

THE PALESTINIAN TECH ECOSYSTEM

March 2022

In line with wider global trends, Palestine's Information and Communication Technology (ICT) sector has become a relatively strong driver of its economy, not least being less constrained by restrictions on movement, access and governance imposed by the occupation.¹ This has led the Palestinian Authority and international donors to focus more on ICT's potential to drive rapid improvements in growth and employment. There are many impediments, such as the limits of 3G (2G in Gaza). Palestine's young and educated population has been quick to adopt technology, with over 80% of households by 2020 having access to the internet and 86% owning at least one smartphone.² This analytical briefing seeks to summarise where the sector stands.

Overview

The sector dates from 1997 and the establishment of Paltel (the Palestinian Telecommunications Company), after which it quickly expanded, with many software firms springing up that mainly provided ERP (Enterprise Resource Planning) and other software for the local market. Several of these developed into outsourcing firms, boosted in 2008-9 through a Cisco/USAID initiative that engaged them on R&D projects. Cisco's investment enabled Palestinian enterprises to demonstrate their capabilities, resulting in increased prominence for the delivery of high-quality at affordable cost, bringing work from HP, Microsoft, and Intel, typically outsourcing through Israeli headquarters. The sector's contribution to the Palestinian economy over the last decade was some 5-7% of GDP annually, with an average of \$543.5 million of value-add a year.³

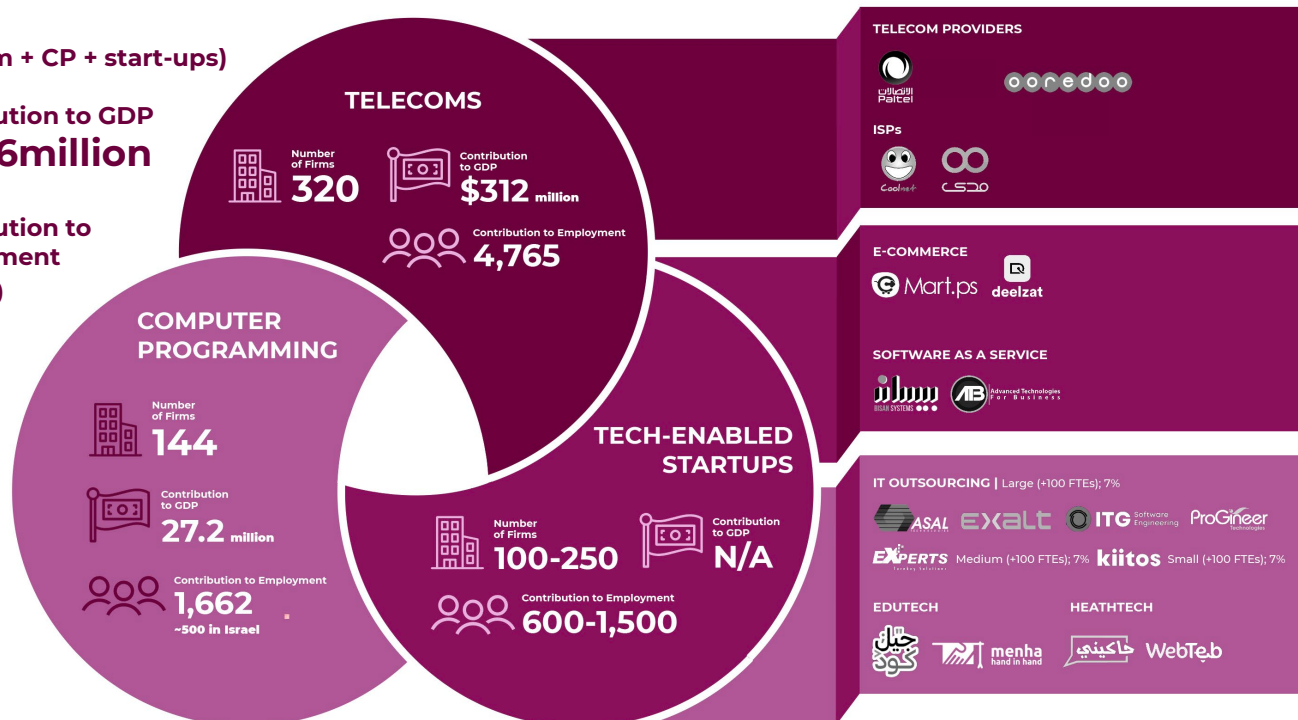
This dropped significantly in 2020 due to Covid, to just \$358.3m or 2.3% of GDP, though still employing over 8,700.⁴ Several start-ups downsized or closed during the pandemic, including Yamsafer, supported by Sadara Ventures. The drop appears mainly in telecoms and specific areas, such as tourism (with the period also seeing increased local competition from global brands). More broadly, the tech sector was resilient. In addition, according to a recent World Bank report, enterprises have significantly increased the use of technology to mitigate the impact of COVID-19 on their businesses, creating opportunities for expansion.⁵

