What can be learned from Israel by the European Union in the field of innovation?

Lindita Komani

Research and Business Development at Campus Party,
Tirana, Albania
Email: lindita.komani@campus-party.org

Vito Bobek*

University of Applied Sciences FH Joanneum,
Eggenberger Allee 11, 8020 Graz, Austria
Email: vito.bobek@fh-joanneum.at
*Corresponding author

Abstract: This paper looks at innovation from a theoretical and practical perspective and recent developments, including open innovation and its importance for the EU. In the first section, the authors establish a link between the pursuit of competitiveness and R&D funding, innovation and economic growth. They then discuss the current status of the EU and its member states at EU level and globally, and present expert views on the concerns and identified challenges that the EU can and would best address. The core section presents the case of Israel, which could be used as best practice for the EU in several areas. Within ten years, Israel has succeeded in becoming one of the leading countries in the innovation race. Finally, the authors critically reflect on the material presented in the paper and draw several conclusions.

Keywords: innovation; open innovation; Israel; the EU; defence; culture.

Reference to this paper should be made as follows: Komani, L. and Bobek, V. (2020) 'What can be learned from Israel by the European Union in the field of innovation?', *Int. J. Diplomacy and Economy*, Vol. 6, No. 1, pp.51–66.

Biographical notes: Lindita Komani was the first Organiser of Startup Weekend Tirana in 2012, since 2015 she is head of Talent Garden Tirana, a co-working space focused on digital professionals and on supporting startups and since 2016 she has been working in the fields of Research and Business Development as well as Global Operations and Content with Campus Party, the biggest open innovation platform organised in the form of technology festivals all over the world. She studied Business and Finance at the Karl-Franzens University Graz, Austria, EU Business Law at the University of Tirana, Albania and now European Project and Public Management at FH Joanneum Graz.

Vito Bobek works as a Professor of International Management at the University of Applied Sciences FH Joanneum (Graz, Austria) and at the University of Maribor (Slovenia). Since 2017, he acts also as Vice-President for Global Operation at global platform for protection and communication of intellectual property Save-Ideas.com. Other positions: Manager and owner of Palemid LLC, Regional editor for Central and Eastern Europe at

European Journal of International Management, Member of editorial board at *International Journal of Trade and Global Markets*, Member of editorial board at *Imago Europae* (Florence, Italy), Member of editorial board at *International Journal of Diplomacy and Economy*.

1 Introduction

The competitiveness between nations has become a problem with the emergence of open global markets. In addition to competitive enterprises as core elements, this competitiveness between nations is also based on the ability of nations to develop education systems and improve the skills of participants in the labour market. Education, research and innovation form the so-called knowledge triangle, which is defined by the Lisbon Strategy, and is one of the important factors of competitiveness (Ciocanel and Pavelescu, 2015, p.729). Among them, innovation is now seen as the most important prerequisite for greater competitiveness. From a policy perspective, this is a good reason why Europe 2020 Flagship Initiative Innovation Union has made innovation a key medium and long-term policy objective. From an economic policy perspective, Schumpeter argues that economic change is associated with innovation, entrepreneurship and market power, and that the use of innovation can achieve better results in terms of increasing market power than competitive pricing compared to competitors. On the other hand, according to Porter, innovation, when defined as a process that enables companies to produce more with the same amount of resources or to do the same with less resources, leads to a competitive advantage (Ciocanel and Pavelescu, 2015, p.730).

As the world changes at a rapid pace and open global markets make it clear to European companies that they need to innovate, the question arises as to how the European Commission can best contribute to ensuring that the EU, the main supranational institution for managing global innovation financing, thrives in this new but not surprising challenge.

This paper looks at innovation from a theoretical and practical perspective and recent developments, including open innovation and its importance for the EU.

Section 2 establishes a link between the pursuit of competitiveness and the financing of research and development, innovation and economic growth. Section 3 discusses the current status of the EU and EU countries at EU and global level and presents expert views on the concerns and identified challenges that can and would best be addressed European Union. Section 4 presents the case of Israel, which could be used as best practice in several areas. Section 5 reflects critically on the material presented in the paper and brings several conclusions. And Finally, Section 6 presents conclusions.

2 Innovation and its link to economic growth and competitiveness

Research on R&D, innovation and economic growth in the EU shows that there is a positive correlation between R&D and innovation, but not all fields of research are equally productive in terms of innovation production. When research is carried out by the

private sector, it tends to have higher returns because it is mainly applied and involves the filing of patents. On the other hand, however, the link between innovation and economic growth does not appear to be as close as that between R&D investment and innovation. Research shows that the growth rates of innovation drive economic growth in peripheral regions, but in the non-peripheral regions the situation is different and no significant relationship is found between the two factors. Moreover, R&D investments take a relatively long time before they can lead to innovations (Rodriguez-Pose, 2004, pp.452–453).

