tools and development kits to be used by other hardware developers.

The first product was rolled-out as a result of a Kickstarter campaign. The startup was able to successfully fundraise with the support of the Kickstarter community. This was one of the first cases of a Jordanian startup to be able to secure funding from an international crowdfunding platform for product development.



The first generation of products funded by Kickstarter was called "PICO" that was the world's smallest Arduino compatible board. The second product generation expanded on the success of the first one by introducing a family of 10 products based on PICO. The third generation is called "FLEXY" which is the first Flexible Arduino compatible board to expand applications of such technology to include any surface such as wearable

technology and fashion electronics, in which smart electronic devices can be incorporated into clothing or worn on the body as implants or accessories. This comes as part of the growing need for products and services linked to the Internet of Things.

The startup employs five people including the two co-founders.

The company raised external funding from Kickstarter (crowdfunding, USD 20,000) used for initial product development, investment from Oasis500 (convertible note, USD 100,000) used for the development of the second and third product generation and international business development to access US, European and Japanese markets. Funding also included a grant from Shamal Start (USD 10,500) used for business model fine-tuning. The startup is seeking now a second round of investment to grow further (USD 250,000).

The business model evolved from initially providing B2B electronic solutions, to introducing its first product (B2E/ B2C) through support from crowdfunding. That support helped to validate the need for such products and created early adopters as makers and users needed similar products but did not find them in the market. The business model is changing now to a B2B model with the FLEXY line of products.

Key issues faced by this startup included issues with customs and shipping processes, increasing the cost and time of R&D and manufacturing activities, ultimately reducing the competitiveness of the startup in global markets.

Key suggestions from the founders to reduce barriers to growth included establishing a special economic zone that caters to the special needs of tech startups; improving customs process (time, cost and consistency); and establishing protected zones where startups can test new technologies.

Imports and Technology Transfer

15% of TBSs have purchased foreign technology licensing. The total value of those "imports" was just JD 3.7 million, ranging from JD 150 to JD 1 million, with an average of JD 207,000. The average size of those

technology buyers was large with 36 employees, or almost twice the average size of TBSs (19 employees).

Average TBSs' imports are lower (Imports-Revenues ratio of 40%) compared with ICT companies in general (50%), meaning that local value addition in TBSs is higher.

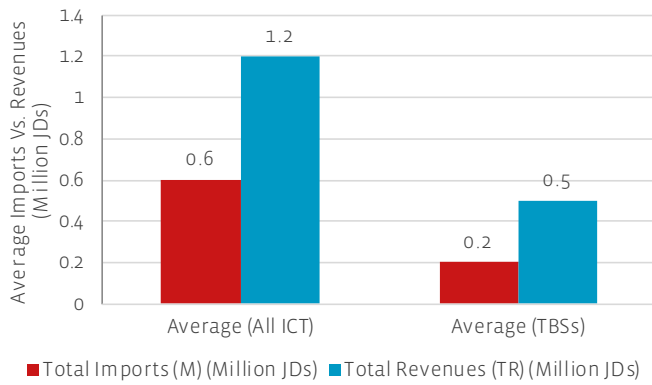


Figure 24: Average Imports Vs. Revenues (Million JDs), Impact MENA Researchers, based on int@j firm-level database

Top ICT industry players in technology licensing are the software industry, telecommunications wired services, and other IT activities.

Registered Financial Capital

Comparing TBSs with all firms in the database, TBSs needed 59% of financial capital while providing a high level of productivity compared with the average of all firms (91%), indicating a higher level of capital use efficiency, as capital efficiency forces better productivity and innovation within TBSs.

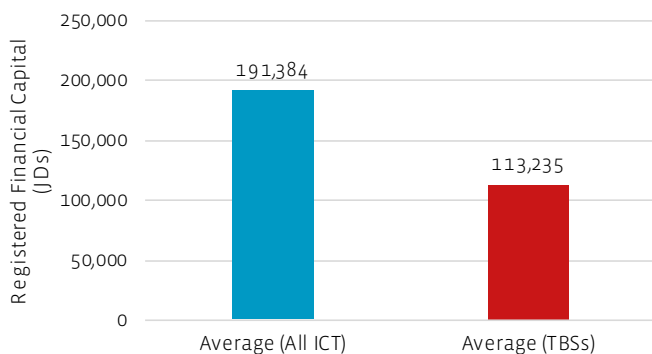


Figure 25: Registered Financial Capital (JDs), Impact MENA Researchers, based on int@j firm-level database

Direct Contributions of TBSs compared with the Sector and the overall Economy

A comparison of Jordanian TBSs' direct contribution to the economy with the ICT sector as a whole and with the overall economy shows that TBSs' performance is higher in terms of exports per employee, export intensity, and its female employment ratio. Performance is lower in terms of labor productivity as measured by revenue or value added, as startups typically invest a significant amount of time and resources in finding the right business model to help scale up the business, generating limited revenue or value added at this stage. Productivity will increase over time after the business has found the right engine for growth and the focus changes from business model search to business model optimization.

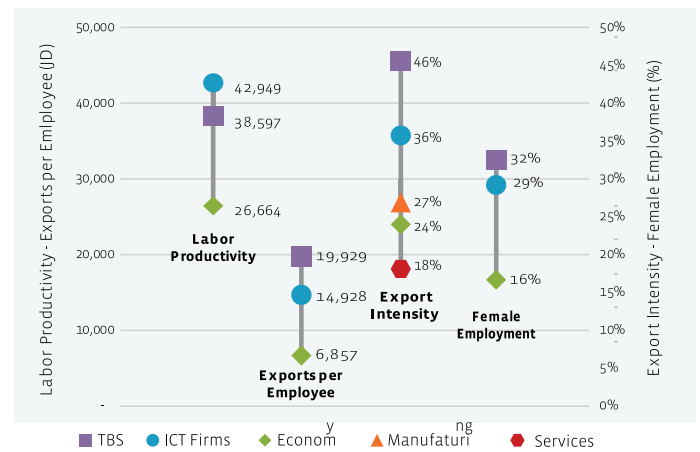


Figure 26: Direct Contributions of TBSs Comparison with Sector & Economy (2016), Impact MENA Researchers

The overall contribution of TBSs in the ICT sector is significant, ranging from 36% to 40% in total employment (total to female only), 53% to 59% in firms' numbers (transferring technology to exporting technology), and 31% of total ICT exports.

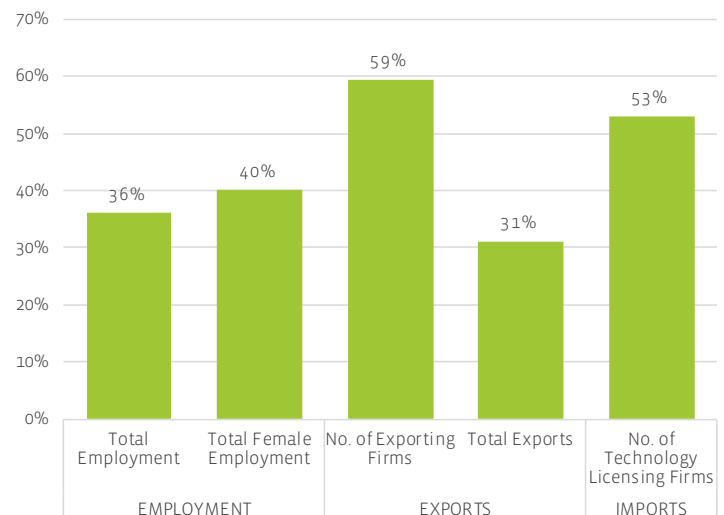


Figure 27: Share of TBSs compared to overall ICT sector (%), Impact MENA Researchers

Sensitivity Analysis regarding Value Added and Employment

To test how sensitive TBSs' contributions are in terms of value added and employment to the key variable of "startup age", the model was re-calculated using an age of "less than or equal to six years" for a typical TBS. This approach helps to assess how the economic impact is changing based on different startup ages.

The test showed that TBSs' contributions in terms of value added and employment are highly sensitive to the startup age. Using the assumption above for direct impact:

- TBSs that are six years or younger contributed 0.1% of nominal GDP in 2016 instead of 0.3% if considering TBSs of up to ten years of age.
- TBSs that are six years or younger (1-6 years) employed 33% of TBSs of up to ten years of age (1-10 years).

3.3.4 Indirect Impact

Indirect impact is created when TBSs procure services and goods from other firms and sectors. This includes business-to-business activities such as rent, equipment, training and professional services. The indirect impact for 2016 is estimated to be JD 11.2 Million based on DOS data (2016).

3.3.5 Induced Impact

Induced impact is created when employees and founders within TBSs and their supply chains spend their earnings. This includes household-to-business activities such as rent for an apartment, food and other purchases, school's tuition and transportation. The indirect impact is generated through the spending of the firms, whereas the induced impact is generated through the spending of employees. The induced impact for 2016 is estimated to be JD 30.4 Million generated through the annual spending of 5330 employees, based on DOS data (2014).

3.3.6 Revised Total Impact using Multiplier Analysis

To provide a more comprehensive picture of the additional impact of TBSs on the Jordanian economy (direct/indirect/induced), multipliers were utilized based on existing research to assess ICT multiplier effects. Output multipliers address the direct and indirect impact of a change in final demand (e.g. ICT investment) on the output of related individual industries and thus on the whole economy.

Undertaking a survey of available studies carried out on Jordan ICT multipliers (including Alrawashdeh and Al-Thyabat, 2012; Al-Zoubi, 2013), a range of 1.4 to 2.0 is found, depending on the study's exact sectorial coverage and year.

Taking into account the above findings on output multipliers and based on the latest available Input-Output Table from DOS (2006) and its 2010 update undertaken by the Ministry of Planning and International Cooperation, the authors consider that an output multiplier of 1.5 for ICT is a plausible estimate for Jordan. A higher multiplier is not advised due to outdated available Input-Output Tables and due to limited ICT manufacturing activities in Jordan.

