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The Innovation and Entrepreneurial Ecosystem in the OPT

Main Challenges and Proposed Solutions

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Introduction

The Representative Office of Switzerland in the Occupied Palestinian Territory (OPT) organized a workshop on October 20, 2020 and invited the main innovation ecosystem enablers in the OPT. The main objective of the workshop was to identify some of the future needs and required interventions to support and strengthen the Palestinian innovation ecosystem. Forty-five participants attended the workshop, hailing from the ecosystem support organizations (funds, accelerators and incubators); and Palestinian university professors with their respective centers of excellence. Participation in the workshop also included representatives from Palestinian public sector institutions such as the Higher Council for Innovation and Excellence (HCIE).

This report was produced to present the workshop outcomes and identify the needs to be addressed by all local and international parties interested in supporting and developing the Palestinian innovation ecosystem.

The Representative Office of Switzerland in the OPT hopes that the outcomes and recommendations of this report could pave the way for concrete interventions on the ground to further support Palestinian entrepreneurs.

The information presented could also help strengthen the ongoing efforts by the universities and entrepreneurship support organizations to enable Palestinian students to think creatively, take risks, and solve problems that would ultimately support sustainable growth for the Palestinian economy.

Workshop Rationale

Entrepreneurship involves the nexus of two phenomena: the presence of enterprising individuals and the presence of lucrative opportunities. As such, the workshop was divided into the following two segments:

Fostering an 'entrepreneurial mindset' among the young and especially Palestinian university students. The 'entrepreneurial mindset' can be described as a set of skills that enable people to identify and make the most of opportunities, overcome and learn from setbacks, and succeed in a variety of settings.[1] Research shows that an entrepreneurial mindset is valued by employers, boosts educational attainment and performance, and is crucial for creating new businesses. The development of an 'entrepreneurial mindset' is a multifaceted process that begins in the household, in the early years of childhood, and continues throughout primary, secondary, and tertiary education before entry into the job market. Despite being only one of several components of the entrepreneurial journey, **higher education forms a pivotal point in the life of aspiring entrepreneurs**. For this reason, the workshop focused on identifying the means of strengthening an environment at university campuses that is more conducive to creativity and innovation.

Paving an 'entrepreneurial path', or the journey the entrepreneurs go through to transform their ideas or research into business ventures. Entrepreneurs are directly involved in the dynamic and complex interplay between financial management and business strategy. The entrepreneurial path begins with the perception of an opportunity or an idea, which the entrepreneur then seeks to pursue: assembling the required resources, implementing a practical plan, assuming the risks and the rewards, and then preparing to launch the final product. Afterwards, entrepreneurs would reach out to customers in the market and raise capital from local investors. Throughout this journey, the role of **the government, ecosystem organizations, the private sector, and international donors is key** in paving a path for Palestinian entrepreneurs to emerge.

Building on these two focus areas, this report will expand on the main challenges identified by the workshop participants, and reflect on the main interventions that have been proposed. The aim is to provide insight from the innovation sector practitioners and enablers to potential stakeholders interested in supporting and developing the Palestinian innovation ecosystem.

[1] Network for Teaching Entrepreneurship (NFTE), October 2020: https://bit.ly/34poNWK

The Palestinian Context

Over the last few decades, the Palestinian economy suffered continual restraint and financial hindrances due to the Israeli occupation. The ongoing movement and trade restrictions in the West Bank, the decade-long blockade on the Gaza Strip, in addition to the lack of sufficient government investment in the productive sectors have hollowed out productivity and prevented the economy from reaching its potential. Furthermore, this high-risk environment has kept investment levels extremely low.

Although substantial transfers of donor aid from the international community have helped to mitigate some of the economic impacts of the occupation, most of this support was channeled through increased public sector hiring. With transfers declining since 2009, including a dramatic drop in 2017-18, economic growth stagnated, revealing the fragility of the aid-driven growth model.[2]

Other factors that inhibited Palestinian economic growth include restrictions on technology infrastructure such as 3G and 4G,[3] restrictions on freedom of movement (both internal and external), lack of exposure to other markets due to the socio-political reality, and finally aid dependency and its focus on macroeconomic 'developmental' outcomes, which don't necessarily address local problems in a sustainable manner. Despite the difficulties, the innovation ecosystem in the OPT witnessed a major development over the past two decades especially in the fields of education, ICT development, and technology empowered solutions. This development manifests itself as follows:

1 Levels of proliferation of technology and the internet have increased to unprecedented levels. According to the latest data, the majority of Palestinian households (80%) have access to the internet with more than 86% of households owning a smart-phone.[4] The dissemination of technology and technology-enabled solutions constitutes an opportunity to introduce more products and services. The Palestinian Information and Communication Technologies (ICT) sector has registered impressive growth over the last two decades. The data of the 2017 census indicated that the number of establishments working in the ICT sector accounted for 1,008 establishments and employed 9,200 persons, of which 2,252 (24.5%) were women.

