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INNOVATIVE CLUSTER DEVELOPMENT ACROSS EUROPE COMPARED TO SILICON VALLEY

O. O. Mosin, Ph.D., (Econ.), Founder «OM-Sales», oleksandrmosin@gmail.com

Methods. In order to reach the results of the conducted research it was necessary to apply the ensuing scientific methods: abstraction – which was employed to define the essence of the innovative clusters; induction and deduction – which were used to identify the root causes of European innovative clusters lagging behind Silicon Valley; generalization and specification – which om distinguishing between various approaches to evolvement of start-up economy.

Results. The study has enabled one to put forward some of the recommendations concerning the remedies to the visible lagging behind of innovative clusters across Europe compared to Silicon Valley. For instance, it is recommended to increase cross-border cooperation and coordinate regulatory actions to promote venture development and scaling throughout Europe. The first step for this is to create a common corporate rulebook, specifically for fast-growing businesses. Another crucial recommendation is to establish fair competition throughout Europe. It will help new start-ups in their goals to rise up alongside giant corporations and compete worldwide. Monitoring competition with foreign businesses will also be essential for providing a safe haven for European start-ups to establish a worldwide presence and lessen the strain of intense fragmentation and rivalry within Europe.

Novelty lies in broadening of the term innovative cluster in order to put an emphasis on the factors that exercise influence on evolvement of start-up economy under modern circumstances.

Practical value is enshrined in establishing the factors that can have impact on evolvement of the innovative clusters across Europe. This may serve as a foundation for implementation of government policies aimed at ramping up economic growth through start-up economy.

Keywords: innovative clusters; economic growth, Silicon Valley, start-up economy, clustering process, innovation.

Statement of problem. Stakeholders all over the planet view Silicon Valley as a model of economic growth. Despite rising economic inequality as an unexpected consequence of the economic progress generated by Silicon Valley [1], its model of innovative business can be considered as an example for numerous followers. The super advanced tech sector has soared with the most noteworthy per capita income in the US. In essence, the economic model of Silicon Valley owes its success to innovative clusters. These days, clusters are seen as crucial tools for encouraging innovation. They also bolster industry expansion and advance industrial development. Academics and decision-makers have talked a lot about their contribution to the economy. Therefore it's crucial to define the factors that impact economic growth through the clustering process. Especially in view of start-up economy in Europe lagging behind its North American counterpart predominantly scattered across Silicon Valley.

Analyses of recent papers. It should be noted that it can be challenging to define clusters precisely because there isn't a consensus among experts. In the early 1990s, Michael Porter's work helped to popularize the term «cluster» in its current use [3]. According to Porter, clusters are localized groups of related businesses and organizations in a specific industry. A variety of related sectors and other organizations that are crucial to rivalry are included in clusters. They consist of, for instance, providers of specialist infrastructure and suppliers of specialized inputs like parts, equipment, and services. Clusters are not uniform corporate alliances; rather, they are intricate systems that may have many variances

yet sharing certain characteristics. There may be conflicts of interest, competitive relationships, and divergent objectives among cluster members, therefore relationships are not always straight-forward.

The life cycle stage of a company affects how it develops and competes within its industry [6]. It should come as no surprise that research on innovative clusters strongly implies that the life cycles of the clusters are substantially similar to those of the underlying industries [8]. Research has shown that a cluster's original position is frequently unpredictable and can occur at random [11]. The causes behind the formation of a cluster are typically revealed after the fact. It should be also noted that [2] the presence of related enterprises in a region increased the probability of a new industry entrant. This finding was supported by studies conducted in the tire, automotive, and television industries. This is mostly due to the fact that high-level personnel in well-established businesses in the same or a closely related sector are the people most qualified to start new operations in that field [12].

As a new industry grows dominating patterns usually appear [5]. A thriving new industry experiences a sharp rise in the number of new businesses. At the same time, the proportion of start-ups in areas with fewer enterprises gradually decreases [7]. As a result, entrepreneurship in the mature industry may drastically drop in such areas. Even in the absence of agglomeration economies, spinoffs are crucial to the clustering process according to a related line of research. Even in the absence of the cluster-based advantages new firms congregate close to incumbents due to incomplete knowledge [10]. Therefore when the industry develops, there is a greater geographical concentration of businesses.

Aim of the paper. The goal of this article is to define the factors that can have impact on evolvement of the innovative clusters across Europe.

Materials and methods. Europe has a long history of steady growth that has resulted in broad wealth, making it one of the largest regional economies in the world. But Europe has been lagging behind the US more and more recently. In addition to its slower rate of economic growth, Europe is predicted to remain behind the rest of the world in terms of innovative clusters [9]. The sustained prosperity and international sovereignty of Europe may be at jeopardy due to this slowing growth. Nonetheless, there is a great chance that Europe's national startup ecosystems will be able to change this economic trend.

In order to realize this potential, any start-up ecosystem will need to make improvements in two critical areas: the number of individuals launching or managing new businesses, or early-stage entrepreneurial activity, and the effective expansion of already-existing start-ups [4]. To compete globally, both individual countries and the entire European start-up ecosystem will need to become successful across all defining KPIs of a start-up ecosystem and coordinate efforts to do so. Moreover, a well-planned European strategy can help European startups succeed in the global marketplace.