This estimate for an output multiplier, although consistent

with estimates for the EU ICT sector (Rohman, 2013) and the software industry in Lebanon (WIPO, undated), should be used with caution as the validity of input-output models deteriorates after five years (Zaman et. al., 2010). This is especially true for dynamic sectors like the ICT sector. This also takes into account the marginal propensity to imports in Jordan's ICT manufacturing sector (e.g. communication), as limited manufacturing activities happening in Jordan within the ICT sector. Also, Jordan is dependent on imports of hardware from other countries, this reduces the indirect and induced effects related to ICT manufacturing activities.

Table 6: Multiplier Analysis, Impact MENA Researchers

Indicator	Direct impact	Multipliers	Total impact
Output (Million JDs)	120.3	1.50	180.5
Gross value added (Million JDs)	77	1.70	130.9
Capital formation (Million JDs)	50.4	1.50	75.6
Employment	5,330	2.79	14,871

Using multiplier analysis, and benchmarking with other countries to estimate different multipliers (output, gross value added, capital formation and employment), the value added of TBSs increases to JD 131 million due to the multiple rounds of effects (TBSs' purchases and employee spending) in the local economy, whereas the previous analysis focused only on the first round of effects by the firms and employees.

TBSs' value added contribution to nominal GDP in 2016 can therefore be estimated to have reached 0.5%.

3.3.7 int@j Database Key Facts

The raw database available for estimating the contribution of TBSs compared to mature ICT firms consists of 210 firms (mature and startup firms) in 28 ISIC4 activities. This is based on the int@j 2016 survey of the broadly defined ICT sector. Out of 545 ICT firms that were invited to respond to the survey, 210 firms did provide feedback. The resulting data set covers all enterprises except large telecommunication companies that are not included in the int@j annual survey.

The average number of firms per ISIC activity reached approx. 8 firms, ranging from 42 firms in software development to just 1 firm in game development. As for exports, out of 210 firms in 2016, a sizable number of 79 firms were export-oriented; a share of 37%.

Table 7: Key facts of total sample of ICT firms including mature and startup firms, Impact MENA Researchers, based on int@j firm-level database

Variable	Min	Max	Average	Sum
Year Established (Age)	1970	2016	2006	-
Number of employees (L)	1	546	30	6,340
Number of female employees (Lf)	0	163	9	1849
Registered financial capital (K) (Thousand JDs)	0.01	3,220	191	40,190
Total revenues (TR) (Million JDs)	0	35.3	1.2	248.9
Export revenues (Ex) (Million JDs)	0	24.7	0.4	88.7
IT imports (M) (Million JDs)	0	28.9	0.6	126.1

As for TBSs, defined as firms not older than ten years, they accounted to 123 firms or 59% of the total number of firms that responded (210).

Table 8: Key Facts of Startups, Impact MENA Researchers, based on int@j firm-level database

Variable	Min	Max	Average	Sum
Year established (Age)	2007	2016	2012	-
Number of employees (L)	1	224	19	2,293
Number of female employees (Lf)	0	163	6	746
Registered financial capital (K) (Million JDs)	0.01	2.0	1.13	13.9
Total revenues (TR) (Million JDs)	0	9.5	0.5	60.2
Export revenues (Ex) (Million JDs)	0	9.0	0.2	27.8
IT imports (M) (Million JDs)	0	3.1	0.2	25.5

The firm-age distribution for the total sample is more skewed towards newly-established firms: 49 new firms were established over the last three years (2014 to 2016),

while 123 startups were established over a period of ten years (2007 to 2016).

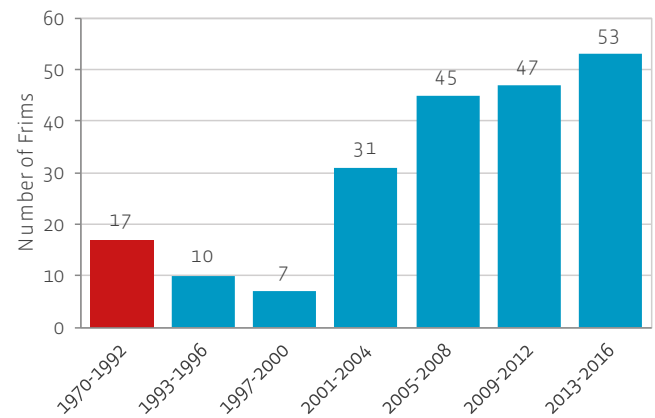


Figure 28: Firm-age distribution in the ICT sector, Impact MENA Researchers, based on int@j firm-level database.

The below chart shows the annual creation of new startups since 2000. It indicates strong enterprise creation activity in 2016 likely due to increased support from the ecosystem, followed by less enterprise creation in 2011, 2007 and 2005. A noticeable drop in numbers of new startups is evident in 2012 that could be explained by the impact of an economic slowdown. The positive trend that started in 2009 may partially be explained by the changes that happened that year in reducing the paid-in minimum capital requirement for new firms from JD 30,000 to JD 1,000 (over 96% reduction), which encouraged more people to start new businesses. However, the impact of this requirement³⁵ change was reduced later due to the effects of the regional economic crises and limited spending.

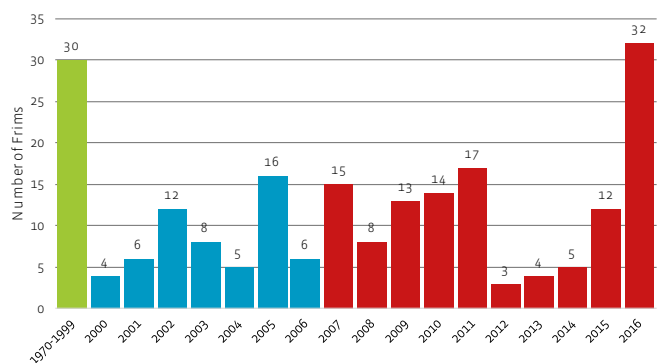


Figure 29: Firm Age Distribution in the IT sector (Expanded), Impact MENA Researchers, based on INT@J firm-level database.

3.4 Social and Environmental Impact³⁶

TBSs in particular, and ICT firms in general are considered to be an enabler for the implementation of the global Sustainable Development Goals (SDGs). The SDGs and their associated targets offer a transformational vision for the future by 2030. These goals are intended to help mobilizing efforts to end all forms of poverty, fight inequality and tackle climate change among others.

³⁵ The paid-in minimum capital requirement reflects the amount that an entrepreneur needs to deposit in a bank or with a notary to legally start a business.

³⁶ Section contains excerpts from the following sources: How Information and Communications Technology can Accelerate Action on the Sustainable Development Goals; SDG Impact Indicators - a guide for investors and companies; The Huawei ICT Sustainable Development Goals Benchmark

ICT is a key accelerator to increase the scale and diffusion of solutions addressing global challenges. It can deliver transformation at unprecedented speed and scale, and benefit to the SDGs in essentially three ways:

- increased access to critical information and services,
- increased connectivity between individuals and organizations, and
- improved efficiency and innovation across many sectors.



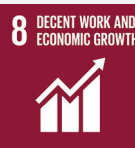












There are many aspects of society in which ICT can be accelerated in support of the SDGs including in the areas of healthcare, education, financial services, energy and climate change among others. Some SDGs show a clearer link between SDG performance and ICT, i.e. SDG 3 Good health and wellbeing, SDG 4 Quality education, SDG 5 Gender equality, SDG 9 Infrastructure, industrialization and innovation and SDG 13 Climate action. Essentially the achievement of all 17 SDGs can potentially be leveraged by ICT as it has the potential to deeply transform the economy and the society as a whole.

It should be noted here that no technology is without risks and ICT raises a number of issues that need to be addressed. This includes privacy issues, loss of human skills, possible health effects or child protection.

A recent study by Huawei (2017)³⁷ found that:

- ICT is highly correlated with country-level SDG performance (89%), which suggests that countries that perform well on ICT, perform equally as well on SDG achievement, and those that underperform on ICT are also lagging behind on SDG achievement.
- Progress on certain SDGs is more likely to be correlated with ICT development. Goals with higher ICT correlation include SDG 9: Infrastructure, industrialization and innovation, SDG 4: Quality education and SDG 3: Good health and wellbeing.
- Overall, developed countries tend to have higher ICT scores than SDG scores, indicating that ICT development is progressing more quickly than sustainable development. These countries ultimately have the scope to leverage ICT more effectively, for the benefit of sustainability.
- Although Gross Domestic Product (GDP) per capita is a factor that influences the ICT SDG benchmark scores developed by Huawei, there are several elements that make this correlation more complex.

TBSs' social and environmental impact created through their products and services offered, linkages, inclusion, as well as innovation and learning, can be identified based on the following impact areas, all of which are aligned with the United Nations Sustainable Development Goals (SDGs), with some impact areas more obvious than others:

Impact level	Impact description	Related SDGs
Primary impact	New job creation for unemployed individuals (especially often disadvantaged groups including youths and females) have a strong social impact component contributing to poverty reduction, gender equality, decent work and economic growth as well as reduced inequalities	   
Secondary impact	TBSs targeting challenges e.g. in energy, agriculture, health, transportation, or education provide additional social and/or environmental impacts to the local ecosystem, and can also help to improve living conditions.	        
Tertiary impact	TBSs can help to develop ICT platforms to encourage and strengthen collaboration between the private, public and citizen sectors contributing to integration and self-reliance	 

³⁷ The Huawei ICT Sustainable Development Goals Benchmark

The type of TBSs' social and environmental impacts varies based on the focus of the startup. In this study, we present

various case studies showcasing various impact types.



Spotlight: Assessing Social and Environmental Impact for TBSs in Jordan

The following provides a proposed list of related SDGs, targets and examples of indicators for monitoring social and environmental impact (primary and secondary) for TBSs in Jordan.