Tech

(Telecom + CP + start-ups)

Contribution to GDP
\$341.6million

Contribution to Employment
7,500



Sources: Statista; PCBS; World Bank, Startup Genome, Intersect Hub, Everest Global, stakeholder interviews

* Range in past five years to account for impact before the impact of the COVID19 pandemic

** Based on a World Bank estimate of the average number of 6.1 employees per startup

Access to Talent

International best practice from comparable ecosystems highlights the well-evidenced key drivers of a successful technology sector, and amongst those, of central importance is access to tech talent, in part from investment at all levels in the education system. Smaller countries often find the local talent pool does not have enough quality, affordable talent to sustain growth.

All 14 West Bank and Gaza universities have IT departments, with over 1,500 students graduating annually,⁶ with levels of educational attainment remaining high and an increased focus on entrepreneurship and innovation. Most host tech incubators, accelerators, or centres of excellence. Whether cause or effect, limited job opportunities is seeing students shift away from science, technology, engineering and mathematics (STEM) subjects.

Table 1: estimates of the size of the talent pool

Country	Palestine	Jordan	Egypt
Total population	5.1 m	10.2 m	102.3 m
Number of graduates from higher education (2020)	42,394	55,170	604,200
Tech graduates (2020)	1,694	4,329	45,961
Tech graduates in past 10 years	15,970	45,003	285,474
Formally employed in tech sector	3,950	16,405	60,900
Freelancers*	5,082	2,690	47,769

Sources: Statista; Palestinian Central Bureau of Statistics; Ministry of Education (Palestine, Jordan and Egypt); freelancer.com

* Platform with the largest presence of developers from the MENA region; freelancer.com

Using the same methodology as Egypt and Jordan, the size of Palestine's tech talent pool is significant, although smaller than surrounding ecosystems. Just 3.8% of Palestinian graduates have an ICT-related degree, compared to 4.7% in Egypt and 8.2% in Jordan. Career trajectory differs too: less Palestinian tech graduates have a formal job in the sector than their Jordanian counterparts, just 24.7% of the last decade's graduates, compared to 34.5% in Jordan. Many graduates, especially in Gaza, freelance online, a pronounced trend. The number of professionals on international freelancing platforms is 31.8% of that Palestinian talent pool, compared to 16.7% in Egypt and just 6% in Jordan.

Quality is also an issue, with several studies and qualitative data from industry leaders highlighting the deficit of practical experience and exposure. Serious flaws have been shown in curricula, assessment, and teaching methods, as well as the critical thinking abilities that enable students to excel in the workplace.⁷ According to a recent World Bank study, Palestinian businesses cite that university degrees and grades do not act as a sufficient screening signal for employers seeking top talent.