2.1 Perspective of the nations

Based on a panel-like regression with fixed effects for 29 European countries, the intensity of the relationship between the (The Innovation Union Scoreboard EU Commission, 2019a) and the IMD World Competitiveness Scoreboard (IMD, 2019) is estimated. Both are calculated as composite indicators based on statistical data on innovation and competitiveness (Ciocanel and Pavelescu, 2015, p.730).

Table 1 Influence of innovation performance growth on national competitiveness

Innovation Union Scoreboard (growth in year *n*) (%)	+1%	+5%	10%	+20%
World Competitiveness Scoreboard (nominal growth in the year *n*)	+0.46	+2.32	4.63	+9.26

Source: Ciocanel and Pavelescu (2015, p.736)

As also shown in the table above, the model obtained from the completed analysis confirms that national competitiveness can be enhanced by improving innovation performance. For example, a strategy aimed at increasing innovation within the Union, combined with an increase in research and development resources, can lead to an increase in competitiveness.

2.2 The perspective of the regions

Should innovation systems rather be designed at national or regional level? Researchers have different views on this issue, but with increasing international competition and integration, the importance of the regional dimension is strengthened as there is a well-defined set of external economies that are realised at this level (Oughton et al., 2002, p.98).

The rationale for focusing on regional innovation systems can be considered from a theoretical and empirical perspective. From a theoretical point of view, the rationale is that the factors identified as important for national innovation systems vary considerably from region to region. These factors include: institutional framework, inter-firm relations, learning capacity, R&D intensity and innovation activity. From an empirical perspective, a focus on regional systems would be justified if the differences between regions in terms of R&D intensity are greater than those between nation states. If these differences between nations are greater, it is of greater interest to focus on national systems (Oughton et al., 2002, p.99).

At the regional level, researchers encounter the so-called regional innovation paradox. This paradox refers to the contradiction between the comparatively greater need

for innovation investment in lagging regions and their relatively lower capacity to absorb public funds compared to more advanced regions. Such a paradox is explained by the nature of regional innovation systems and the institutional characteristics of the regions. Enterprises in lagging regions often express little need for R&D and tend to lack a tradition of cooperation and trust, both among themselves and in contact with regional innovation actors. In addition, regional research and technology infrastructure tends to be isolated rather than embedded in the regional economy, making it difficult for providers of innovation services to identify the innovation needs and capabilities of firms in the regional economy (Oughton et al., 2002, p.103).

3 Where does the EU stand in terms of innovation?

Internal and external evaluations place EU countries very high in the global ranking and identify Europe as a driver of innovation, although it seems that it is not possible to calculate a scoreboard for the EU as a regional block (Cornell et al., 2018, p.49). As other countries move at a very fast pace towards more innovation, the EU and EU countries must do more to consolidate their already strong position and strive for global leadership.

Horizon Dashboard, as European Innovation Scoreboard well Regional Innovation Scoreboard as are presented as follows to provide a view from within, while the Global Innovation Index and the World Economic Forum proposals follow to present a view from outside the EU.

3.1 Measuring innovation performance in the EU with the Horizon Dashboard

With the new publication of the Horizon Dashboard, in a first attempt of this kind, the consolidated figures EC provide about 6000 IPR applications and about 300,000 scientific publications reported by projects funded by EU research framework programs (The European Commission, 2019b, p.1).

In this Scientific Publications section, information about unrefereed and peer-reviewed articles, conference proceedings, book chapters, monographic books, dissertations and other information is exchanged. With an EU contribution of EUR 4381 billion invested in 20,979 projects, the total number of publications is 330,400, of which 270,500 publications come from 14,695 projects funded under FP7.

This Intellectual Property Rights section provides information on patents, trademarks, designs and utility models related to the results of the project from the beginning until after the end of the project (The European Commission, 2019b, p.1). With an EU contribution of 85.38 billion euros in 47,618 projects, 7135 IPR applications were submitted between 2008 and 2019, of which 5837 IPR applications (in 25,735 projects) were submitted under FP7.

3.2 The Innovation Scoreboard and differences among the countries and regions

European Innovation Scoreboard 2018 shows that the EU's performance has increased by an average of 5.8% points since 2010. Despite the different measures, no convergence has been achieved between EU countries operating at lower levels and those operating at higher levels. Since the reference year 2010, innovation performance has increased in

18 EU countries and decreased in 10 others. The highest increases were recorded in Lithuania, Malta, the Netherlands and the UK, while the largest decreases were recorded in Cyprus and Romania (The EU Commission, 2019a).