Primary impact

- **SDG 1 No poverty**
 - Delivery of products and services to lower income groups
 - Indicator: % of revenue from products serving low income group - USD
- **SDG 5 Gender equality**
 - Providing opportunities and fair remuneration
 - Indicator: % of women in workforce (full-time equivalent/FTE) and employed at equal pay – number of people
- **SDG 8 Decent work and economic growth**
 - Job creation
 - Indicator: Number of jobs created (FTE) – number of people
- **SDG 10 Reduced inequalities**
 - Providing opportunities for direct employees and those in supply chain
 - Indicator: Number of jobs created (FTE) in low income areas, among disadvantaged groups – number of people
 - Indicator: Number of local SME suppliers – number of people

Secondary impact

- **SDG 3 Good health and wellbeing**
 - Providing access to healthcare
 - Indicator: Number of people reached with improved health care – number of people
- **SDG 4 Quality education**
 - Providing access to education
 - Indicator: Number of people receiving education services – number of people
- **SDG 6 Clean water and sanitation**
 - Providing access to clean water and sanitation
 - Indicator: Number of people provided with safe and affordable drinking water – number of people
 - Indicator: Number of people provided with

adequate and equitable sanitation – number of people

- **SDG 7 Affordable and clean energy**
 - Providing access to clean energy
 - Indicator: Number of people with access to affordable and reliable clean energy services - number of people
- **SDG 9 Industry, innovation and infrastructure**
 - Development of infrastructure for more efficient societal or enterprise functions
 - Indicator: R&D expenditure in line with SDGs, as % of sales - USD
- **SDG 11 Sustainable cities and communities**
 - Access to safe, affordable and sustainable housing
 - Indicator: Number of people with access to safe, affordable and sustainable housing – number of people
- **SDG 12 Responsible consumption and production**
 - Avoiding resource waste, emissions to air and water
 - Indicator: Avoided resource waste, emissions to air and water – tons
- **SDG 13 Climate action**
 - Increasing resilience to climate related hazards
 - Indicator: Products and services developed addressing climate action – number of products/ services
- **SDG 15 Life on land**
 - Avoiding or reducing land pollution
 - Indicator: Avoided or reduced land pollution - km²

3.4.1 Young ICT-Related Firm Regional Development

The majority of ICT-related enterprise creation and growth is happening in the capital of Amman. There are limited activities outside of Amman, restricting the potential for

economic, social and environmental impact creation on the national level. More than 90% of firms producing or using ICT are based in the Amman governorate. Other governorates record significantly lower shares of TBSs; Irbid and Aqaba each recording 2% of total TBSs, while the remaining governorates record even lower shares.

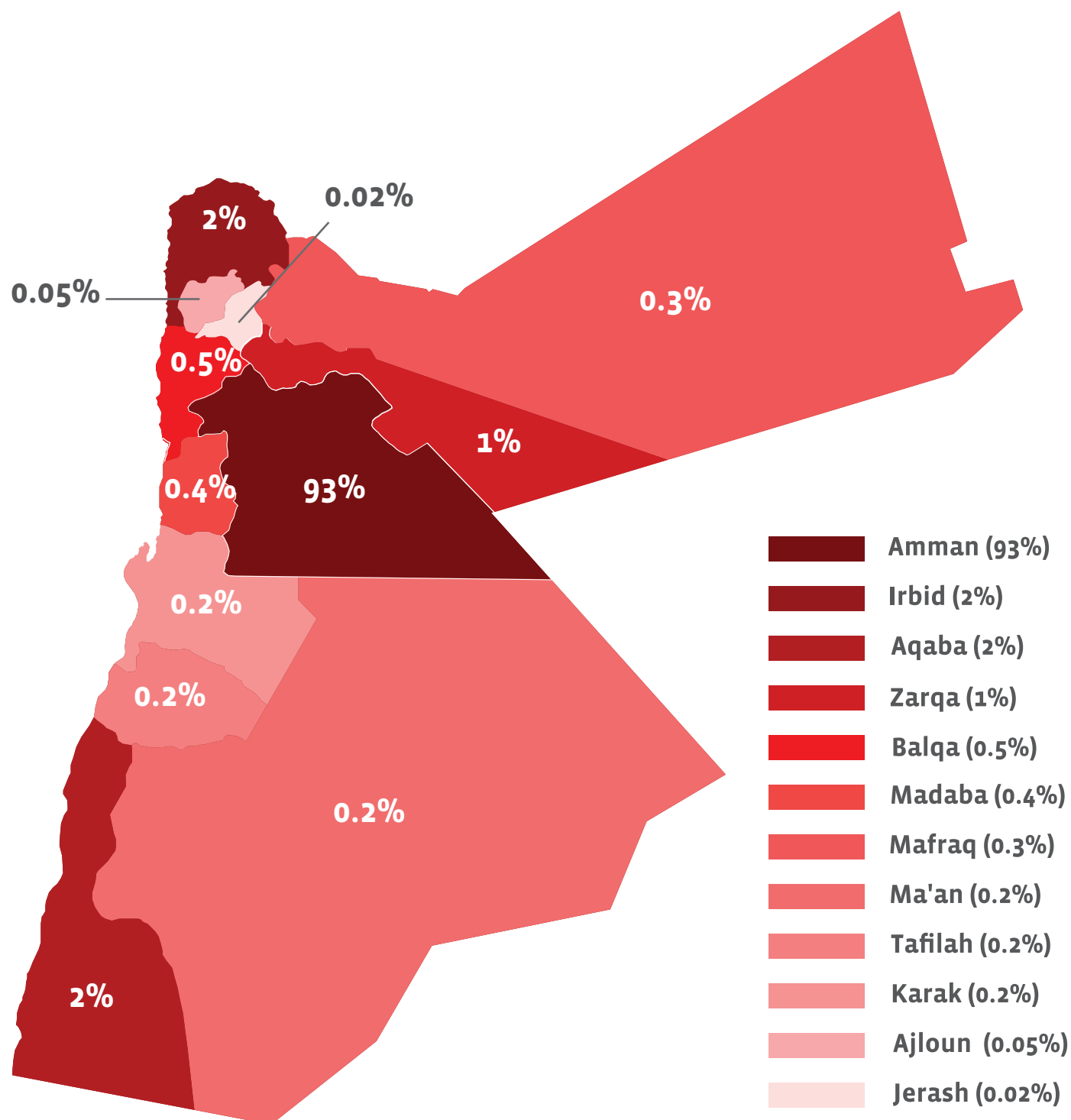


Figure 30: Young ICT-Related Firm Regional Distribution (2007-2016), Impact MENA Researchers, based on CCD Firm-level Database



Case Study: DARB's growth path as a technology firm









In 2016, the founder of DARB was working for a leading local engineering solutions company, designing and installing solar systems for their clients. The

founder noticed that dust was impacting the overall efficiency of the systems and resulted in losses in energy generation that reached 10% or more. As the market did not have any automated solutions to reduce such losses, he decided to start a company to provide such solutions. Over two years, DARB has developed Jordan's first automated cleaning solution for solar panels. The system has been tested on a large scale and provided a significant improvement in power generation efficiency.

In addition to the obvious environmental impact achieved by reducing losses in energy and water, the company's impact includes also the creation of high value highly needed jobs for engineers and technicians designing and manufacturing novel technology products. New job creation for engineers in Jordan tends to be rather low as most job opportunities in the technology sector are available in the software space. There is less demand and there are fewer opportunities for hardware-related jobs, resulting in high unemployment among technology and engineering graduates related to hardware jobs (non-software jobs), especially in Research and Development roles.

The impact of the DARB may be attributed to six different Sustainable Development Goals (SDGs):

Impact Themes		Sustainable Development Goals	Details
Primary Impact	Affordable & clean energy		<ul style="list-style-type: none"> CO₂ level reduction National energy bill reduction
	Sustainable cities & communities		<ul style="list-style-type: none"> Energy output boost
	Water & Sanitation / responsible consumption & production	 	<ul style="list-style-type: none"> Water saving
Secondary Impact	Job Creation		<ul style="list-style-type: none"> Creating High Impact job opportunities
	Innovation & Infrastructure		<ul style="list-style-type: none"> Local innovation to regional problems Increase public awareness regarding national industry

The company is still at its early stage of growth. Nonetheless, it has already managed to develop the second generation of its products, building on the original prototype the company built for Hanger Roof based solar systems, introducing a large-scale machine for hangers and large car parking.

The founders started the business by investing their personal savings and using angel funding (founders, family and friends) that amounted to USD 185,000 used for initial product development and testing. DARB later secured a grant from Shamal Start of USD 27,000 used for further R&D and hardware components. The startup's efforts were recognized later when they came in first place in the national competition of the Abdul

Hameed Shoman Scientific Research Support Fund. DARB was awarded a grant of a USD 210,000 and the funds are used for building a factory including the provision of relevant infrastructure and the establishment of production lines. The startup also received in-kind services and support from the incubators Shamal Start and BIG by Orange.

Their business model is evolving from providing products to technology solutions providers (B2B) into providing full solutions directly to end consumers with maintenance contracts (B2C). DARB also considers providing the solution as a service with energy saving sharing model.



Key issues faced by DARB include the high cost of doing business due to customs, shipping, taxes and social security. Also, there seems to be a limited awareness on government-level for the special needs of tech startups and in particular of hardware startups.

One interesting issue the startup faced was during the business registration as their key business objective (purpose) that was approved is "to produce plastic and metallic cleaning tools". This does not indicate the technology focus for the company. Their efforts to convince the registration employee at the Ministry to find a better objective to reflect the technology nature of the offering was unsuccessful.