This is not easily remediated by the market. An impasse has developed, with local outsourcing firms unwilling to bear the risk of training recent graduates without the security of increased future revenue and multinationals reluctant to carry the risk of extending contracts without that talent. Various programmes sponsored by multinationals like Intel and donor agencies have tried to step into the breach through upskilling young graduates, including through experience with global companies, such as the Axos Academy, Gaza Sky Geeks and the Talent Acceleration Programme. However, these are mainly small-scale, lengthy, and expensive.

All this leaves Palestine with fewer experienced tech professionals than competing markets, and an especial shortage of experienced medium-level (3-5 years of experience) and senior (5-8) team leaders in a number of technology platforms, also limiting opportunities for new graduates to learn from senior colleagues. However, the length of career experience among founders is comparable to similar ecosystems globally, the typical Palestinian founder having six years of professional experience with 2.4 enterprises.⁸

Estonia^{9 10}



- Provide computers and Internet connection to every school
- Teach teachers how to utilise computers in the classroom
- Support digital learning through educational software
- Encourage children to improve their computer abilities
- Assist municipalities in establishing an ICT infrastructure
- Database that consolidates all school data to track students' progress and improve educational quality over time

Access to Markets

Access to markets is similarly crucial, as small markets like Palestine cannot rely only on internal demand. Many similar ecosystems have therefore established strong links to international markets through structured programmes to assist entrepreneurs develop demand-led products and services targeting international markets.

According to Start-up Genome, the local start-up community is cohesive and supportive, with slightly higher levels of local connectedness than the comparable global average. However, early-stage funding and market reach is shown to be less globally connected, with 3.2 connections between start-up founders and peers in the top seven ecosystems, compared to the comparator 4.2.¹¹ This means a low share of worldwide consumers, poor sales overseas and less linkages to leading ecosystems. While universities, incubators, and accelerators connect some local actors internationally to knowledge networks, this does not result in sufficient expertise.

Access to Capital

Local entrepreneurs also struggle with lack of early access to capital, which international experience also identifies as a crucial enabler. Where relationships between entrepreneurs and investors are limited, early-stage capital generally flows from close linkages built with international investors, often through local support programmes. Palestine has seen significant initiatives providing start-up financing over the past decade, including technology-focused VC funds such as Sadara Ventures and Ibtikar, and various support organisations and programmes. This helped a promising digital innovation and entrepreneurship scene emerge, with a significant number, around 15%, women-led (higher than New York and Cairo).¹² There have been two exits, both in healthcare: Dimensions Healthcare and WebTeb.¹³

However, such financing initiatives have slowed significantly in recent years, start-up funding has declined, and investor activity plummeted. Today Ibtikar is the only active sizeable VC with a Palestinian office, its second round attracting the International Finance Corporation, the Dutch Good Growth Fund, managed by Triple Jump BV and PwC, and numerous private and corporate investors from Palestine and the diaspora.¹⁴ This lack is partly because of the limited supply of quality start-ups and founding teams, with investors citing limited specialised expertise, flawed team structures and low capacity for rigorous due diligence. As a result, start-ups in Palestine receive far lower investment than the \$200,000 of comparable ecosystems - the average seed round being just 5.5% (\$11,000) from 2017-9. These capital constraints and lack of funding runway also mean many founders are driven to revenue-generation too soon, making for less competitive products and less international market development.

Policy and Infrastructure

Global experience also shows another critical enabler, or even pre-condition, for attracting risk capital, and more broadly for tech sector development: a stable and responsive legal, regulatory and policy environment, with appropriate incentives. Similarly necessary is the underlying infrastructure generally, and internet and mobile broadband penetration particularly, as well as exposure to international technologies and ideas.