It should be noted that Europe has one of the greatest economies in the world when you add together the GDP of all of its member states. In comparison to the US's $25.5 trillion GDP, the EU-27, Switzerland, the UK, and Norway collectively produced about $21.1 trillion in GDP in 2022. This means that the United States and the region are 20 percent apart. When looking at GDP per capita, this economic development is much more noticeable. As of right now, the majority of US states have GDPs per capita that are larger than those of European nations; the US average is more than 30% higher ($64,000 in the US vs. $48,700 in Europe). Given that the United States is outgrowing Europe by 3.3 percentage points yearly, this difference is predicted to increase even further [9].

A notable disparity in innovation between the two regions is one of the main causes of this growing economic divide between the United States and Europe: R&D spending indicates that Europe is investing at much lower levels than the United States on novel innovations that will yield economic benefit in the future. As a summary of the above-mentioned consider Table 1.

Table 1

Europe Lags Behind On Critical Technologies Of The Future

Europe's global relative position as indicated by multiple	- Europe Lagging	+ Europe Leading
Transversal Technologies	Innovation	
Next level automation: industrial, collaborative, professional robots; additive manufacturing	- 0.6	
Future of connectivity: 5G, Internet of Things	- 0.7	
Distributed infrastructure: cloud, edge computing	- 0.2	
Next-generation computing	-0.5	
Applied AI: robotic process automation; optimized decision making	-0.5	
Future of programming: no-code and low-code programming	-0.3	
Trust architecture: zero trust security, cybersecurity	-0.3	
Next-generation materials	-0.7	
Future of cleantech: solar power, wind energy		+1.3

Source: McKinsey & Company

As far as Table is concerned, values above 1 indicate Europe is leading and values below1 indicate Europe is lagging; e.g., if Europe issues 200,000 patents per year related to automation vs. 400,000 a year in the US, the multiple is 0.5 Average number of the ratios is based on the number of publications, number of patients, and venture capital funding [9]. It's worth noting that innovation is essential to a prosperous economy, particularly when it generates start-ups and scale-ups that have the potential to become tomorrow's industry leaders. The remarkable rise of US-based technological champions, which increased dramatically in recent years serves as a striking illustration of this market dynamics. Start-ups have a great potential to boost a nation's economy by creating jobs because of their capacity for innovation and expansion.

Conclusions. It is indeed essential to implement the policies ramping up the economic growth across Europe through evolvement of innovative clusters and development of start-up economy. First and foremost, it's crucial increase cross-border cooperation and coordinate regulatory actions to promote venture development and scaling throughout Europe. The first step for the same is to create a common corporate rulebook, specifically for fast-growing businesses. Another crucial recommendation is to establish fair competition throughout Europe. It will help new start-ups in their goals to rise up alongside giant corporates and compete worldwide. Monitoring competition with foreign businesses will also be essential for providing a safe haven for European start-ups to establish a worldwide presence and lessen the strain of intense fragmentation and rivalry within Europe.

By addressing the structural obstacles in the area and enhancing the performance of particular start-up ecosystems Europe has a great deal of untapped potential. It is possible for members of the European start-up ecosystem to gain a great deal of knowledge from one another and use the models, initiatives, and strategies that help successful start-ups get off the ground and develop. The foundation for this accomplishment may be laid by the close cooperation of national and local market players.

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РОЗВИТОК ІННОВАЦІЙНИХ КЛАСТЕРІВ ЄВРОПИ У ПОРІВНЯННІ З КРЕМНІЄВОЮ ДОЛИНОЮ

О. О. Мосін, к. е. н., засновник «OM-Sales», oleksandrmosin@gmail.com

Методологія дослідження. Для досягнення результатів дослідження застосовано такі наукові методи: абстрагування – для визначення сутності інноваційних кластерів; індукції та дедукції – для виявлення першопричин відставання європейських інноваційних кластерів від аналогічних структур у Силіконовій долині; узагальнення та конкретизації – для розмежування різних підходів до розвитку економіки стартапів.

Результати. Проведене дослідження дозволило запропонувати деякі рекомендації щодо подолання помітного відставання інноваційних кластерів у Європі від кластерів Силіконової долини. Наприклад, рекомендується посилити транскордонне співробітництво та координувати регуляторні дії для сприяння розвитку та масштабування венчурних підприємств по всій Європі. Першим кроком для цього є створення спільного корпоративного кодексу, особливо для швидкозростаючих підприємств. Ще однією важливою рекомендацією є створення умов для чесної конкуренції в Європі. Це допоможе новим стартапам у їхніх цілях стати поряд з гігантськими корпораціями і конкурувати по всьому світу. Моніторинг конкуренції з іноземними компаніями також матиме важливе значення для забезпечення безпечної гавані для європейських стартапів, щоб вони могли вийти на міжнародний ринок і зменшити напругу від інтенсивної фрагментації та конкуренції.

Новизна полягає в розширенні змістовного наповнення поняття «інноваційний кластер» шляхом акцентування уваги на факторах, які впливають на розвиток економіки стартапів у сучасних умовах.

Практична цінність полягає у встановленні факторів, які можуть впливати на розвиток інноваційних кластерів у Європі. Це може слугувати підґрунтям для реалізації державної політики, спрямованої на прискорення економічного зростання за рахунок стартап-економіки.

Ключові слова: інноваційні кластери; економічне зростання, Кремнієва долина, стартап-економіка, процес кластеризації, інновації.

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