Taking into account the achievements of the EU and referring to evaluations of past and current EU innovation policy packages, the Global Innovation Index 2018 recommends that "other regions of the world could well benefit from emulating a similar supranational innovation policy or coordination" (Global Innovation Index, 2019, p.47).

The Global Innovation Index still highlights some concerns that could be seen as challenges for the EU. Firstly, differences in innovation performance within the EU region are persistent. Secondly, referring to earlier literature that has been dealing with the "EU paradox" since the mid-1990s, the GII shows that the EU performs better on academic components such as scientific publications and less well on fixed innovation components such as R&D or innovation performance. Third, the GII also shows that entrepreneurial activity in the EU lags behind that in the USA, but nevertheless recognises that the EU start-up scene has experienced new positive developments (Global Innovation Index, 2019, p.46) Horizon Dashboard.

3.3 The EU compared to the world: Global Innovation Index

28 out of the 50 top-ranked countries in the Global Innovation Index 2018, comprising 126 countries, are EU countries.

Table 2 Ranking of EU countries in Global Innovation Index 2018

Rank 1–10	*Rank 11–20*	*Rank 21–30*	*Rank 31–40*	*Rank 41–50*
(2) Netherlands	(15) Luxembourg	(21) Austria	(31) Italy	(41) Croatia
(3) Sweden	(16) France	(24) Estonia	(32) Portugal	(42) Greece
(4) UK		(25) Belgium	(33) Hungary	(49) Romania
(7) Finland		(26) Malta	(34) Latvia	
(8) Denmark		(27) Czech Rep.	(36) Slovakia	
(9) Germany		(28) Spain	(37) Bulgaria	
(10) Ireland		(29) Cyprus	(39) Poland	
		(30) Slovenia	(40) Lithuania	

Source: This table is based on the ranking of Global Innovation Index (2018, 2019)

By having the EU achievements into consideration and by referring to evaluations of the past and current EU innovation policy packages, Global Innovation Index 2018 recommends that also "other regions of the world might well benefit from emulating similar supra-national innovation policy or coordination" (Global Innovation Index, 2019, p.47).

Global Innovation Index (2018) still identifies a few concerns that might be considered as challenges for the EU. First, the differences in innovation performance within the EU region are persistent. Second, while referring to previous literature addressing the "EU paradox" since the mid-1990 s, GII shows that the EU has higher performance in academic components such as scientific publications and lower performance on firm innovation components such as R&D or innovation outputs. The same could be identified also by analysing the Horizon Dashboard. Third, GII also shows

that entrepreneurial activities in the EU lag behind those in the USA, but still it recognises the fact that the start-up scene in the EU has experienced new positive developments (Global Innovation Index, 2019, p.46).

3.4 The EU compared to the world: World Economic Forum

By comparing developments worldwide and identifying strengths, weaknesses, opportunities and threats, World Economic Forum and McKinsey count several challenges that Europe needs to overcome in the future. Those related directly to research are mentioned as follows (World Economic Forum and McKinsey, 2019, p.4):

- "Private investment in R&D lagged that in the USA by about $90 billion in 2015, while public R&D investment remained below the level of 2010";
- "R&D investment is unevenly distributed: 90% can be found among just eight EU Member States";
- "Europe's innovative companies face global competition for technical and entrepreneurial talent, with a projected 760,000 unfilled positions for Information and Communications Technology (ICT) professionals by 2020".

They call Europe to set a new ambition for itself - to compete for global innovation leadership. They consider that there is a need for Europe to establish a new innovation model built on the following 10 blocks:

1 Pan-European approach

2 Corporate-start-up collaboration

3 Innovation funding

4 Enabled government and public institutions

5 Data access and protection

6 Entrepreneurial talent

7 Digital education, reskilling and upskilling

8 Gender diversity

9 Digital infrastructure and interoperability

10 Harmonised legislation and standards.

The scale required for global competition could be achieved by four catalysts in the model, two of which are related to research and innovation, namely:

- *Leverage of industrial goods*: They propose that Europe should provide funding for breakthrough innovation, create cross-sectoral innovation strategies and platforms for high potential industries, including regulatory sandboxes for experimentation, and provide EUR 80 billion of cumulative funding to bridge the R&D funding gap with the USA.

- *Changing data dynamics*: Europe could open up government-owned, non-personal and anonymised data to research. Their three-year goal could be to create interfaces for at least 30% of the data held by public institutions and to allow access to authorised organisations.
- *Boost talent*: Europe could work towards the following objectives: Reversing migration flows and attracting entrepreneurial talent; using new technologies to retrain and train workers; increasing talent diversity, including female STEM talent, and attracting women as entrepreneurs in the technology sector.
- Create demand on a large scale, by providing public sector leadership in exploiting public procurement rules; implementing a digital retrofit for public services; promoting convergence of standards.