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[2] The Portland Trust (2013). 'Beyond Aid: A Palestinian Private Sector Initiative for Investment, Growth and Employment'. Retrieved from: https://portlandtrust.org/sites/default/files/pubs/beyond_aid.pdf

[3] Sawafta, A. (2018, January 24). Palestinians get 3G mobile services in the West Bank. Reuters. Retrieved from: https://reut.rs/3jNXSIG

[4] Press Release about The World Telecommunication and Information Society Day 05/2020. PCBS and MTIT.

2 Levels of educational attainment have remained high in all disciplines with an increased focus on entrepreneurial and innovative university education. Currently, all 14 universities in the West Bank and Gaza have IT departments, with over 1,500 students graduating annually (of which 730, 48.6%, were women in the academic year 2018/2019).[5] However, employment opportunities available for these graduates are limited, particularly among female graduates.

In the context of the chronically low demand for Palestinian labor, entrepreneurship may be a promising solution enabling youth to create their own jobs in a sustainable manner and contribute to innovation and economic growth. In addition, entrepreneurship is an increasingly popular idea among skilled Palestinian youth; many are drawn to it because of the sense of freedom gained by working for oneself and the sense of pride and self-worth derived from building a successful business. Entrepreneurship is viewed as a means of achieving the self-expression that was denied to them in their education or employment, thus a digital entrepreneurship culture is growing in the OPT. Over the past decade, the number of startups operating in Palestine increased significantly; on average, 19 startups are created annually in comparison to the previous year, resulting in a 34% compounded growth rate in startup creation since 2009.[6]

[5] Ministry of Higher Education: http://www.mohe.pna.ps/services/statistics

[6] World Bank Group (June 2019). 'West Bank and Gaza Jobs in the West Bank and Gaza Enhancing Job Opportunities for Palestinians'. Retrieved from: https://bit.ly/3dywJGO

Reforming Higher Education

Universities are the first point of entry into professional life where most people begin to ponder their career choices in a serious manner. Universities are also the main platform for conducting research, which is one of the most important drivers of innovation and economic growth.

Established in the 1970s and 1980s, Palestinian higher education institutions have developed steadily especially in the last two decades. Universities, along with various stakeholders, have been involved in serious efforts to develop the educational system and adopt new models such as entrepreneurship courses and project-based learning. The Ministry of Higher Education (MoHE) has been supporting institutions to integrate critical thinking capabilities into the higher education curricula and provide students with key knowledge and skills needed in the labor market. This has been encouraged by Palestinian universities, whom have taken the lead to establish new learning centers and capacity building workshops. Today, most of the OPT's universities host technology incubators, accelerators, and centers of excellence:[7]

TABLE 1: LIST OF RESEARCH AND ENTREPRENEURSHIP CENTERS IN LEADING PALESTINIAN UNIVERSITIES

Governorate	University	Name of center
Jerusalem	Al-Quds University	• Medical and Health Research Center of Excellence • Center for Chemical and Biological Analysis • Genetic & Metabolic Diseases Center • Al-Quds Cognitive Neuroscience Lab • Biodiversity Center • Nutrition and Health Research Institute
Ramallah	Birzeit University	• The Institute of Environmental and Water Studies • Innovation and Entrepreneurship Unit • Najjad Zeenni IT Center of Excellence • Samih Darwazah Institute for Pharmaceutical Industries
Hebron	Palestine Polytechnic University	• Business Incubation Unit • Biotechnology Research Center • Renewable Energy Unit • Power Electronics Unit • Center of Excellence in Telecom and IT Research
	Hebron University	• IT Unit

[7] Palestine Economic Policy Research Institute and Swiss Development Cooperation (2018). 'Palestinian Innovation System and Digital Economy: Challenges and Opportunities': https://bit.ly/35B1KaH

Governorate	University	Name of center
Nablus	An-Najah University	• Business Innovation and Partnership Center • Energy Research Center • Urban Planning and Disaster Risk Reduction Center
Jenin	Arab American University	• Center of Excellence for Climate Change and Environmental Technologies • Hassib Sabbagh IT Center of Excellence
Tulkarem	Palestine Technical University - Kadoorie	• The Innovation and Education Technology Center
Bethlehem	Bethlehem University	• Bethlehem Business Incubator • Water and Soil Environmental Research Unit • Institute for Community Partnership • UNESCO Biotechnology, Educational & Training Center • Hereditary Research Laboratory
Gaza Strip	University College of Applied Sciences	• UCAS Technology Incubator
	Islamic University of Gaza	• Business and Technology Incubator

MAIN CHALLENGES

Although there have been improvements in skills development at Palestinian universities in recent years, it is still far from the internationally accepted standards. An analysis of the capacity of Palestinian higher education institutions to address the needs of the ICT sector reveals serious flaws in three main areas of the educational process: assessment methods, curriculum designs, and teaching methods.[8]