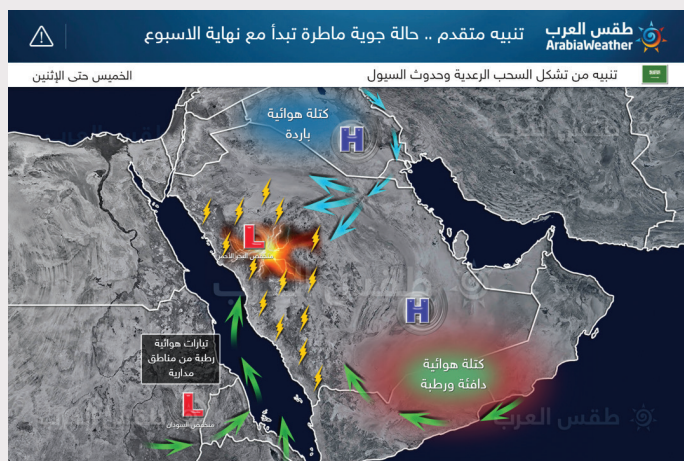
Key suggestions by the founder to reduce barriers to growth included providing startups with a 5 years grace period for taxes and social security; creating more awareness for government agencies and frontline employees on startups' needs; expanding the government definition of ICT to include automation and internet of things, providing hardware startups with similar benefits; issuing a certificate/ card similar to the exporter card for tech startups to facilitate additional support and preferential treatment at government agencies; reducing high custom duties for hardware startups as those duties can be two- to fourfold the original item value; providing better logistics solutions for small quantity shipments (aggregation); providing more support to hardware startups to find needed technicians/specialties from vocational majors who need limited training to start adding value; supporting hardware startups in the prototyping phase; and providing the market with additional incentives to buy local products.



Case Study: ArabiaWeather



ArabiaWeather is an example of a Jordanian technology startup developing unique and valuable services needed on the local and regional level. The business started with a personal interest and passion for meteorology by the founder. In high school, he established the website JordanWeather.Jo, publishing weather forecasts for 25 locations within Jordan. Initially, the website simply captured the offline daily weather forecasts reports and put them on the web. Later, the contribution grew to include predication. In 2008, the founder was the only Jordanian meteorologist to correctly predict a massive snowstorm. Supplementing his pharmacology degree, the founder earned a certificate in Advanced Forecasting and Aeronautical Aviation from the United Kingdom's Meteorological Office College. His university in Jordan also provided him with support to focus more on his startup. In 2010, the founder expanded JordanWeather.Jo's reach beyond Jordan's borders, and rebranded it as ArabiaWeather.



ArabiaWeather Inc. now is the first local provider of on-demand Arabic weather forecasts for consumers and businesses in the Middle East and North Africa region. ArabiaWeather publishes five-day hourly to 14-day hyper-local forecasts in Arabic through web, mobile, and social media. The forecasts not only benefit citizens, but also media, aviation, and oil and gas companies as changing weather conditions can significantly impact

profit margins. ArabiaWeather generates hyper-local, real-time weather forecasts in Arabic using proprietary weather algorithms, automated weather stations and satellite data. Its network of 200+ automated weather stations – the largest in the MENA region – coupled with regionally adapted algorithms enhance forecast accuracy and precision.

The offering developed from simply bringing offline daily weather forecasts reports to the web, to adding predictions and better data collection, analysis and reporting, to then developing customized products (reports) for each industry. Now, the startup is building one of the largest regional weather platforms / databases. The startup employs 40 full-time staff.

ArabiaWeather needed several rounds of funding to fuel its growth, with a total of USD 8.2 million raised at different stages: Angel funding from Jabbar Internet Group (Dubai); Seed investment from Jordanian Dash Ventures and MENA Venture Investments; Pre-series A investment from Jordanian organizations Dash Ventures and Silicon Badia; and series A funding from Silicon Badia and Wamda Capital. The startup is now seeking another round of funding to secure USD 10 million in series B funding to expand globally including further expansion in MENA, Africa and emerging markets, for product expansion and for investment in artificial intelligence/machine learning/stations network.

The business model evolved from a simple B2B advertising and sponsorship model over the web, to a B2B SAAS model and a B2C subscription model (web/app/social media).

The impact of this startup covers environmental, economic and social dimensions. In addition to job creation in Jordan, the startup helps citizens and organizations avoid false alarms and prepare for bad weather conditions, reducing the risk for the loss of life as well as for financial losses for individuals and agriculture, media, aviation, and oil and gas sectors.

Key suggestions by the founder to reduce barriers to growth include providing startups with a 5 years grace period for taxes and social security; easing the process of hiring international resources; introducing local funds with higher ticket sizes (Series B, USD 5 to 10 million); improving customs processes with regards to time, costs and consistency; encouraging data sharing and collaboration with the public sector.

3.5 Tracking the Evolution of Jordan's TBSs

Monitoring the dynamics and changes over time in Jordan's TBSs performance proved to be a difficult task (compared with cross-section snapshots), given limited data availability and the nature of startups with regards to closure and growth. A comprehensive assessment would require standard and repeated measurement of the same sample of startups over a period of time (so called Micro-Panel or Longitudinal data).³⁸

This part of the study utilizes DOS services, internal trade and industry firm-level survey data for 2012 and 2016 to track growth and tax performance of the ICT sector in general, and TBSs growth in particular for 2016. Nominal value added as per DOS data is JD 67 Million, compared with JD 77 Million based on int@j data. The variance is due to the fact that int@j coverage is larger than DOS, as it contains more tech and tech-enabled startup activities.

³⁸ Examples of such data sources are the Kauffman Firm Survey (KFS) and University of Michigan Panel Study of Entrepreneurial Dynamics (PSED)



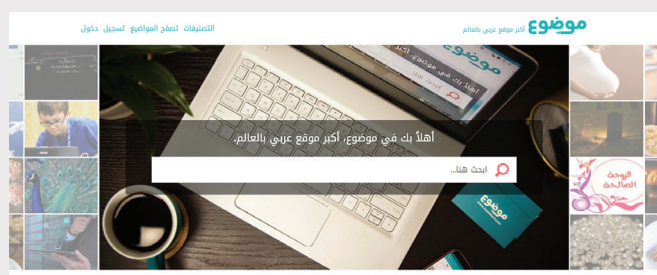
Case Study: Mawdoo3



MAWDOO3 has done for Arabic content on the web more than any other private led organization in the region. The concept for Mawdoo3 was initially developed in 2010 by

one of the founders while studying at university as a personal interest in digital marketing and Arabic content. This interest evolved to a project to develop a keyword analysis service in Arabic that won the first prize of the Queen Rania National Entrepreneurship Award for the category of Universities and Academics in 2011. The company was officially launched in 2012.

Now, Mawdoo3 provides the largest Arabic language content platform in the world. Its 84 million site visits and 42 million unique visitors per month make the online encyclopedia the most visited site in the region. There are currently more than 140,000 articles live on the site. The portal, which launched in 2012, is used by Arabic-speaking people around the world to access information in their native language providing premium quality Arabic content.



The offering developed from the original website-based version to an mobile app, expanding the content repository and user base. It then evolved to creating new ways of accessing knowledge through artificial intelligence (AI), providing B2B solutions by

using Arabic Natural Language Processing (NLP) toolkits for companies that want to cater to Arab users. Mawdoo3 was the first globally to introduce AI web services and a comprehensive NLP toolkit for developers and the first Arabic speaking digital assistant (called Salma) that answers factoid questions from the Mawdoo3 platform.

The startup employs 80 full-time staff members and hundreds of freelancers who create the site's original content. This type of startups has an important social impact as it creates jobs anywhere as company location is irrelevant – especially for part-time resources and freelancers engaged in the content generation – and thus provides an opportunity for regional economic development in various Jordanian governorates.

The impact includes next to job creation across the region and country also an increase in Arabic content on the web, providing high quality educational resources to Arabic users, thus increasing the learning and knowledge transfer.

Such rapid growth needed regional and global venture capital funding. The initial funding of the startup started by personal and angel funding (founders, family and friends) and the award money from the Queen Rania Center for Entrepreneurship. Mawdoo3 subsequently secured USD 1.5 million in series A funding from Dubai-based EquiTrust to support Arabic content and increase the number of Arabic pages on the internet. Finally, the company secured USD 13.5 million in series B funding from outside the region, namely via Kingsway (UK) and Endure Capital (US).

Key suggestion by the founders to reduce barriers to growth focused on easing the process of hiring international resources, especially in advanced topics such as artificial intelligence to help establish Jordan as a regional hub for such technologies.

Table 9: Evolution of Jordan's TBS- Constant value added, In Thousands of JDs, Deflator ³⁹ (2016=100), Compiled by Impact MENA Researchers, based on DOS VA and price data.

Year	Nominal value added (Total ICT)	In % of GDP (Total ICT)	Indirect taxes (Total ICT) ⁴⁰	Nominal value added at current prices (TBSs)	Value added at constant prices (TBSs)
2012	1,036,596	4.7%	278,089	60,208	60,366
2016	951,437	3.4%	229,726	66,964	66,964
Growth 2012-2016	-8%	-	-17%	11.2%	10.9%
CAGR	-1.7%	-	-3.7%	2.2%	2.1%

Real value added growth for TBSs between 2012 and 2016 was nearly 11% reflecting a compound annual growth rate (CAGR) of 2.1%, negatively affected by weak demand, an unfavorable business environment (including tax), and external shocks (including harsher international

competition in certain services). The Gross Fixed Capital Formation (GFCF) growth of the ICT sector between 2012 and 2016 was nearly 43% and compound annual growth rate of 7.4%.

³⁹ Deflator: Deflator is a measure of the level of prices of all new, domestically produced, final goods and services in an economy in a year.

⁴⁰ For communication and information sector, direct taxes data not available.

Table 10: Gross Fixed Capital Formation for ICT Sector (GFCF or Real Investment), In Thousands of JDs, DOS sectoral surveys for 2012 & 2016

	Services	Manufacturing	Trade	Total ICT
2012	102,088	103,616	1,445	207,152
2016	290,589	2,691	2,148	295,428
Growth 2012-2016	185%	-97%	49%	43%
CAGR	23.3%	-51.8%	8.3%	7.4%

Table 11: Evolution of Jordan's TBSs - Constant VA, Compiled by Impact MENA Researchers, based on DOS VA and price data.