3.5 The EU having open innovation in priorities

As early as 2012, the European Commission, more precisely an independent expert group on Knowledge Transfer Open Innovation set up by the DG research and innovation research community, has identified Open Innovation as a trend (The EU Commission, 2016, p.11). The EU Commission has also identified the roles of the different actors in the field of open innovation. The public sector is seen as having a central role in promoting open innovation. For the financial sector, the development of more innovation-friendly financial instruments is seen as a proposal for the future. Enterprises are seen as having a key role in innovation, while science plays a role as a producer of knowledge and as a co-creator and producer of skilled human capital. Citizens are considered to have an overarching role in bringing innovations to market, as they create demand, finance innovative projects of interest to them, are themselves a source of innovative ideas and can help determine which research is useful for them (The EU Commission 2016, p.17).

4 The case of Israel

Within ten years, Israel has succeeded in becoming one of the leading countries in the innovation race. In the Global Innovation Index (GII, 2010), it ranked 23rd, and in 2019 it was in the top ten for the first time. Since the GII was founded, the top ten list has hardly included any new countries.

Within the (GII, 2019), Israel is in first place or among the first countries in the world on a variety of issues within Innovation Input Sub-Index and outside the Innovation Output Sub-Index, including (Cornell University, INSEAD and WIPO; Global Innovation Index, 2019):

a) On the Input page where it is located at position 17:

- R&D – 2
  - Researchers, FTE/million population – 1
  - Gross corporate spending on R&D, as % of GDP – 1
- Venture capital deals – 3

- Business sophistication – 3
  - Gross expenditure on R&D performed by business, % of GDP – 1
  - Females employed with advanced degrees – 3
- Innovation linkages – 1
- University/Industry research collaboration – 2
- Research talent, % in business enterprise – 1

b) On the Output side where is located at position 8:

- ISO 9001 quality certificates/bn PPP $GDP – 5
- Knowledge diffusion
  - ICT service exports, % of total trade – 1
- ICTs and business model creation – 5
- Cultural and creative services exports, % of total trade – 4
- Online creativity – 5
  - Wikipedia edits/million population – 1
  - Mobile App Creation/Billion PPP $ GDP – 1.

4.1 Open innovation in Israel

Together with Start-Up Nation Central, PWC conducted a study entitled "The State of Innovation" in which they mapped Israel's innovation ecosystem and identified the presence of 536 multinational companies in the country. As part of its research, PWC conducted interviews with 71 MNC executives representing 22 countries around the world. This study not only gives a general insight into the situation of innovation, but also, and in particular, into open innovation, how and how often it is implemented by these multinational companies, which can also be seen as a good indicator of how and how often open innovation is generally implemented in this country.

The multinational companies surveyed in this study cite the improvement of core competencies through open innovation as an important driver for coming to Israel and promoting innovation there (77%) (PWC and Start-Up Nation Central, 2019, p.72). On average, 60% of them state that they decentralise innovation through open innovation, while this figure is higher for certain sectors: healthcare (70%), technology (69%), automotive (69%), pharmaceuticals (64%) (PWC and Start-Up Nation Central, 2019, p.23). For multinational companies in Israel, open innovation today includes all activities that involve cooperation with third parties and help them to make the costs of innovation more variable and demand-driven. These third parties could be start-ups, but also well-developed companies that are inventive and make the technology possible (PWC and Start-Up Nation Central, 2019, p.22).

An interesting fact related to open innovation in Israel is that despite the fact that the average time since the first introduction of operations in Israel is 15 years for multinational companies, the average team for open innovation in Israel is 4.5 years, so

the use of open innovation as a model for innovation is still new and on the rise. A combination of R&D with open innovation activities is quite common. Now multinationals are increasingly building open innovation teams to improve interaction with local start-ups and other stakeholders in the local ecosystem. While in-house R&D activities still dominate with 59% of the programs implemented by multinational companies, programs run in partnership (open innovation) have now reached a level of 25% (PWC and Start-Up Nation Central, 2019, p.117).

4.2 Innovation and strategy as part of a state agenda

The founding fathers of Israel drafted a national security strategy that aimed for qualitative superiority (including investment in education, science and technology) as its first element (Tabansky, 2016, p.55). In this respect, the Israeli government explicitly uses the academic, economic and defence sectors for soft power (Tabansky, 2016, p.60).

This objective for soft power, including R&D, innovation and economic diplomacy, makes the Israeli government's involvement in supporting (open) innovation more understandable and accessible and could also be taken as an example by the EU Commission, even though the EU is not a state but a union of states.