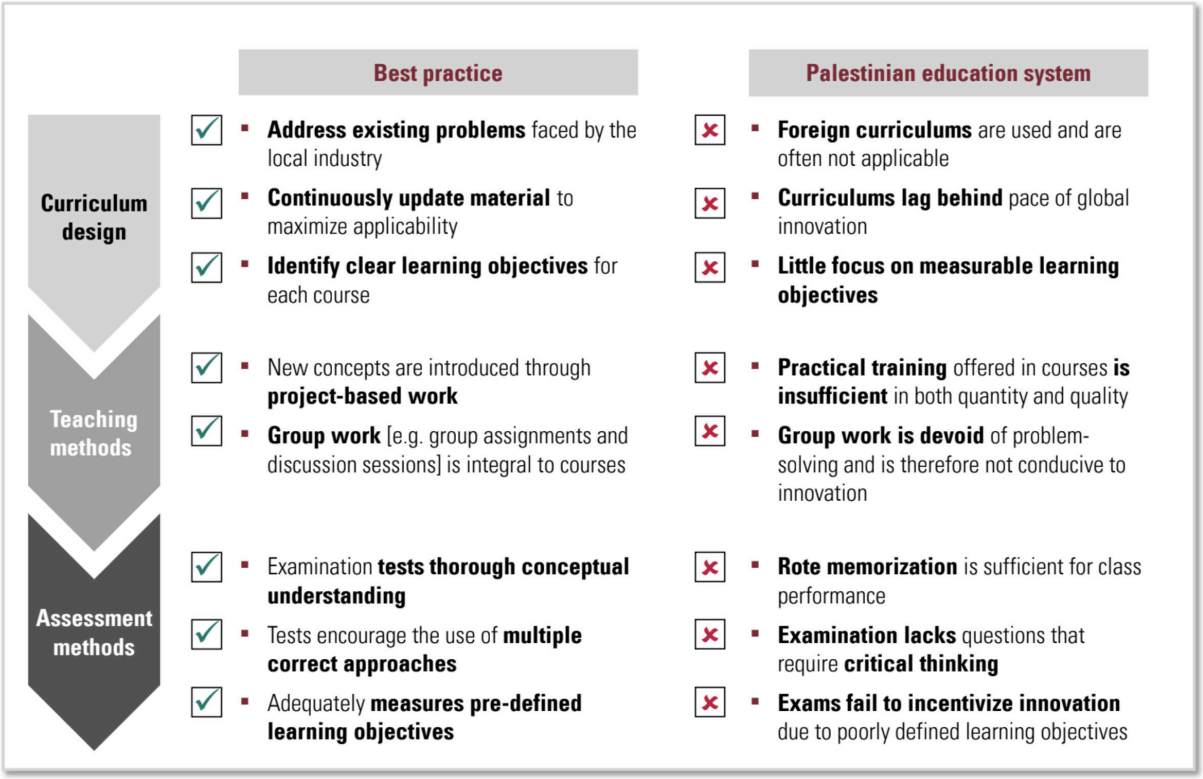

FIGURE 2: COMPARISON BETWEEN INTERNATIONAL BEST PRACTICES AND THE PALESTINIAN EDUCATION SYSTEM [9]

Although many universities engage in regular curricula updates, the higher education system is also not offering enough specialized disciplines that qualify graduates for work based on the certificate they earn. Specialized courses such as Artificial Intelligence, Data Science, and Applied Entrepreneurship are not yet offered at Palestinian universities.

As a result of the shortcomings of the higher education sector in the OPT, graduates leave universities with limited exposure to the skills needed to enter the job market; a statement that has been confirmed by a number of studies.[10]

[8] Palestinian IT Association (2014). 'Comparative Study: The Palestinian Education System vs. The Needs of the Private ICT Sector' https://bit.ly/3mmmWbi

[9] PITA and AWARD

An analysis of science, technology, engineering and mathematics (STEM) under-graduate education in Palestine indicates that courses focus on skills that are essential for performing a set task, and neglect introducing new approaches and teaching methods in order to develop critical thinking abilities among students that will drive entrepreneurial activity.