	2012	2016	Percentage change	CAGR
Value added at current prices	60,208	66,964	11.2%	2.2%
Deflator (2016=100)	99.7	100.0	0.3	
Value added at constant prices	60,366	66,964	10.9%	2.1%

Table 12: Gross Fixed Capital Formation in Core ICT-Services (Telecommunications and IT), based on DOS service surveys 2012-2016

ISIC	2012	2013	2014	2015	2016	Avg.
Wired telecommunications activities 6110	13,708	14,869	20,338	16,511	25,937	18,273
Wireless telecommunications activities 6120	82,098	117,840	357,028	309,492	257,547	224,801
Satellite telecommunications activities 6130	3,704	8,678	9,533	6,375	5,535	6,765
Other telecommunications activities 6190	128	0	259	43	0	86
Computer programming activities 6201	239	842	5,315	831	585	1,562
Computer consultancy and computer facilities management activities 6202	2,211	134	362	516	985	842
Total	102,088	142,363	392,835	333,768	290,589	252,329

Companies in core ICT services (telecommunications and IT) invested on average JD 252 million annually during 2012-2016. Excluding the Telecommunication Wireless Services Industry related to Telecommunication Network Infrastructure (ISIC4=6120), investment in core ICT-services decreases on average to JD 27.5 million.

Top core ICT investment stars were:

- In the Computer Programming and Consultancy sector (ISIC4=62): Computer Programming (ISIC4=6201).
- In the Telecommunication sector (ISIC4=61): Telecommunication Wireless Services Industry (ISIC4=6120).

ICT investments will have a measurable multiplier indirect effect as well as an important non-quantifiable contribution to the country's competitiveness and governance infrastructure (e.g. e-government, e-business services, e-education, and e-medical services). An estimate of 1.5 for Jordan's ICT output multiplier means that a yearly ICT investment of JD 252 million will have a yearly multiplier effect of JD 75.6 million on the Jordanian economy created by ICT and TBSs, respectively.

3.6 Inter-temporal Survivability of TBSs

Survivability analysis is a preliminarily and exploratory method for examining long-term competitiveness and survivability of younger (smaller) enterprises against mature (larger) ones. It uses time series aggregated data. It classifies various firms in an industry by age or size classes and calculates the share of industry output or employment coming from each class over time.

A larger share over time indicates a relatively efficient age or size class in terms of optimal operation. Unfortunately, consistent data for ICT firms by age class tracked over time are not available in the int@j dataset. Therefore size (employment) class data between 2012 and 2016 will be utilized based on the DOS employment survey for the "information and communication" sector (i.e. including publishing and broadcasting) as a proxy for the ICT sector. In the first bracket (1-4 employees), a 48% drop can be explained by startup exits of smaller size, limited smaller startup creation, and possible growth happening to small startups in terms of employees (employment to increase more than 4 employees). Second and last brackets (5-19 and over 100) saw increases in share, indicating growth and possibly better performance of such sizes.

The data indicates that for the period from 2012 to 2016, it seems that 5-19 employees' firms has better competitiveness and thus survivability compared with smaller or larger organizations and represent an optimal size for TBSs. A panel study of startup dynamics is needed to draw more meaningful conclusions.

Table 13: Share of employment class between 2012 and 2016 for "Information & Communication", Shares in Totals (%), based on DOS data.

	2012	2016	Growth
All	100%	100%	0%
1-4	11.50%	5.90%	-48%
5-19	13.50%	17.90%	33%
20-49	13.00%	13.40%	3%
50-99	8.30%	6.50%	-21%
100+	53.70%	56.20%	5%

3.7 ICT Firm Entry

Entry of new ICT firms increases competition and is associated with the introduction of new products, services and technologies. The chart below shows an upward trend in the entry of firms with ICT-related objectives.

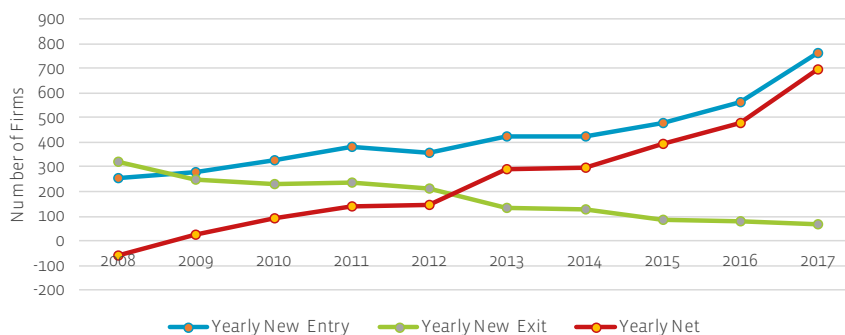


Figure 31: Number of yearly new firms with ICT-related objectives, Impact MENA Researchers, based on CCD Firm-level Database

More than three quarters (55%) of newly established companies in the ICT sector in the period from 2008 to 2017

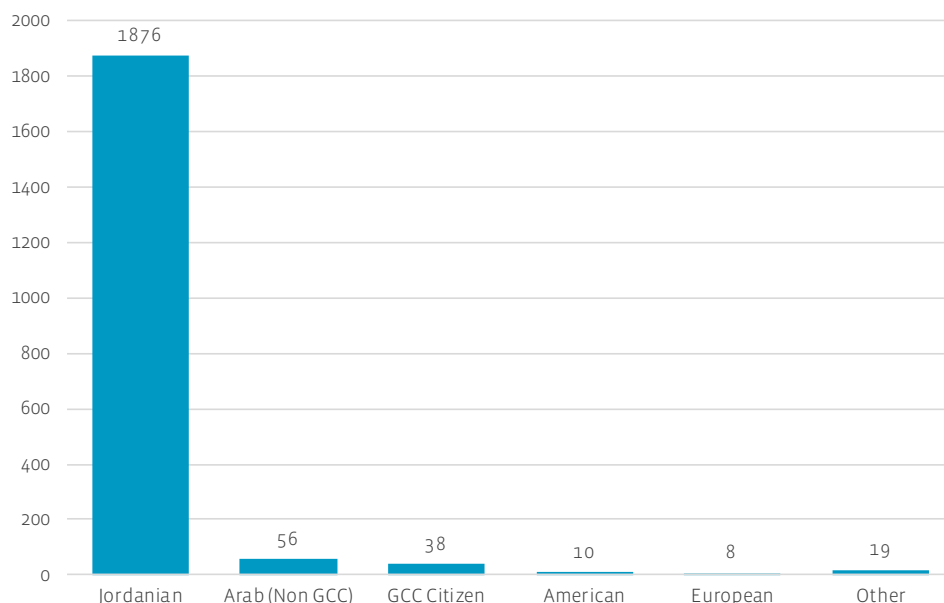


Figure 33: Firms by Partner Nationality for 2007-2016, Impact MENA Researchers, based on KINZ data

are registered as limited liability companies. This seems to be the most preferred legal form by startups as it provides limited personal liability to the founders and is accepted by investors. The second most chosen legal form is that of individual corporates (31%).

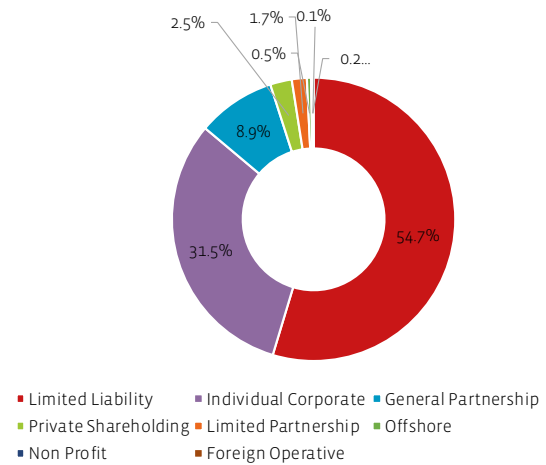


Figure 32: Firms by Legal Type for 2007-2016, Impact MENA Researchers, based on KINZ data

Most of firms were established by Jordanian partners (over 93%). The below chart breaks down partners by nationality. This indicates limited participation from foreigners in local enterprise creation, as they seem to prefer getting engaged in offshore companies. Also, the focus groups with startups indicated that many TBSs prefer to register companies outside Jordan to avoid taxation or attract investment. This reduces the economic benefits such as taxes and employment for the Jordanian economy compared to when those companies would be registered locally in Jordan.

More Jordanian startups are doing business via offshore havens such as British Virgin Islands (BVI), the Cayman

Islands, and also in the US state of Delaware. In 2016 alone, Wamda estimated that there were at least USD 815 million in new investments across the MENA region, and a significant part of those went to offshore companies as regional investors push for offshore investments outside of Jordan and the region. Offshore registration was a must and not an option for many Jordanian startups. Several regional investors even require registration outside of Jordan or even the region. One prominent regional investor indicated a clear rule: They would invest across the MENA region, but only if the company to be invested in agreed to register outside of the region ⁴¹. Thus, this is not only an issue for Jordan but also beyond in the MENA region.

Below are some of the key issues encouraging startups to register abroad. Resolving one issue will not automatically eliminate the problem of startups registering abroad as reasons vary from one startup to another. Thus, a comprehensive and holistic review of relevant policies is needed addressing the following main areas:

- **Investment-related:** Some startups opt to register offshore to insulate and protect the shareholders from legal liabilities. Other startups have been requested to register offshore as many regional early stage investors want to standardize and minimize the paperwork and administrative processes needed to invest smaller amounts in a larger number of startups across the region, something difficult to achieve when the investments are executed locally in various locations. Also, some issues exist in local investor agreements enforcement for shares issuing, selling and exits. Other countries have issues also regarding issuing multiple types of shares to provide different rights to stakeholders.

- **Taxation-related:** Many startups were established to be acquired later by others, and taxes put in the past on the sale of shares encouraged founders and investors to seek offshore registration. Most startups are also worried about the taxation system and the unexpected changes that might increase the tax burden and significantly impact their profit margins.
- **Expansion- and closure-related:** Few businesses are planning to own other companies (branches or independent firms) in other countries across the region, which can be easier to do as an offshore company. Also, many entrepreneurs view the local laws as are more fit for brick-and-mortar companies than startups, hindering growth. Finally, closing a startup is difficult in Jordan, especially before Jordan issued its own Insolvency Law in 2018 that enables individuals and companies to reorganize their businesses in case of a troubled financial situation, to reach deals with creditors, helping to reduce issues such as loan defaults and going to courts.