A few key programs that the Israeli government has designed and implemented over the years with the intention of boosting a start-up economy have already produced outstanding results, such as (Jefferies, 2018, p.15):

- The value of the exits in 2017 reached 23 billion US dollars;
- In 2018, there were 21 unicorns compared to only one unicorn in 2013, and in addition there were 27 so-called "charging ponies";
- Tel Aviv has, among other things, the highest density of technology start-ups per capita in the world;
- 536 multinational companies carry out R&D and (open) innovation activities at a high level in Israel.

These important government programs include (Jefferies, 2018, p.15):

1 Tax cuts were introduced in the 1980 s;
2 This was followed in the 1990 s by the Yozma program, which introduced tax incentives for foreign investors;
3 In addition, the government has also eased corporate tax rates;
4 In addition, the government has facilitated the implementation of mergers for high-tech companies.

In recent years, cybersecurity, privacy and tax reform laws have been passed that enable mobility, cybersecurity and healthcare entrepreneurs to work on forward-thinking solutions and support Israel's rise to a global technology power (Jefferies, 2018, p.8).

The government's financial commitment to support the innovation ecosystem is evidenced by some key indicators of the (IIA Israeli Innovation Authority), the key institution dealing with innovation in the country. In 2018 alone the IIA invested in 920 companies and financed about 1500 projects with a total value of 1.7 billion shekels

(Israeli Innovation Authority 2018–2019, p.12). Mobility, cybersecurity and healthcare are the sectors with outstanding potential where government support is crucial.

Despite the fact that Israel does not have a core competence in transportation and traditional mobility, Israeli entrepreneurs have been able to enter the mobility market by adapting the underlying intellectual property for various commercial purposes, and have succeeded in revolutionising the arena of intelligent transportation. Some 600 Israeli start-ups are active in this field (Jefferies, 2018, p.9).

Cyber security, which will reach an estimated $100 billion global market in 2020, is closely linked to the country's defence expertise. Israel has thus become the second most important cyber security centre in the world after the USA (Jefferies, 2018, pp.12–13).

Healthcare is estimated to be a global market worth an estimated $200 billion and is becoming a core competency for Israel, supported by the government in particular with the Israel Digital Health Initiative, which was introduced in 2018 and aims to create a 3D database of clinical, behavioural and genetic health data of 9 million Israelis. The data generated by this $300 million project will pave the way for future participation by innovators working on large data, artificial intelligence, sensors, wearable's and human intelligence (Jefferies, 2018, p.14).

In order to counteract what is seen as a threat to the future of the technology sector in Israel (Arlossoroff, 2014) – the shortage of mathematics students – the Ministry of Education has launched an interesting program to create a high-level workforce for the R&D sector, innovation and science in Israel: The National Program for the Promotion of Mathematics and Science in Israel sets clear goals to position Israel as a leader in mathematics and science (Israeli Innovation Authority, 2019, p.58):

- By 2021, 19,700 students will be studying five-point mathematics
- By 2025, 17% of 12th grade students will be taking five-point mathematics.
- By 2022, 14,200 students will study five-point physics and 13,000 students five-point chemistry.

As part of the program, financial incentives are used to recruit university teachers with a university degree to develop advanced mathematics teaching programs and to participate in the program.

4.3 Military as fertile ground for innovation and innovators

Israel's military strategy fundamentally intertwines the concepts of combat and trade, and the government allows emerging ideas originating from the military to be translated into global commercial solutions (Jefferies, 2018, p.8). These are considered to be two Israeli-specific factors that enable unique development in the context of discovering and developing tech talent and, consequently, outstanding tech startups.

Forbes estimates (Behar, 2016) that 5000 people are assigned to the Israeli army's mysterious Unit 8200, which is involved in intelligence work, "with a mandate to use the latest technology, often in life-and-death situations, with surprisingly little guidance". Forbes also estimates that the veterans of Unit 8200 have created more than 1000 companies, from Waze to Check Point to Mirabilis, the parent company of ICQ. Several lessons can be drawn from Unit 8200 to understand what and how the European

Commission could encourage young people in all EU countries to engage in other ways to think about and produce innovation. More than two dozen veterans were interviewed to generate this knowledge.

4.4 Culture as a rather neglected factor in understanding the Israeli way of innovation

There is also a cultural dimension to researching the Israeli way of (open) innovation. Hofstede's cultural studies and the Hofstede 6-D Michael Minkov model developed by Geert Hofstede, Gert Jan Hofstede, and its research teams are available for cross-country comparisons and also enable an understanding of the deep driving forces of Israeli culture in relation to other cultures and, in part, the reasons why (open) innovation flourishes in Israel. The theory has its origin in the extensive study of international business life and has a wide usage within the business world. It dominates in cross-cultural psychology and international management (Beugelsdijk and Welzel, 2018, p.1469).