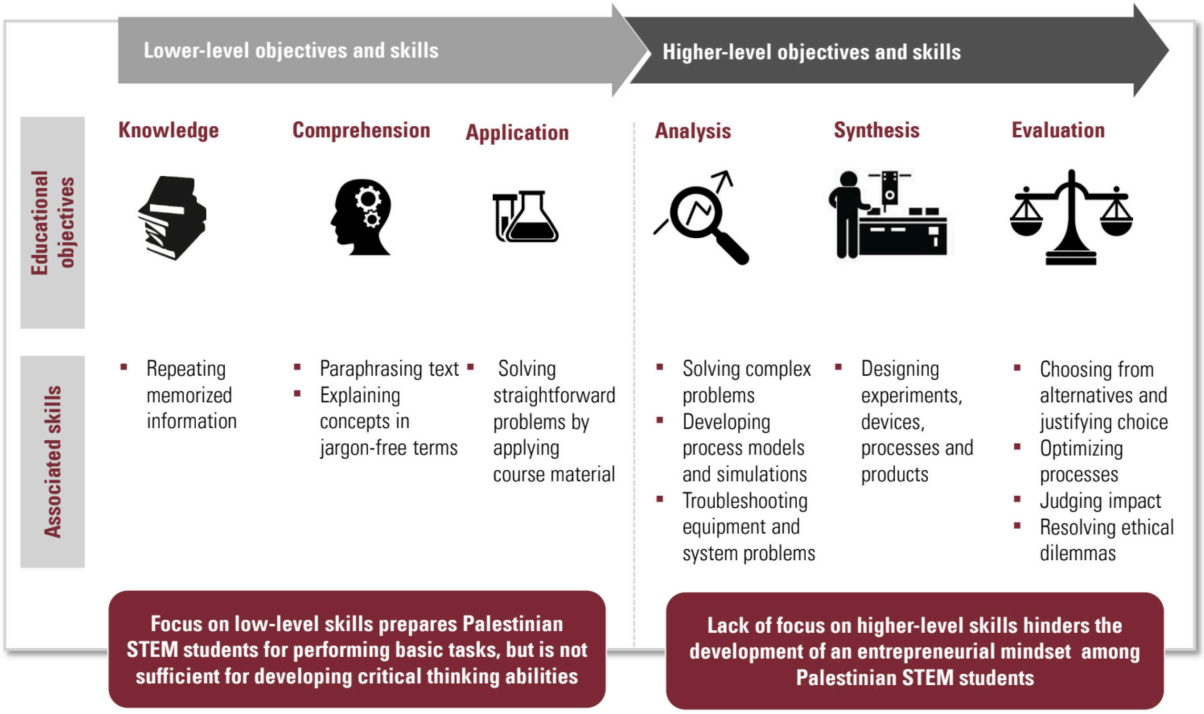

FIGURE 3: LEVELS OF EDUCATIONAL OBJECTIVES IN THE OPT[11]

PROPOSED SOLUTIONS

During the discussions, workshop participants highlighted the importance of educational reform in the development of a strengthened innovation ecosystem. They further stressed that primary and secondary school education should also be considered for reform, as many of the shortcomings of the educational process begin at this stage.

The proposed interventions aimed at improving the Palestinian university educational system entailed restructuring the educational process in accordance with international best practices.[12]

[10] AWRAD and CARE International (2015). 'Skills Gaps and Development in the Occupied Palestinian Territory': https://bit.ly/3ost6sg

[11] B.S. Bloom and D.R. Krathwohl, Taxonomy of Educational Objectives. Handbook 1: Cognitive Domain. Addison-Wesley, New York, 1984.

In addition, educational reform should examine how to enhance the overall student experience beyond course work. Below are some of the main interventions proposed by the workshop participants:

Upgrade curricula: best practice curriculums establish relevance of course materials and do not venture far from the realm of experimentation.[13]

- **Embed local case studies and role models:** teaching theory through referring to tangible and relatable case studies improves student engagement and bridges the gap between academia and industry. Case studies incorporated into the curricula should include both success stories and failures.
- **Expose students to a wider reading list for every course:** instead of focusing on a very limited amount of textbooks, educators should expect students to look at multiple sources and potentially research sources of information and evaluate their credibility. This will improve critical thinking abilities as the focus is shifted from memorizing the required materials to investigating certain fields of knowledge and self-learning.
- **Increase project work:** a large portion of the curriculum should be taught through project work. Theoretical material should complement project work rather than replace it. Project work should be linked to products, and different projects during the semester should deal with different aspects of the development of a product. Designing projects based on international best practices will strengthen skills in students and ignite their creativity.
- **Introduce specialized courses:** universities should continuously add new courses and teach new skills either under the formal degree curriculum or via the centers of excellence on campuses. These courses should answer to market demands in terms of new technologies (data science, AI, Fintech, block chain,... etc.) and skills (technical and soft skills), responding to global shifts in the future of job markets such as the freelance economy. Related suggestions include the introduction of curricula developed in partnership with industry leaders, and incorporating new working methodologies (e.g. agile methodology) into the said curricula.

[12] Henderson, Charles, Andrea Beach, and Noah Finkelstein. "Facilitating change in undergraduate STEM instructional practices: An analytic review of the literature." Journal of Research in Science Teaching 48.8 (2011): 952-984.

[13] Herreid, Clyde Freeman, and Nancy A. Schiller. "Case studies and the flipped classroom."; Journal of College Science Teaching 42.5 (2013): 62-66.Teaching 48.8 (2011): 952-984.