Palestine performs poorly on the well-respected World Bank ease of doing business index, ranking 117th of 190 countries in 2020.¹⁵ This is an improvement on 2016 (140), but some way behind Jordan (75). Palestine scores particularly low on 'starting a business', with a \$1,400 minimum cost, and 'enforcing contracts', with no specialised commercial court and legal actions extremely slow, pushing businesses to resolve disputes in other ways.¹⁶ Basic company law is very outdated (the West Bank's is based on 1964 Jordanian law),¹⁷ although a new law comes into force in March 2022 which will modernise and unify existing laws, instil global best practices, and resolve duplication.¹⁸ Positioned to support a modern entrepreneurial ecosystem, it should aid in attracting risk capital; although tax incentives, investor protections, and an eased path from ideation to exit are also required, as are improved intellectual property rights, making it still easier to start a company, establishing specialised commercial courts and improved enforcement of relevant laws.

Rwanda^{19 20 21}



- Register a business online in less than a day free of charge
- Standardising the registration and liquidation of enterprises
- Fiscal and non-fiscal incentives options to attract local and foreign investors (e.g. newly formed SMES exempt from paying trading license taxes for first two years of operation)
- Startup Act (in dialogue phase - yet to be adopted into law)

Improved telecoms infrastructure substantially contributed to the ecosystem's growth. However, poor transmission rates, high latency, expensive subscription, and antiquated equipment all now result in poor quality internet. Cellular download and upload speeds in 2021 averaged 7.7 Mbps and 2.2 Mbps respectively, compared to 25.1 Mbps and 17.3 Mbps in Jordan.²² Palestine's fixed broadband performance is ranked 130th globally, with average download and upload speeds of 22 Mbps and 10.4 Mbps, compared to 50.18 Mbps and 49.04 Mbps in Jordan.

The poor state of Palestinian ICT infrastructure is largely a result of Israeli policy, which places draconian restrictions on the development of mobile broadband

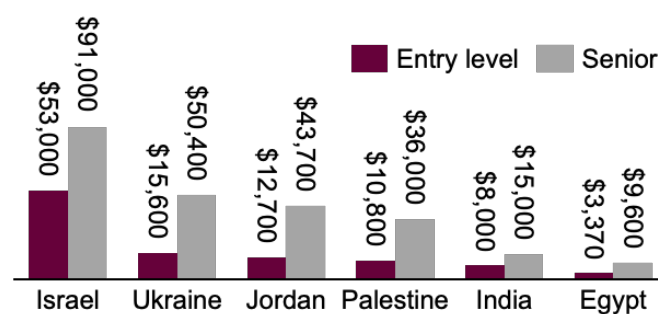
infrastructure. After a long delay, 3G was introduced in the West Bank only in 2018, compared to 2003 in the UK and 2004 in Israel. In Gaza, Israeli restrictions allow only a 2G network. This salient point has been repeatedly raised by the Palestinian Authority, and for the first time a tentative public statement was made by a relevant Israeli Minister on August 31, 2021. However, no tangible progress has been seen since. Even once agreed the installation process will take some eighteen months. Palestine would still then lag its Israeli neighbour and much of the rest of the world, whose mobile operators already operate on 5G. This has severely impaired the penetration of mobile broadband. In 2021 only 22.8% of mobile users had 3G, compared to 80.8% in Jordan and 83.1% in Egypt, which is a significant impediment to digital businesses as only a small part of the population conducts commercial activities online.²³

Proximity to the Israeli Economy

The ecosystem should have a major economic advantage due to its proximity to the world-class Israeli hi-tech sector, which generated some \$60 billion in 2020,²¹ compared to Palestine's \$31.5 million. Israeli demand for IT and R&D outsourcing does indeed constitute a large proportion of Palestinian outsourcing contracts given its doorstep availability, and so accounts for the employment of many Palestinian tech professionals. However, the availability of opportunities in Israel inevitably drives salary expectations upwards, especially for software engineers, and so this proximity is viewed by some local tech firms as a threat to the ecosystem's scaling and continuity. The recent move to issue 500 work permits for Palestinian tech employees in the West Bank to work in Israel, a number expected to rise, has therefore received a mixed reaction. The number of permits is small compared to the talent pool (estimated at 15-20,000) but the best and most experienced are likely to be attracted by the much higher salaries on offer. Global experience backs up the impact of talent migration where it returns and is deployed effectively, broadly likely in this case, and so the transfer of these broader experiential advantages is likely to be positive in the longer-term, provided a critical mass of Palestinian tech professionals do continue to reside in Palestine.