3.8 Startup Growth Barriers

A number of issues and recommendations to promote TBSs' establishment and growth were identified through focus group discussions and in-depth interviews. A particular focus was put on areas of Government and Policy, Financing and Support, as well as Human Capital as pre-identified areas of concern. Representatives from startups from various growth stages as well as experts in domains related to startup support and growth participated in the focus groups and interviews.

Seed and late growth stage companies had more issues and recommendations communicated at the focus groups compared with startups in the early growth stage. Recurring issues revolved around finding and hiring talent, receiving investments, dealing with taxes and social security, as well as barriers in the regulatory environment.

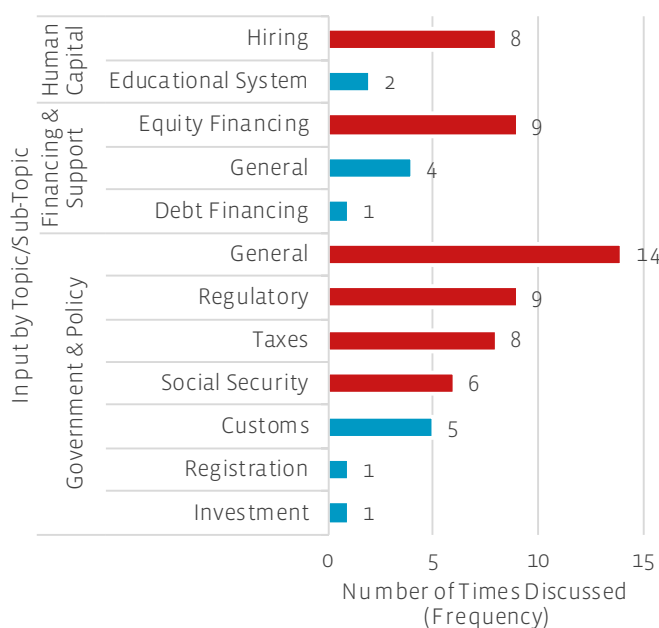


Figure 34: Focus Group Input by Topic/Sub-Topic, Impact MENA Researchers, based on Focus Groups outcomes

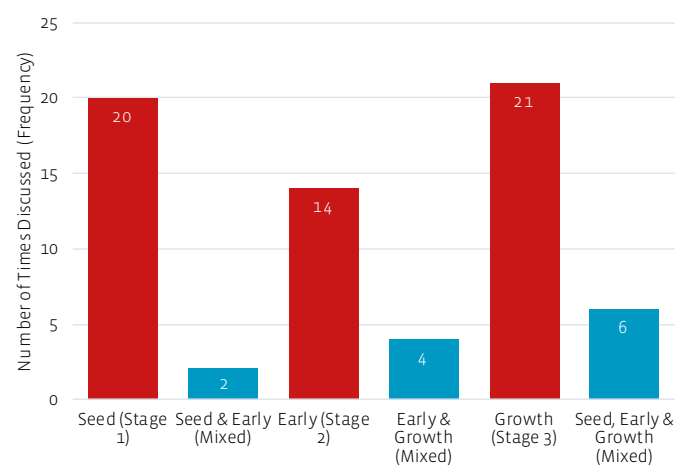


Figure 35: Input by Stage, Focus Groups, Impact MENA Researchers, based on Focus Groups outcomes

⁴¹ IT'S COMPLICATED: For many Middle Eastern entrepreneurs, the first order of business starts offshore", article by Dennis Quinn & Commentary, QUARTZ

3.8.1 High Priority Issues, Comments & Recommendations - Government & Policy



Regulatory

Some startups at the growth stage indicated that regulations are not friendly towards startups having new and disruptive offering or business models. The Government should also play the role of an enabler and not only of a regulator. Startup representatives also mentioned that new laws in some cases do not accommodate changes in technology and business trends.

Most startups at the seed stage indicated that they have issues with the way laws and regulations are implemented by relevant governmental authorities. Often, laws and regulations are seen as arbitrary and based on personal interpretations, particularly by government employees in areas such as tax and customs. Also, many startups indicated that Government agencies and employees on various levels have limited knowledge about startups and their special needs, and some of them have even some hostile attitude towards startups.

Recommendations proposed by the startups included establishing a Higher Council / Authority / One Stop Shop in charge of all startup-related issues, responsible for reviewing and enforcing all laws impacting startups; rolling-out an external independent process for escalation to be used by startups having issues regarding tax or customs or other government services.

It is clear from the issues raised and recommendations proposed that a wide gap already exist between the regulator and startups being regulated. Reducing such a gap will require continuous dialogue and creating awareness on the special needs of startups as current local laws are more fit for traditional and mature brick-and-mortar companies than for innovative startups with new offerings or business models.



Taxes

Some startups at the seed stage indicated that laws to regulate online businesses (i.e. e-Commerce) are absent, complicating taxation and encouraging some startups to reallocate their businesses outside of Jordan or register offshore companies. Also, some startups register outside of Jordan as requested by investors to avoid taxation.

Recommendations proposed by the startups included providing eligible startups for exemption from taxes and social security for the first 5 years; providing tax exemptions for all production inputs (local or imported) or at least reducing taxes on international services needed as an input for production.

Taxation is becoming a more important issue for Jordanian startups. This is especially true as they are increasingly competing with regional and global companies operating in startup-friendly business environments. If profit margins are reduced with each new tax change and the tax environment is unpredictable in the mid- to long-term, startups and investors will prefer to move business activities to other locations. This reduces the potential economic benefits captured within Jordan.



Social Security

There is a high level of agreement among startups from across the seed, early and growth stages that social security has negative impact on them due to its effect on raising overhead costs. Some startups outsourced the work to other companies or used consultation and service agreements to avoid social security costs.

Recommendations proposed by the startups included introducing grace a period of social security installments for the first 2 to 5 years; introducing optional employee enrollment in social security, especially for young workers or introducing the end of service benefit as an alternative.

Along-term perspective and strategy in terms of shaping social security regulation is important when working with Jordanian startups, encouraging these firms to create new job opportunities that are not produced adequately anywhere else (public sector organizations, mature private companies and NGOs are not creating sufficient jobs, many are even downsizing). Startups can generate new jobs if allowed to grow and scale up. Targeted incentives and support at the different startup stages may help to tap startups' potential.

Also, the Social Security Corporation is not diversifying its portfolio unlike other pension funds globally, avoiding investing in Jordanian startups or funds, thus creating additional strains on startups without providing any help through supporting existing startup investment vehicles. Globally, Venture capital provides diversification benefits to pension funds, and they offer investors access to private companies that are otherwise hard to gain exposure to via other asset classes. Some pension funds are even expanding their investment activities from only investing in managed funds into more direct investments.



General

Many startups perceive the local market in Jordan as a ground for testing, piloting, and back office operations, but not as adequate to fuel growth. Most startups indicated the need for governmental agencies to coordinate with each other and align their activities to regulate and support startups.

Recommendations proposed by the startups included creating better awareness on current incentives or opportunities for startups already in place (e.g comprehensive portal or call center) and on any changes in the laws; creating a special economic zone only for startups or creating special areas / incubators within economic zones to allow the startups to benefit from the zone's services decreasing their need for investments.

Only a holistic approach when dealing with policy-related challenges will produce the needed results for the Government and startups. Partial interventions may have limited impact as other issues will grow or new issues will be created. Mandating one Government body to oversee all regulations and issues related to startups might be part of the solution.

3.8.2 High Priority Issues, Comments & Recommendations – Financing & Support



Equity Financing

There is a high level of agreement among startups from across the seed, early and growth stages that it is difficult to raise funds for the seed and pre-series A rounds (USD 100,000 to 250,000). Most startups at the growth stage also indicated that it is difficult to raise funds series B/C.

Most startups at growth stage find the funding process in Jordan at the growth stage lengthy and find better opportunities from regional investors. Some startups indicated that local and regional valuations are one third to one fifth of startup valuations in the US or Europe due to limited supply (startups) and demand (VCs), market sizes, risk appetite, and limited funds sizes. Startups also indicated that some Jordanian VCs are investing outside Jordan rather than within the country.

Startups at the early and growth stages indicated local funding at the early stage is limited due to weak understanding of startup business models, unfair valuation, unstructured angel investing, and expensive due diligence processes. From another perspective, some startups are fundraising not to grow but to cover the current operational cost or mainly to receive funding to exit.

Recommendations proposed by the startups included providing local and international investors with additional incentives and offering better protection to shareholders to encourage more investment in locally registered companies; increasing government financial support programs (grants, debt, equity) to help startups grow and attract international investments and initiating a discussion with the Social Security Corporation to encourage more institutional investment in Jordanian startups, accelerators and VC funds.

The more debt and equity financing available for startups, the faster the startups are able to grow and access regional and global markets. For this to happen, additional incentives for local and regional investors need to be created to invest in Jordanian startups, especially as such regional investors started looking at early stage investing as viable investment class.



Debt Financing

Most startups at the seed and early stage indicated that they do not view debt financing as a viable financing option as banks assessment processes focus mainly on the current status and past performance of the business and not the future potential.

In order for debt finance providers to target more early stage companies with growth potential, competences for assessing future performance potential need to be strengthened. A traditional view on purely evaluating a current business model with regards to minimizing risks in all areas and limiting the focus to only current performance and cash flows hinders innovative startups' access to finance.



General

Many startups find various support programs weak in terms of tools, curriculums, and capable human resources. If proper support and promotion was offered, Jordan can be positioned as a hub for TBSs in general, and specifically for advanced technologies such as artificial intelligence and other drivers of the Fourth Industrial Revolution.

Proper support is needed from the ecosystem. This includes amongst others capacity building, technical assistance, specialized networking and matchmaking activities. Support is needed both on the firm-level as well as on an industry level, as specific industries have special needs and challenges e.g. in terms of competitiveness and accessing markets.