Restructure teaching methods: most successful experiences focused on inductive (student-centered) rather than deductive learning (teacher-centered)

- **Flipped classroom:** in the flipped classroom model, what is normally done in class and what is normally done as homework is switched or flipped. Instead of students listening to a lecture in class and then going home to work on a set of assigned problems, they read material and view videos before coming to class and then engage in class in active learning using case studies, labs, games, simulations, or experiments.
- **Introduce research at the undergraduate level:** by incorporating research as part of the course work, students get the opportunity to to gain a deeper knowledge of research techniques and processes, apply classroom learning in real-world contexts, explore academic literature, and form meaningful relationships with faculty members and professional researchers
- **Develop cooperative learning projects:** an instructional approach in which students work in teams on a project structured to promote improved communication and collaborative learning. These approaches improve students' interpersonal and teamwork skills (soft skills) and improve educational outcomes.

Restructure teaching methods: The most successful teaching experiences are focused on inductive (student-centered) rather than deductive learning (teacher-centered)[14]

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- **Develop cooperative learning projects:** an instructional approach in which students work in teams on a project structured to promote improved communication and collaborative learning. This approach improves students' interpersonal and teamwork skills (soft skills), as well as their educational outcomes.

[14] Edutopia (2008), 'Why Assessment is Important?'. Retrieved from: https://edut.to/324QNNH

Introduce assessment methods: assessment is an integral part of instruction, as it determines whether or not the goals of education are being met. Successful assessment methodologies provide diagnostic feedback that helps educators set standards and evaluate progress, while also motivating performance in students

- **Encourage volunteering and internships:** by including volunteer and internship hours as part of the grading and evaluation process, universities can incentivize increased participation among students. In certain courses, educators can encourage students to submit a 'portfolio' as part of their graded course work. Universities can also include internship/ apprenticeship hours as part of their graduation requirements.
- **Test interpersonal and softer skills:** soft skills are hard to quantify and can be difficult to measure through tests, however, specific interpersonal skills can be tested through alternative methods such as presentations (to test public speaking skills), team projects (to test communication and teamwork skills) and extended projects (to test resilience).
- **Introduce faculty assessment:** although very complex and difficult to implement, developing feedback mechanisms is a vital component to any successful education system. Providing feedback for educators on their own practices helps them reflect and introduce the necessary amendments.

Enhance overall student experience: the educational process should be addressed beyond course work, with a focus on extracurricular activities and opportunities to learn outside of the classroom.

- **Modernize acceptance criteria:** currently, the only requirement for university enrollment is the high school examination. Students are not required to share their goals and motivations as they choose their educational path. By adding interviews and personal statements as part of the admission process, universities would encourage students to think about their career path from an early stage.
- **Provide career development mentorship:** many students struggle to define their career objectives and have no knowledge of available job opportunities after graduation. By embedding career development into the educational process, universities will equip their students with a better understanding of their career options, enabling them to make better choices when it comes to their educational focus and future career.

- **Introduce exchange programs:** universities should create more partnerships with international universities to set up exchange programs. Studying abroad broadens students' horizons and exposes them to new ideas and cultures.
- **Commercialize graduation projects:** most universities ask their students to submit a graduation project in order to graduate. While this approach is highly encouraged, such projects are often neglected upon graduation. Universities should collaborate with the private sector and other stakeholders to support students with exceptional and innovative projects to commercialize those ideas and launch businesses.
- **Establish entrepreneurship and innovation clubs:** in addition to the increased support from research centers and centers of excellence, universities should support initiatives to promote innovation and entrepreneurship at the student level (e.g. new clubs and communities at universities).

Boosting Private Sector Involvement

In developed innovation ecosystems, the role of the private sector is crucial in the diffusion of digital technology, the development of R&D and innovation, and the stimulation of the startup ecosystem.[15] For aspiring entrepreneurs, the private sector should serve as the main access point to networks, distribution channels, and experienced mentors.
The private sector is also the natural source of financing for innovation: directly through corporate venture capital or revenue share agreements with innovative solutions providers, and indirectly through entrepreneurship support organizations (mentorship via launching and operating innovation hubs and sponsoring acceleration and incubation programs).
A key feature of developed innovation ecosystems is a strong link between the private sector and academia. In partnership with universities, the private sector should structure student fellowships and internship programs, recruit distinguished faculty professors and researchers to provide advisory services to actual market challenges, and identify specific domain experts from the private sector to teach on a part-time basis in Academia.

[15] Ximena Ares (October 2017). 'Presentation: Agreements between Academia and Industry'

The private sector should also form strategic partnerships with universities and R&D centers by funding research projects and cutting-edge equipment to support research in new fields relevant to the market. They should also collaborate with technology transfer offices (TTO) in order to license and commercialize innovative solutions or inventions.