In the short-term, the effects are more pressures on the local talent pool, with many companies already citing difficulty in retaining quality talent given high international competition and other distortions of Israeli restrictions, the net effect of all this being to drive up the cost of outsourcing in Palestine, reducing competitiveness compared to the likes of India and Egypt.

Software developer salaries



Sources: Daax, PayScale, Glassdoor, SalaryExplorer, Global Brainforce

Promotion and Visibility

The sector's promotional efforts have generally emphasised the size of the talent pool, cost and relatively high levels of English and also Arabic, providing the capacity to deliver services across a wide range of international and Arab markets. However, qualitative data from multinationals and Israeli companies show a clear lack of awareness of rising opportunities in Palestine and difficulties in identifying business partners and navigating the business environment, including taxation, pension and hiring and firing. Palestine lacks a national branding and promotion effort to communicate its comparative advantages, so multinationals tend to be familiar only with larger companies, making it harder for others to match capability with international demand.

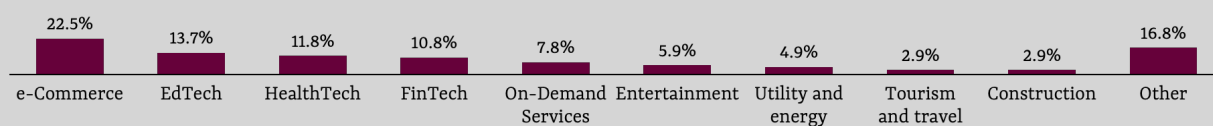
Incubators and Accelerators

Existing accelerator and incubator programmes are not producing a significant number of high-quality start-ups. Many Palestinian entrepreneurs fail to develop companies to the level required to attract investors due to lack of access to mentoring and support, suggesting current availability is too conventional to stimulate or attract sufficient innovation and expertise. Mentors appear to have minimal influence on start-up growth, suggesting a lack of quality. Although Palestine has a sizeable number of incubators and accelerators, they vary in terms of quality and services, business models and sector/stage focus, as well as lacking consistency in terms of management capacity and long-term operational strategy.¹¹ Only a few have well-functioning, curriculum-based programmes, with implications for the kind of start-ups being supported and readiness to go through the early phases of growth.

The Palestinian Startup ecosystem¹³

The tech startup ecosystem is in the 'early activation phase', with low early-stage funding, no high value scale-ups and only two recorded exits. A recent report by Intersect Hub maps 102 startups in the Palestinian ecosystem.

Figure 2: Breakdown of Palestinian tech startups by sector, 2021



Source: Intersect Innovation Hub

Palestine has 37 incubators and 2 accelerators. This is a large number for the size and maturity of the ecosystem and is likely driven by high levels of donor funding.

Conclusions

This snapshot analysis does not offer recommendations, although several are evident. The Palestinian tech sector has proven it offers opportunities for Palestinians to earn a living, build a career and grow global businesses. However, the more rapid expansion of the sector, and its movement up the value chain is severely restricted due in part to factors beyond Palestine's control, such as the withholding of 4G. However, cases such as Estonia and Rwanda show that small countries can do a great deal internally even with low levels of infrastructure development, some lessons being embedding technology at the early stages of education and monitoring outcomes throughout. Tech should be, and could become, an economic success story for Palestine, which its location in an increasingly open and interconnected world leans into. However, although the potential is there, the Palestinian tech ecosystem remains too small and undeveloped to carve a substantial and impactful niche in a fiercely competitive world.

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