

# HIGH-TECH IMMIGRANT ENTREPRENEURSHIP: A CONCISE REVIEW

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**Abstract** - Immigrant entrepreneurship has become a major source of economic growth fueling economies in many countries. Traditionally, immigrants (especially first generation) preferred to locate within their respective ethnic enclaves and sell traditional and cultural products and services. However a shift towards knowledge-based sectors has been noticed during the last two decades. Immigrants are increasingly engaging in sectors such as the high-tech which require higher human capital attributes. With much focus on the United States context, this paper reviews immigrant entrepreneurship in high-tech sectors and aims to bring to light its importance and contribution to the economy of the host country. The paper also discusses requirements and drivers of immigrant's engagement in high-tech industries and identifies avenues for future research.

**Keywords:** businesses, high-tech, immigrant entrepreneurs, U.S.

## 1. INTRODUCTION

Immigrant entrepreneurship is a phenomenon that has started attracting interest of scholars from sociology and economics in the 1970s. Research produced so far shows that businesses owned by immigrant are over-represented compared to native in many countries including the United States (U.S.) and Britain. For instance, recent data in the U.S. indicates that 18% of small business owners are immigrants [1]. This situation has many implications on the socio-economic life of the host country depending on the overall proportion as well as policies intended to assist minority businesses in general. Immigrant businesses play important roles in boosting economies of the host countries. Recently, there has been a growing concern among policy makers in various Western countries to better nurture these businesses. For instance [2] points to the fact that many states and cities in the US have started pursuing strategies to attract immigrants with entrepreneurial inclination in order to grow their economies; although this seems no longer a trend nowadays under Donald Trump governance.

One such high impact contribution made by immigrants is through starting and developing businesses in the high-tech sector. High-tech sector, which is also known as knowledge-intensive sector, refers to nontraditional types of businesses that require the entrepreneur or the entrepreneurial team to have critical knowledge related the management of the firm's core business. [3] categorizes knowledge intensive industries into: financial services, insurance, legal service, industrial engineering, medical services, education services, advertising, architecture, computer services management consulting and public relations, research and development (R&D) higher education, and accounting. According to [4] most of the definitions for the high-tech sector refer to research and development (R&D) spending (i.e. an above-average amount of revenues), and the share of high-skilled workers in the labor force. Companies active in this sector have higher costs, higher expenditures per employee, important part being attributed to R&D and to the payment of skilled workers.

The proliferation of high-tech immigrant business over the past decade in many cities especially across established economies was observed. In the US, Silicon Valley is the world preeminent high-tech cluster in which native and immigrants entrepreneurs exert their high-tech based entrepreneurial profession. The same thing goes true for many other countries across the world especially in Europe, West and Southern Asia. In Netherlands for instance, a growing number of immigrants are engaging in high-tech businesses in the ICT sector (automation, software computer programming, and Internet service provider companies), the FIRE-sector (finance, insurance, real estate, consulting, accountancy companies), and the tourism sector (tour operators and travel agencies [5].

Some research, although limited, has been carried with regards of high-tech immigrant entrepreneurship but mostly, in the United States (US) context. Yet, even within the US, many studies have focused on the contribution of high-tech immigrant firms in Silicon Valley while their contribution in other regions is far less explored [2]. The study of [6] is a pioneer work on this stream. This paper reviews High-Tech immigrant entrepreneurship from global lenses but it sheds much light on the U.S. context. Our review looks particularly at the requirements and drivers of the entry and development of immigrant firms in these industries as well as the contribution of immigrant high-tech firms to the economies of the host countries.

## 2. REQUIREMENTS AND DRIVERS OF IMMIGRANT'S HIGH-TECH ENGAGEMENT

While the general immigrant entrepreneurship theory attribute immigrants' higher rate of self-employment primarily to blocked mobility and discrimination in the mainstream labor market, personal and cultural factors such as hard work, frugality, family support and so on are also, but to a lesser extent, invoked as well. However, this seems not being the case for high-tech industries. Immigrant entrepreneurs in these industries are more attracted by human capital factors and opportunity structure in the host country. In fact, it is argued and empirically concluded that high-tech entrepreneurship requires a rare combination of inclinations, capabilities, and resources [7], higher education level and various skills [5], intensive inputs of technology and human capital attributes [8]. In the U.S., [9] posit that success high-tech companies is shaped by factors like the availability of start-up capital, access to promising markets and the founder's skill set and insight. Also, as compared to firms founded by native-born entrepreneurs, immigrant-founded firms have strategic relationships with foreign firms. This is often translated into engagement of immigrant entrepreneurs in transnational business activities primarily with the home country or with other countries of the same culture.