Due to the lack of available data, it is difficult to account for the role of the private sector in the promotion of innovation and knowledge creation in the OPT. However, there have been significant developments that are worth mentioning. A number of newly structured internship programs were recently launched, mainly led by large corporations and international donor agencies. Most notably, the launch of the Dual Studies program at Al-Quds University, which managed to engage over 200 local partner-hiring companies. The German-funded program covers four fields: Business Administration, IT, Electrical Engineering, and Industrial Engineering.[16] Furthermore, other internship programs have been developed independently by local corporations and companies, such as the Massarak program (a collaboration between Rawabi Foundation and Massar International), and Go Professional Tech (developed by the mobile network company Jawwal).[17] Many outsourcing companies have also developed in-house training programs for students.

Larger Palestinian corporations, such as telecommunications companies and banks, have also recently began to realize the importance of innovation for their own development. The Jerusalem District Electricity Company (JDECO) is supporting start-ups in the energy sector enrolled in the Palestinian Incubator for Energy (PIE), which was cofounded by the Higher Council for Innovation and Excellence (HCIE) and JDECO in 2014 in Jericho.[18]

In 2019, the largest Palestinian telecommunications company Paltel, launched Fikra Innovation Hub, a tech co-working space for innovative ideas to grow and for entrepreneurs to access mentoring and capacity building.[19] In 2020, the OPT's leading bank, the Bank of Palestine, followed suit with the launch of its own startup support program, Intersect Hub.[20] Other large-scale players also supported a variety of innovation and entrepreneurship events and programs.

[16] Dual Studies at Al-Quds University: https://ds.alquds.edu/en/

[17] Rawabi, Massarak Program: https://www.rawabi.ps/en/current-projects#collapse-3

[18] Corporate Start-up partnership (CSP) in Palestine. Report by GIZ. 2019

[19] This Week in Palestine: https://www.thisweekinpalestine.com/fikra/

[20] Intersect Hub: https://intersecthub.org/

MAIN CHALLENGES

While efforts by larger corporations to engage university students through various programs and to increase financing for innovation and entrepreneurship are visible on the ground, this has not yet translated into financing for R&D at universities. In addition, more than 99% of private businesses in the OPT are small and medium enterprises (SMEs) with less than 20 employees, most of which are family-owned businesses.[21] In general, these businesses are not growth driven, make minimal long-term investment, and usually tend to look for solutions from international markets.

There is a growing consensus among innovation ecosystem stakeholders in the OPT on the presence of an information dissemination gap between the private sector and academia.[22] The private sector is citing skills shortage among graduates, and universities are not directing their educational objectives towards market needs, citing lack of engagement by the private sector.

PROPOSED SOLUTIONS

Private sector companies can play a significant role in facilitating, supporting, and strengthening the creation of a functional and capable innovation ecosystem in the OPT. The points below highlight the main mechanisms to achieve this, based on the workshop input:

Awareness:

- Explore potential avenues to increase innovation among SMEs across the OPT.
- Improve the perceptions surrounding the quality of local entrepreneurs and their innovative projects.

Financing:

- Support the establishment of new venture capital (VC) and Funds.
- Recruit angel investors, entrepreneurship-friendly banking, corporate investments, and investors from the diaspora.
- Develop new tools: revenue-sharing agreements, royalties, convertible notes, and matching grants.
- Ensure transparent criteria selection of investments by VCs.

[21] Middle East Investment Initiative (MEII): https://www.meii.org/palestine
[22] Rapid market system analysis: quality of engineers for MNE's. Report by PMDP. 2015.

Partnerships with universities:
- Include industry in curricula development.
- Develop effective and smooth internship programs.
- Promote collaboration between the private sector and universities on challenges requiring research financing.
- Expose the private sector to projects and ideas originating from universities.
- Share resources between universities and the private sector on the latest technologies.

Enhancing Innovation Ecosystem Organizations

Due to the increased attention on entrepreneurship, innovation and technology and their role in creating opportunities for the local economy, many international donor organizations have dedicated funding and support toward programs in this field. Efforts to build the Palestinian innovation ecosystem are therefore mostly developed with the active participation of bilateral and multilateral donor agencies. Today, most of the incubators and accelerators in the OPT are supported by donor funding.

There is a large number of acceleration/incubation programs operating in the OPT. According to a report by the World Bank, there were 20 accelerator programs operating in the OPT in 2017, which accelerated 61 local startups. While this number seems small, it is large when compared to the size and maturity of the ecosystem.[23] A more recent report commissioned by the Belgian development agency, Enable, states that there are 27 accelerators, incubators, and centers of excellence in the OPT, in addition to 10 co-working spaces and a significant number of support organizations and programs.[24]

MAIN CHALLENGES

It is evident that most of the ecosystem organizations provide modest quality support to entrepreneurs. Although acceleration / incubation programs have access to substantial amounts of grant funding, they often lack the commercial expertise to deploy the funds effectively. In addition, most of these programs receive their funds from donor organizations, who typically operate in 'silos' with limited coordination with each other.