3.8.3 High Priority Issues, Comments & Recommendations – Human Capital



Hiring

Startups at the early and growth stages indicated that they find it difficult to match the salary and benefit packages offered to talented local resources by international companies coming to Jordan. At the same time, same startups find difficulty in hiring resources from outside Jordan for many technical and business domains and cannot find good alternatives in the local market. This is especially true for new and specialized technical domains, including senior / C-level managers and various specialists positions. Also, most startups at the early stage indicated that it is difficult to hire needed technical resources that have good management and soft skills.

Recommendations proposed by the startups included introducing new academic programs to meet the evolving needs of the startups sector; introducing an improved quota system (e.g. allowing startups to hire one international resource for every five Jordanian resources), provided that knowledge transfer will happen, helping to train local resources on latest tools and practices.

Dealing with the human capital issues will likely build on establishing long-term partnerships with higher education institutions to develop the local human resources through education. At the same time, the door could be further opened especially for high-growth startups to hire experienced international resources that can help in developing the local resources through well designed knowledge transfer activities.



4

CONCLUSIONS AND RECOMMENDATIONS



Jordan's tech and tech-enabled startups help drive economic growth and inclusion

Despite recent challenges faced by startups in Jordan due to local and regional economic difficulties, Jordanian TBSs enjoy high performance potential in terms of export intensity, female employment, high-wage job creation, and technology transfer and diffusion. TBSs contributed 0.5% of Jordan's nominal GDP in 2016, of which 0.3% constituted a direct value added. The economic impact of TBSs also expands to indirect and induced effects through TBSs' investments, value chain effects, employees' spending and not least product and process innovations also tackling social and environmental challenges.

Due to its skill-intensity, the value added of Jordan's ICT sector is markedly high compared to the national average across sectors and other key activities. The average value added generated by the ICT sector reached 64% of its total output as compared to an average of 40% for the manufacturing activities and an average of 52% for all Jordanian economic activities.

Tech and tech-enabled startups bear further potential for the Jordanian economy

Given the limited Jordanian market and the need to promote Jordan's export capabilities, TBSs are particularly promising due to their high export performance compared to both mature ICT firms as well as other sectors of the Jordanian economy.

Also, the high percentage of female employment in TBSs is promising. Likely, the combination of ICT being a sector more accessible for women in Jordan, a sector with extensive linkages to other sectors, and a sector with a relatively high (yet low if compared internationally) female participation allows to leverage the sector as guidance for other sectors in Jordan.

Another untapped potential is that of "Jordanian" startups in other countries. Anecdotal evidence shows that a number of startups - although owned by Jordanians and operating in the Jordanian market - are registered abroad. Many of Jordan's success stories have chosen to register abroad as they or their investors consider the business and investment environment in Jordan less conducive than in other economies in the region and beyond.

Concerted efforts of the government and further stakeholders can tap startups' potential for Jordan

This study identified a number of opportunities to promote startups' growth and impact. Nurturing TBSs generally as well as specifically with regards to their export performance can help establish Jordan as a digital

service hub in the region and beyond. Research revealed a number of entry points for policy makers to enhance the business and investment climate for startups. This includes aspects with regards to legal (e.g. issuing a startup law and encouraging local funds to be established building on the venture capital by-law), regulatory (e.g. using innovative reform instruments such as a regulatory guillotine to eliminate and simplify regulations in a short period at low cost), incentive (e.g. ensuring long-term and stable tax inducements), as well as institutional and policy frameworks (e.g. supporting the implementation of the National Entrepreneurship and Micro & SME Development Strategy).

A reference entity in the Government to deal with policies related to startups facilitating the interaction between entrepreneurs, related Government agencies and support organizations could positively affect the business and investment climate for startups and related institutions.

To effectively deal with the seemingly increasing movement towards offshore registration, policy makers may consider a comprehensive and holistic review and intervention with regards to investment, taxation, and expansion-related issues.

An overarching strategy addressing the needs of startups should consider recommendations proposed by startups. An effective public-private dialogue will allow addressing the most promising interventions on the one hand as well as those possible to be addressed with little resources at short notice ("low hanging fruit") on the other hand. Priority areas may include (1) the introduction of exemptions / grace periods for taxes and social security for the first years of operation, (2) provision of tax exemptions for production inputs (local or imported), (3) rolling-out a customs process for startups only to reduce time and costs as well as to improve consistency in terms of applied processes and procedures, (4) establishment of a process for escalation for startups regarding other issues in terms of public service provision, (5) establishing a Higher Council / Authority / One Stop Shop in charge of all startups-related issues, responsible for reviewing and enforcing all laws impacting startups.

Effective management and promotion of startups' impacts requires a common language and a review of Jordan's relevant data sources

Jordan still lacks a formal definition and unified policy framework for startups in general, and tech / tech-enabled startups (TBSs) in particular. This inhibits coherent implementation and synergic impact of government and non-government interventions for supporting such firms. This study proposes an operational definition for TBSs based on international best practices and consultations with Jordanian key stakeholders.

Effective measurement also requires an effective statistical system. Study research has found locally available sources of information that are somewhat regularly updated and locally available, thus not dependent on ad hoc surveys. However, the study revealed that only three secondary data sources provide immediately relevant data sets. Also, those data sets would need to be reviewed and refined to ensure their scope, depth and focus is sufficiently answering key questions on startups growth paths. Jordan's formal statistical system holds potential for further refinements to generate official, micro-based, and age-sensitive data on the contribution and performance of startups in general and TBSs in particular. Of particular importance for assessing the indirect and induced effects of ICT and other sectors are the Input-Output Table and related statistics. It is recommended to initiate a new and more detailed Input and Output model for the Jordanian economy.

Int@j provides sector-specific and a regularly updated, well-developed data set for the ICT sector in terms of industry coverage and quality. Nonetheless, there is a need to benefit from DOS international methodology in covering more standard and detailed variables (e.g. value added, real investment), as well as other key variables, such as ICT exit or discontinuation rates (by age group), geographical

concentration of ICT firms, and firm skill intensity (ratio of employees with Bachelor degree or higher). Adopting a unique identification number for each ICT firm would facilitate the systemic tracking of startup firms over time.

Statistical data, analytical research, and promotional reports of investment opportunities for priority sub-sectors in ICT and related services, such as the software industry, e-commerce, and call centers, may be improved.

Finally, there is a strong need for unifying the classification of business activities according to international classification (ISIC) among the different government entities involved in the registration, licensing and tracking of businesses (Ministry of Industry and Trade, Companies Controller Department, Amman Municipality, Governorates Municipalities, and Department of Statistics) and business support organizations (Chambers of Commerce and Chambers of Industry). Also, providing a classification of firms on a more detailed level (e.g. beyond four digit ISIC codes) in the establishment census and in sector surveys is needed and would allow for more in-depth analysis of priority economic activities.



APPENDICES

Appendix A: Focus Groups Outcomes



Appendix A: Focus Groups Outcomes

Government & Policy - Issues

Sub-Topic	Stage/Group	Input
Customs	Seed	Customs duties paid to government keep changing based on the subjective judgment of the customs department employee who has little understanding or interest regarding startups special needs, creating major issues in forecasting costs and pricing
		Customs process is lengthy and costly, as it might take months to complete the process, with customs duties sometimes costing multiples of original item cost
		Some startups prefer to do some product development activities outside Jordan to avoid the lengthy and costly customs process
General	Seed	Government agencies and employees on various levels have limited knowledge about startups and their special needs, and some of them have a hostile attitude towards such organizations
		Many startups have issues with the way laws and regulations are implemented by relevant governmental authorities, and seen as arbitrary and based on personal interpretations particularly by government employees in areas that include tax and customs
		Many startups having issues related to government services do not escalate disputes due to their limited time or due to the fear of retaliation or due to the lack of such process. Also, some licenses require high investment for some startups (Export/Import License)
		Many startups indicated that limited market size and limited government support encourages some startups to relocate to other countries
	Growth-Early	Many startups look at the local market as testing, piloting, and back operations, but not adequate to fuel growth
		Most startups indicated the need for governmental agencies to coordinate with each other and align their activities
	Growth	Some startups indicated that e-government services are not active or incomplete or contradict with the offline process
		Good efforts by Government but some major/minor issues exit
Registration	Seed	Changes (instability) in laws in general, and taxation (such as income tax) is a major concern to startups and investors
		Most startups found the initial registration process easy, but such process does not allow them to operate until related permits and licenses are obtained, causing delay issues to many
Regulatory	Seed	Most local economic zones are suited for manufacturing activities and not startups in terms of minimum space and investment size
	Growth-Early	Many startups indicated that some regulations are vague, and some cannot be applied to startups with disruptive offering or business models
		Some startups indicated that they could not get the full regulations related to their business
		Some startups registered offshore had difficulties opening a bank account
	Growth	Some startups that need testing of products to be exported have issues with the lengthy process
		Regulations are not friendly towards startups having new and disruptive offering or business models, and the Government need to play the role of enabler and not only regulator
Social Security	Seed, Early & Growth	New laws should accommodate changes in technology and business trends
		Social security is a major issue for most startups as it raises overheads. Some startups outsourced the work to other companies or used consultation and service agreements

Taxes	Seed	Some startups indicated that laws to regulating online businesses (i.e. e-commerce) are absent, complicating taxation, and encouraging some startups to reallocate their businesses outside Jordan or register offshore companies
	Growth-Early	Most startups indicated that the cost of benefiting from international services providers is too high due to additional taxes, especially if no good local alternative is available
	Growth	Tax exemption of software sales, reduced income tax (5%) and export tax exemption are good for startups
		The laws already give tax exemption for limited sales
		Some startups register outside Jordan as requested by Investors or to avoid taxation