As stated by the Hofstede Insights researchers (Hofstede, 2011, p.8), Israel occupies a unique position in the country database with its ratings in the six dimensions. This is due to the fact that Israel is the only country in the world where the size of immigrant groups is so large that they influence the prevailing values to the extent that new citizens of Israel change existing values. Nevertheless, the presentation of the values as presented in the research results is also well reflected in the research on (open) innovation (Hofstede Insights, 2020)[1]:

1 *Power distance*: With 13 points, Israel is at a very low level of this dimension compared to other countries with (Hofstede Insights, 2020). This is also the dimension that illustrates most of the innovation behaviour, especially open innovation. The entire statement recalls preconditions and observed situations of open innovation in a business and innovation ecosystem. "With an egalitarian mindset, Israelis believe in independence, equality, accessible leaders, and that management facilitates and empowers. Power is decentralised and managers count on the experience of their team members. Respect among Israelis is something that is earned through practical experience. An informal atmosphere prevails at the workplaces with direct and inclusive communication on a first name basis. The employees expect to be consulted."

2 *Individualism (against collectivism)*: Israeli society is a mixture of individualist and collectivist cultures. This could make it easier both to look after the particular company you are dealing with and to maintain close relationships with other companies and engage with other companies that are engaged in the same business and innovation ecosystem.

3 *Masculinity (versus femininity)*: With a score of 47 points, Israel is neither a clearly male nor a female country, but there is a good mix in society. Nevertheless, some elements, such as the fact that performance is highly valued, or that managers are expected to be determined and assertive, or that status is often shown, point to more masculine characteristics.

4 *Uncertainty avoidance*: This dimension, in turn, is important and revealing in terms of the way innovation is well organised in Israel, as it is both strongly driven and

encouraged by regulations and financial support from the state. The way the people and state of Israel deal with the fact that you can never know the future is reflected in the high score of 81 points. Israel is on the list of countries that avoid uncertainty the most. People who avoid uncertainty have an emotional need for rules and security as an important element of their individual motivation. They also have an inner urge to be busy and work hard, with precision and punctuality being the norm.

5 Discussion: what can be learned from Israel by the European Union in the field of innovation?

5.1 What can the European innovation ecosystem learn from the integration of multinational companies into the Israeli innovation ecosystem and what can be replicated in Europe?

According to MNC executives interviewed in the PWC study, there are four key benefits of innovation in Israel (PWC and Start-Up Nation Central, 2019, p.73):

- The technological capabilities are high, Intellectual Property is of distinct quality and Israeli start-ups show technical maturity;
- The local talent pool offers considerable added value at group level;
- Ecosystem actors are more open and accessible than in other countries;
- Local innovation teams bring imaginative and more aggressive applications of known technologies and contribute to the rest of the group team through a challenging mindset.

Furthermore, the World Economic Forum shares several lessons that could be useful for European companies and the EU Commission, especially when they are dealing with their initiative (Ziskind and Annika, 2019):

- *Reverse innovation model*: First the challenges are sought, then the market is searched for relevant start-ups and well-developed companies that offer the solutions. In this respect, more European accelerators could be set up to look for solutions;
- *Technical excellence and persistence*: Europeans can learn a lot from the Israeli way of dealing with failure, accepting it and tackling the next challenge;
- *Local support with global reach*: Owing the fact that the Israeli market is very small and limited, companies in Israel think about how to work and find solutions to global challenges from day one.

5.2 What can be learned from Israel by the European Commission in terms of government involvement in the innovation ecosystem?

As far as state intervention in the innovation ecosystem is concerned, the EU has much to learn from Israel and share among EU countries. On the basis of the knowledge gained through the exchanges between the Digital Europe program and Israeli Innovation

Authority could establish an EU-wide program to create a space for the exchange of knowledge between these countries, but also Israel.

The EU Commission, in cooperation with important stakeholders of the innovation scene in Europe, could also draw attention to the fact that the EU member states should focus more on their core competencies. They should look at specific sectors and understand what the core competences of the EU zone in general are, in order to be able to invest more carefully in strengthening existing competences and capacities and to understand where the future will lead.

One area in which the EU could get involved would be to promote educational programmes aimed at ensuring that mathematics, physics and chemistry are studied much more widely in EU countries than is currently the case. This could also be very useful in ensuring that a well-trained workforce is prepared for the challenges of the future. In addition, countries could be encouraged to work more closely together in this respect, also with a view to joining forces in order to compete with other regions of the world.

5.3 What can the EU learn from Israel's experience in the defence sector?

One of the four Israeli lessons that the World Economic Forum considered valuable and that should be repeated in Europe is to give responsibility to youth. Following the Israeli example, this begins with the systematic scanning of high schools to identify the country's best talent, and then continues with a commitment to early responsibility and the opportunity to be called to account at a very young age (Ziskin and Annika, 2019).