[23] World Bank (2018). 'Tech Startup Ecosystem in West Bank and Gaza: Findings and Recommendations': https://bit.ly/2TqBJVZ

[24] Enable (2020). 'Mapping Innovation Hubs in Palestine'. Prepared by RAI Consulting

This uncompetitive and fragmented nature of funding and support programs shelters rising entrepreneurs from real competitive market conditions. As a result, available acceleration/incubation programs neither generate quantity nor quality of startups.

While the ecosystem is connected to international knowledge networks through international universities and accelerators, this connectivity is not channeled to attract the right expertise to the ecosystem. Available mentorship programs seem to have little impact on start-up success, suggesting limited quality.[25]
Existing programs have a shortage of international mentors with the experience to provide meaningful support; instead, most programs hire local mentors who often have limited exposure and experience.

Another major challenge is the availability of funding for innovative startups to scale. While the current capital funding structure attracts entrepreneurs by providing them with seed funding, the challenge is to receive funding at later stages, in order to achieve real, long-term impact. There is a lack of angel investors and associated networks, and the connection with angel investors from the diaspora is weak. Finally, there is only one VC fund, Ibtikar Fund, operating in the OPT, with 14 startups in their portfolio and plans on raising a second fund.

PROPOSED SOLUTIONS

Several small but transformative and practical changes on the ground could further strengthen and solidify the role of Palestinian accelerators and incubators. If taken into consideration by ecosystem organizations and other stakeholders, the solutions proposed by the workshop participants, outlined below, can have a considerable impact on the overall Palestinian innovation ecosystem:

Enhancing the quality of programs

- Promote specialization among organizations to decrease unproductive competition over developmental resources and increase collaboration based on complementarity.
- Increase access to high-quality trainers and mentors.
- Focus on market research and the development of minimum viable products (MVP).
- Expand outreach by targeting new groups and sectors.

[25] World Bank (2018). 'Tech Startup Ecosystem in West Bank and Gaza: Findings and Recommendations': https://bit.ly/2TqBJVZ

- Enhance early-stage support (Engineering, Business, Finance) through technical assistance and capacity-building programs.
- Identify mechanisms for early identification of potential entrepreneurs and allocate the tools to support them.

Increased collaboration

- Expanding efforts to raise awareness on entrepreneurship.
- Increase the strategic collaboration and coordination among ecosystem support organizations.
- Create a shared and centralized platform to provide access to innovation tools, market information, and data.
- Co-organize and plan large hackathons, startup weekends, and entrepreneurship events.

Strengthening markets linkages

- Increase international collaboration and linkages especially with international and multinational corporations.
- Create exchange programmes and other exposure tools
- Organize international delegations and share market intelligence to identify opportunities for value creation.
- Introduce entrepreneurs and projects to private sector stakeholders and assist in partnership formation and facilitation.
- Provide early stage funding and assist entrepreneurs with fundraising.
- Establish linkages with angel investment groups.[26]

[26] Angel investors are individuals who invest in start-up businesses, normally in the early stages. Angel investors are increasingly joining efforts to form angel groups that are typically organized by geographic region, and can provide individual investors with more confidence that result in better terms for entrepreneurs.

The Role of Government

Governments typically play a critical role in spurring innovation; they have a key responsibility to create the legal framework for protecting innovation and knowledge production. In successful innovation ecosystems, the government also brings stakeholders together and provides a framework for collaboration.

Over the years, the Palestinian government established some research institutions that played an important role in enhancing public awareness of the fundamental role of science and technology in the development of the Palestinian economy. These institutions include the Palestine Academy for Science and Technology and, most recently, the Higher Council for Innovation & Excellence, and the Scientific Research Council. In addition, the recent establishment of the Ministry of Entrepreneurship and Empowerment (MoEE) by the current Palestinian government is a promising sign toward the amendment of the current policies and legislations affecting entrepreneurs.

MAIN CHALLENGES

Public support for scientific research in the OPT is very limited and fragmented. Budget allocations for innovation and entrepreneurship by the Palestinian government is low. Despite the launch of several national efforts to support innovation and entrepreneurship, the contribution of these efforts to economic development is not clear.

The general regulatory environment in the OPT negatively affects the development of the innovation ecosystem. The Palestinian Legislative Council has been inactive for over a decade, and the existing legal framework are both complicated and outdated, which creates unnecessary obstacles for entrepreneurs and innovators. The current Palestinian Companies Law has been in place since 1964, and fails to take into account the growing needs of entrepreneurs. The Palestinian Ministry of National Economy (MoNE) is currently working together with the MoEE on a new draft law, in order to offer greater facilitation for Palestinian entrepreneurs wishing to start a business, but the new law is yet to be passed by the cabinet.