Government & Policy - Recommendations

Sub-Topic	Stage/Group	Input
Customs	Seed	Consider rolling-out an easy and standardized process to help startups accurately estimate the customs to be paid before any order is made. Also, create a fast-track process for startups.
	Growth	Consider allowing new technologies that have security issues enter to special protected zones for piloting purposes
General	Seed	Consider exemption from taxes and social security for the first 5 years
		Consider rolling-out an external independent process for escalation to be used by startups having issues regarding tax or customs or other government services
	Growth	Consider having Higher Council / Authority / One Stop Shop in charge of all startups related issues, responsible for reviewing and enforcing all laws impacting startups
Investment	Growth	Consider ways to create better awareness of current incentives or opportunities and any changes in the laws
Regulatory	Growth	Consider ways to encourage investors to invest in locally registered companies by providing better protection to shareholders
	Seed	Consider creating special areas / incubators within economic zones to allow the startups to benefit from the zones services without the large investment
Social Security	Seed, Early & Growth	Consider creating a special economic zone only for startups
		Consider a grace period of social security installments for the first 2 to 5 years
		Consider optional employee enrollment in social security, especially for young workers, and introduce the end of service benefit as an alternative
		Consider establishing a fund to subsidize or lend (Not to be repaid in case of closure) the social security installments for the first 2 to 5 years for startups (Similar to Isterdad in KSA)
		Consider allowing startups to register employees with minimum salaries for the first 2-5 years
Taxes	Growth-Early	Consider allowing startups to register employees as part-timers
		Consider reducing taxes on international services needed as an input for production
	Growth	Consider providing a tax exemption for all production inputs (Local or imported)
		Consider limiting full benefits to Innovative Promising High Growth Startups with lean and objective certification and accreditation process
		Consider reviewing income tax and sales tax rebate process as it is causing a liquidity and admin issues

Financing & Support - Issues

Sub-Topic	Stage/Group	Input
Debt Financing	Seed & Early	Most startups will not think about debt financing as banks assessment process focus mainly on the current status of the business and not the future potential
Equity Financing	Seed	Most startups find funding process lengthy and have better opportunities from regional investors
	Seed & Early	Most startups find difficulty in raising funds for seed / pre-series A (USD 100,000 to 250,000)
	Growth-Early	Some startups indicated local funding at the early stage is limited due weak understanding of startups business models, unfair valuation, unstructured angel investing, expensive due diligence process
		Some startups are fundraising not to grow, but to cover the current operational cost, or mainly to get funding to exist
	Growth	Local and regional valuations are one third to one fifth of startups valuations in the US or Europe due to limited supply (startups) and demand (VCs), market sizes, risk appetite, limited funds sizes
		Most Startups find difficulty in raising funds between USD 100,000 to 250,000, or series B/C
		Jordanian VCs are investing outside Jordan
General	Seed	Many startups find various support programs weak in terms of tools, curriculums, and capable human resources
	Growth-Early	Some startups indicated the need for better capacity building activities to prepare the founders to the growth and fundraising process
	Growth	With proper support and promotion, Jordan can be positioned as a hub for advanced technologies such as AI and other drivers in the Fourth Industrial Revolution

Financing & Support - Recommendations

Sub-Topic	Stage/Group	Input
Equity Financing	Growth	Consider initiating a discussion with Social Security Corporation to encourage more institutional investment in Jordanian startups
General	Growth	Consider increasing government financial support programs (grants, debt, equity) to help startups grow and attract international investments

Human Capital - Issues

Sub-Topic	Stage/Group	Input
Educational System	Seed	Some startups at seed stage do not find major issues in hiring needed talent but had to invest in preparing these resources to start adding value as the educational system is not able to fully prepare them for the work environment
Hiring	Seed	Most startups used internal resources to develop offering, some preferred outsourcing as a better cost-effective option
		Many startups found the starting salaries high for technical resources and the availability of needed resources to be a challenge
		Many new employees find difficulty to integrate with startup culture and prefer a traditional work environment
	Growth-Early	Most startups at the early stage indicated it is difficult to hire needed technical resources that have good management/soft skills
	Early & Growth	Many startups find difficulty to match the high packages offered to talented resources by international companies
		Many startups find difficulty in hiring resources from outside Jordan for most technical and business domains, and cannot find good alternatives at the local market, especially for new and specialized technical domains
		Many startups find difficulty in recruiting senior/C-level managers and specialists

Human Capital - Recommendations

Sub-Topic	Stage/Group	Input
Educational System	Seed & Growth	Consider introducing new academic programs to meet the evolving needs of the startups' sector
Hiring	Early & Growth	Consider introducing a quota system allowing startups to e.g. hire one international resource for every five Jordanian resources, provided that knowledge transfer will happen, helping to train local resources on the latest tools and practices

Jordan's Startup Economy:

Assessing the economic contribution and potential of tech and tech-enabled startups

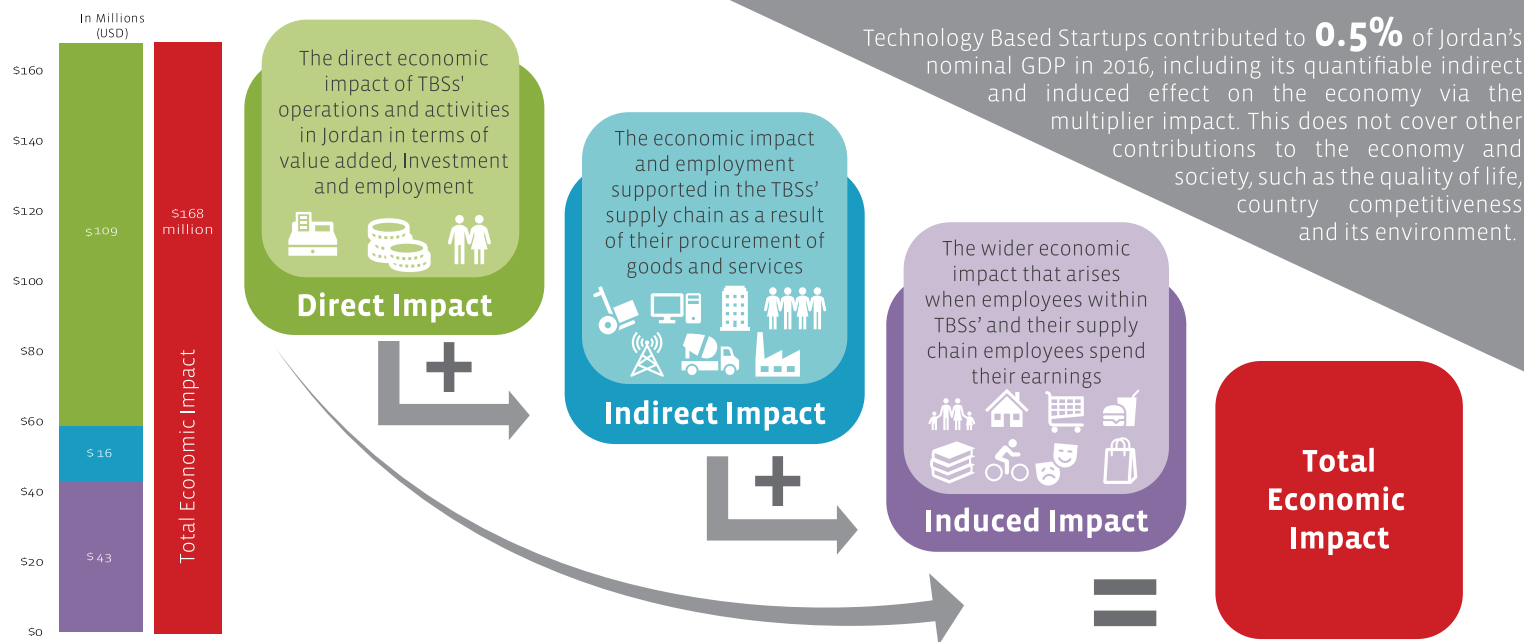


A Technology Based Startup (TBS) in the context of the study is defined as:

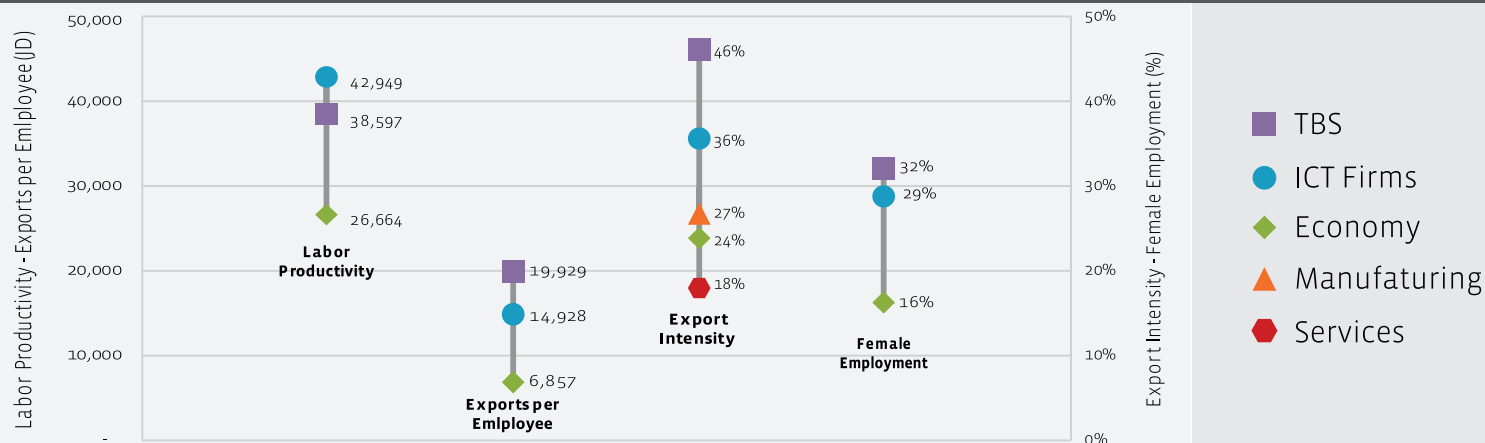
Technology Based Startups Definition

“A knowledge-based, legally independent active company, not older than ten years since formal registration, and operating in one or more ICT commodity or service sectors”.

Technology Based Startups Total Economic Impact



Technology Based Startups National Averages Comparison



Technology Based Startups National Distribution & Profile