Young people between 18 and 25 years of age in the EU zone could be confronted with much more important questions and issues than just studies, internships and student exchanges. Talent could be identified as early as high school, and although education is a matter for national authorities and ministries at the state level, they could indirectly influence European Commission this process by creating programs that help in this direction: Competitions, educational programs and more.

The challenges related to how the work of the European Commission could be brought closer to the citizens, how the EU institutions could be better accepted by EU citizens, how even security and military issues could be linked to innovation and innovation ecosystems could be solved by involving young people following the Israeli example.

5.4 What can the EU learn from Israel in cultural terms?

All EU countries that, like Israel, have been in the top 10 list of the Global Innovation Index over the last 11 years have low scores in this Power Distance dimension: Denmark (18), Finland (33), Germany (35), Ireland (28), Luxembourg (40), Netherlands (38), Sweden (31) and UK (35). This is a further indication that this dimension is obviously related to innovation.

The next interesting dimension worth analysing by comparing EU countries with Israel is the one related to the avoidance of insecurity. With the exception of four countries, namely Denmark (23), Ireland (35), Sweden (29) and the UK (35), all other EU countries have values above 50, which shows that they avoid uncertainty, which means that in these countries the intervention of (state) institutions to reduce uncertainty would be appreciated.

At least in these two dimensions, there would be room for the EU Commission to intervene with measures that have a positive impact on innovation in the EU zone:

- *With regard to the power dimension*: Educational measures could be carried out with business leaders, entrepreneurs, but especially at school level and with the younger generation in order to introduce a new way of dealing with power, similar to the way Israel is showing. A new generation of entrepreneurs and innovators can emerge through a new way of communicating with supervisors, investors, interacting with each other, in a work environment, within an entrepreneurial and innovation ecosystem.
- *Regarding avoiding uncertainty*: A regulation by the European Commission could be adopted here which (a) gives clear indications on the future of young people who are willing to innovate and stay in the EU zone and (b) creates an innovation-friendly EU zone where innovation is assessed as a common basis for communication, self-development and shared citizenship.

The other three dimensions could also be worth considering, especially the short-term orientation.

- Business leaders, entrepreneurs, but especially young people in the EU zone could be taught more consistently how to deal with shame and how failure is an important part of life and business. This could make it easier for young people to embark on a career as entrepreneurs and/or innovators. The EU Commission could again intervene with educational measures introduced at EU level.

6 Conclusions

The right regulatory environment in the EU still needs to be created or redesigned to remove barriers to innovation and encourage innovators and entrepreneurs to step up their efforts. More efforts should also be made to facilitate the emergence of more private financial instruments to create opportunities for innovators similar to those that exist in the USA. Also, management play a crucial role in defining the appropriate budget plans (Horvat et al., 2019). The financial plan is the internal control in the planning of financial resources (Horvat, 2017, p.165). The third pillar of the action includes the redesign of existing instruments and the creation of new institutions such as European Innovation Council.

For the future it is proposed to focus more on the needs of European businesses. The aim is to help them to grow, to connect more with users and citizens and to make more efficient use of the knowledge base available in Europe. For the EU Commission, this would mean that it should not only work with universities and research-active organisations, but also conduct a structured dialog with citizens, users, investors, companies and business associations.

In addition, it could be suggested that the European Commission should take a closer look at the existing Open Innovation Platforms that are already successful in Europe and provide financial support for them to enable sustainable development. Management of a company must establish a good business process structure in order to achieve its business objectives (Horvat and Mojzer, 2019, p.11). These platforms, as Campus Party in Italy, have proven to be attractive formats for entrepreneurs and innovators to test their ideas

and understand how business models can be created in a pre-incubation phase. Each employee in organisation is accountable for their areas of work in accordance with the definitions in employment agreements or the act on the classification of assignments and duties and in compliance with these rules (Horvat and Lipičnik, 2016, p.31). The organisers of these platforms spend a lot of time reaching and persuading sponsors to support the upcoming activities, while the focus should be more on what they do best, namely creating the perfect environment for upcoming (open) innovation at local, regional, national and supranational level.

The EU Commission could then also work to make open innovation more attractive at country level by promoting the case of Israel and its strategy to be implemented at national and regional level as a Europe-wide example.

References

Arlossoroff, M. (2014) *What's Threatening the Future of Israeli High-tech? A shortage of Math Students*, Haaretz, 30 August 2014. Available online at: https://www.haaretz.com/israel-news/business/.premium-the-fuzzy-math-behind-matriculation-exams-1.5261700

Behar, R. (2016) *Inside Israel's Secret Startup Machine*, Forbes, 11 May 2016. Available online at: https://www.forbes.com/sites/richardbehar/2016/05/11/inside-israels-secret-startup-machine/#7f5956b91a51

Beugelsdijk, S. and Welzel, C. (2018) 'Dimensions and dynamics of national culture', *Journal of Cross-Cultural Psychology*, Vol. 49, No. 10, November 2018. Available online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6191680/

Ciocanel, A.B. and Pavelescu, F.M. (2015) 'Innovation and competitiveness in European context', *Procedia Economics and Finance*, pp.728–737.