Furthermore, the taxation system in the OPT does not distinguish between large and small companies, which adds large costs on small businesses and entrepreneurs. Finally, the legislative system is still missing laws to protect intellectual property rights and patents. It is also worth mentioning that the Palestinian Authority is not part of the PCT system and the World Intellectual Property Organization (WIPO).[27] These legal and administrative hurdles impede foreign direct investment (FDI) and minimize the number of investment opportunities.

PROPOSED SOLUTIONS

After discussing the role of government in advancing innovation, the workshop participants explored challenges and opportunities within the current circumstances and brainstormed solutions to enhance the role of the government in creating an environment conducive to creativity and innovation. The proposed solutions include:

Policies to improve the business enabling environment

- Upgrade the legal framework, companies' registration, and commercial law/courts.
- Improve provisions for monitoring quality assurance and accountability.
- Create sandboxes and other mechanisms that enable innovative startups to test the market in the early stages.
- Sectoral focus and international export-oriented positioning, including the expansion and support of the IT outsourcing sector to train professional technical staff.
- Introduce additional incentives to promote FDI and improve existing incentive programs.

Direct investment in technology adoption

- Allocate additional public funds for research and development, with a focus on new technologies such as artificial intelligence, internet of things, biotechnology,... etc.
- Develop a national strategy to impose new technological solutions.
- Develop e-government services in partnership with local businesses and entrepreneurs.

[27] World Intellectual Property Organization: https://www.wipo.int/pct/en/pct_contracting_states.html

Collaboration with universities

- The Government and municipalities should invite universities to solve problems through innovative events such as hackathons.
- Bridge the gap between academia and industry through incentives and the design of specialized programs.
- Introduce human capital development courses and specialized trainings at the national level.
- Facilitate research partnerships between local universities, research center and international counterparts.

Concluding Remarks

Continued support for innovation through various activities and initiatives is necessary to guarantee an environment that encourages creativity and embraces entrepreneurship in the OPT. To that end, this report presents the recommendations of key innovation ecosystem stakeholders and supports them with evidence from the available literature on the topic.

While we hope that the outcomes of the workshop and the supporting research in this report provide valuable insights into the needs of the Palestinian innovation ecosystem and potential solutions, the findings constitute only the beginning of the journey, as additional, more focused research would be required to address the challenges identified. Interventions and future support projects should carefully design interventions with focused activities aimed at addressing the present challenges.

It is important to mention that existing research assesses the various aspects of the Palestinian innovation ecosystem by comparing it to international standards and best practices; however, this might not give justice to the particularities of development under occupation. Although research on the development of innovation and entrepreneurship is available, there is still little known about entrepreneurial activity under adversity and conflict. As cited by many Palestinian stakeholders, this issue stands as a major gap in the available research, which merits further investigation.

TABLE 2: SUMMARY OF MAIN WORKSHOP RECOMMENDATIONS

SUMMARY OF RECOMMENDATIONS

Stakeholder	Focus area	Recommendations
Higher education institutions	Upgrade curricula	• Embed local case studies and role models • Expose students to a wider reading list for every course • Increase project work • Introduce specialized courses
	Restructure teaching methods	• Flipped classroom model • Introduce research at the undergraduate level • Develop cooperative learning projects
	Introduce assessment methods	• Encourage volunteering and internships • Test interpersonal and softer skills • Introduce faculty assessment
	Enhance student experience	• Modernize criteria for acceptance into university • Provide career development mentorship • Introduce exchange programs • Commercialize graduation projects • Launch entrepreneurship and innovation clubs
Private sector	Awareness	• Explore potential for increased innovation among SMEs • Improve perceptions of local innovations
	Financing	• Support the establishment of new VCs and Funds • Leverage internal capacity to diversify financing options • Develop new financing tools and business models • Ensure transparent selection of investments by VCs
	Partnerships with universities	• Include industry in curricula development • Develop effective and lean internships programs • Expose university researchers to market challenges • Equip universities with the latest technologies

Stakeholder	Focus area	Recommendations
Ecosystem support organizations	Enhancing programs quality	• Promote specialization among organizations • Increase access to high-quality trainers and mentors • Focus on technical minimum viable products (MVP) • Target new groups and sectors and expand outreach • Provide technical assistance at early-stages • Early identification of potential entrepreneurs
	Increase collaboration	• Raise awareness on entrepreneurship • Sharing market information and innovation tools. • Organize large events such as hackathons
	Strengthen markets linkages	• Partner with international/multinational corporations • Host international delegations & visit other ecosystems • Connect entrepreneurs with private sector partners • Enhance early-stage financing
Government	Policies to improve business environment	• Upgrade legal framework • Provision of quality assurance and accountability • Launch sandboxes for startups to test the market • Sector-focused strategies • Incentives to promote FDI
	Investment in technology adoption	• Public funds for R&D • National strategies for technology adoption • Launch e-government services
	Collaboration with universities	• Government and municipality hackathons • Specialized upskilling courses at the national level • Research partnerships with international counterparts