Global Innovation Index (2018) *Global Innovation Index 2018*, Cornell SC Johnson College of Business, INSEAD, WIPO. Available online at: https://www.globalinnovationindex.org/gii-2018-report

Global Innovation Index (2019) *The Global Innovation Index 2019: Creating Healthy Lives*, The Future of Medical Innovation, Cornell University, INSEAD, and WIPO, Ithaca, Fontainebleau, and Geneva.

Hofstede Insights (2020) *Country comparison*. Available online at: https://www.hofstede-insights.com/country-comparison/israel/

Hofstede, G. (2011) *Dimensionalizing Cultures: The Hofstede Model in Context*, Online Readings in Psychology and Culture. Available online at: https://scholarworks.gvsu.edu/orpc/vol2/iss1/8/ (accessed 12 January 2011).

Horvat, T, Žvorc, B. and Skoko, H. (2019) 'Impact of school management on legally adequate content of a budget plan: the evidence from Slovenia', *Economic Research-Ekonomska Istraživanja*, Vol. 32, No. 1, pp.3502–3518. Doi: 10.1080/1331677X.2019.1666022.

Horvat, T. (2017) 'Auditing international controls in financing preschool public institutions: evidence from Slovenia', *The USV Annals of Economics and Public Administration*, Vol. 17, No. 26, pp.161–170.

Horvat, T. and Lipičnik, M. (2016) 'Internal audits of frauds in accounting statements of a construction company', *Strategic Management*, Vol. 2, No. 4, pp.29–36.

Horvat, T. and Mojzer, J. (2019) 'Influence of company size on accounting information for decision-making of management', *Naše gospodarstvo/Our Economy*, Vol. 65, No. 2, pp.1–20. Doi: 10.2478/ngoe-2019-0007.

IMD (2019) *The reference database on world competitiveness*. Available online at: https://worldcompetitiveness.imd.org/

Israeli Innovation Authority (2019) *Innovation Report 2018–2019*. Available online at: https://innovationisrael.org.il/en/news/israel-innovation-authority-2018-19-report

Jefferies (2018) *Momentum Economies for the Digital Age*. Jefferies Prime Services Blue and White Paper,

Oughton, C., Landabaso, M. and Morgan, K. (2002) 'The regional innovation paradox: innovation policy and industrial policy', *Journal of Technology Transfer*, Vol. 27, pp.97–110.

PWC and Start-Up Nation Central (2019) *The state of innovation*. Available online at: https://lp.startupnationcentral.org/mnc2019/

Rodriguez-Pose, A. (2004) 'From R&D to innovation and economic growth in the EU', *Growth and Change*, Vol. 35, No. 4, pp.434–455.

Tabansky, L. (2016) 'Towards a theory of cyber power: the israeli experience with innovation and strategy', in Pissanidis, N., Rõigas, H. and Veenendaal, M. (Eds): *Proceedings of the 8th International Conference on Cyber Conflict, Cyber Power,* NATO CCD COE Publications, Tallinn.

The EU Commission (2016) *Open Innovation, Open Science, Open to the World*. Available online at: http://publications.europa.eu/resource/cellar/3213b335-1cbc-11e6-ba9a-01aa75ed71a1.0001.02/DOC_2

The EU Commission (2017) *Regional innovation scoreboard*. Available online at: https://ec.europa.eu/growth/industry/innovation/facts-figures/regional_en

The EU Commission (2019a) *European innovation scoreboard*. Available online at: https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en

The EU Commission (2019b) *Horizon Dashboard – H2020, FP7 Project Results: Reported IPRs and Scientific Publications*, Release Note of March 2019. Available online at: http://ec.europa.eu/research/participants/data/ref/h2020/other/dashboard/190320-release-notes_en.pdf

World Economic Forum and McKinsey (2019) *Innovate Europe Report 2019*. Available online at: http://www3.weforum.org/docs/WEF_Innovate_Europe_Report_2019.pdf

Ziskind, J. and Annika, B. (2019) From Israel's Startup Nation, 4 lessons in innovation. Available online at: https://www.weforum.org/agenda/2019/09/israel-start-up-nation-innovation/

Notes

1 The authors have focused only on four dimensions, since there is no score available for Israel in the database of Hofstede Insights for Indulgence versus Restraint and for Long Term Orientation.