[10] Argue that by virtue of having left their countries, immigrants may have entrepreneurial inclinations. Education especially science and engineering and experience they gain in the U.S. equip them with critical knowledge that bears on high-tech innovation. This will be then consolidated by the outsider effect which allows them to recognize "out-of-the box" opportunities not perceived by native-born individuals and the unique resources they have such as access to customers and suppliers in their home countries. Because the opportunities in high-tech sectors blend together technological and market factors, individual entrepreneurs and founding teams in these sectors typically combine technical expertise rooted in formal education and market savvy that flows from extensive business experience. They must also be able to tap quickly and effectively into networks of customers, suppliers, expertise, finance, and talent as business opportunities ripen [7].

Furthermore, inclination of immigrants towards high-tech entrepreneurship can also be captured via generational continuity or differences between first and second generation immigrant entrepreneurs. Comparative research in this matter usually points to the fact that first generation entrepreneurs prefers to be ethnically oriented and locate within the ethnic enclave where co-ethnic community exists as this allows them to gain easy access to resources although the market itself is limited. At this point, their limited levels of the host country language proficiency and lack of knowledge over the mainstream market among other factors limit their chances to tap the wider mainstream market. In contrary, second generation entrepreneurs have characteristics and attributes which allow them to compete with native entrepreneurs in the wide mainstream market. Thus, this group of entrepreneurs has better characteristics and assets to engage in high-tech investments. Support to this view is found in the study of [11] which compared between high tech and service-based immigrant businesses in Sweden in terms of their use of ethnic resources. Their results show that high-tech immigrant firms rely less on ethnic resources than service-based firms.

It is contended in [5] that second generation immigrant entrepreneurs are in better position to start and maintain businesses in high-tech services because they resemble more the indigenous population in general, and more specifically in sectorial choice. Thus, the factors that facilitated the move of second generation immigrant entrepreneurs to high tech sector are: 1) the emergence of new niches such as entertainment and creative industries following saturation of the traditional mainstream and ethnic markets, 2) increased educational opportunities 3) better knowledge of the host country language and market conditions, 4) higher degree of assimilation compared to their first generation counterparts, 5) they are more selective in terms of jobs, 6) respond better to pull factors and 7) benefit more from formal networks including support from weak ties.

From location perspective, high- tech the ethnic enclaves are not appropriate places for immigrant businesses for two reasons. First, the ethnic market is limited and only conducive for the sale of traditional and cultural services and products; and second, knowledge and talent spillover in high-tech industries require clustering location. [1] Studied clustering of high-tech immigrant firms in U.S. metro areas and found that immigrant high-tech businesses are more likely to locate within regional labor markets that have an overall higher percentage of high-tech industries and less likely to be in places with higher unemployment rates. In addition, 80% of immigrant high-tech entrepreneurs prefer to be concentrated in the largest twenty-five metropolitan areas compared to only 57 % of U.S.-natives.

Agglomeration benefits are arguably higher among the high-skilled and high-tech industries given their reliance on knowledge spillover and scientific exchanges [12]. Firms within the same industry locate close to each other in order to benefit from knowledge transfer, intellectual spillovers, labor market pooling, and resource sharing, as well as other network effects of scale economy. Such geographic proximity and industrial concentration foster economic

growth and higher productivity (see [1]). Study [1] also found that higher to ethnic diversity and access to larger shares of immigrant population in the metropolitan areas are important factors in attracting or fostering immigrant high-tech entrepreneurship.

### 3. CONTRIBUTION TO THE ECONOMY

Generally speaking, there is clear evidence on the importance of immigrant entrepreneurship at the host country level. The Partnership for a New American Economy's report entitled "Open for Business: How Immigrants are Driving Small Business Creation in the United States" acknowledges that: 1) immigrants are more than twice as likely to start a business compared to native-born, 2) over a quarter of their businesses operate in seven of the eight economic sectors expected by the U.S. government to have fastest growth in the next decade: construction (31.8%), health care and social assistance (28.7%), retail trade (29.1%) and leisure and hospitality (23.9%), among others, 3) contribute more than \$775 billion dollars to the GDP and, 4) employ one tenth of workers in the private sector across the country.

Fortune Magazine revealed that immigrants and their children had founder roles in more than 40% of the 2014 Fortune 500 (of the largest U.S. firms by their total yearly revenue) including such giants like AT&T, Intel, Apple, Procter & Gamble, Google, eBay, Goldman Sachs, Pfizer, Kraft, Cigna, and Kohl's among many other high-tech firms. Similarly, one third of U.S. firms that went public between 2006 and 2012 had at least one immigrant founder [13]. Furthermore, Forbes Magazine's October 2016 annual list of the 400 richest Americans includes 42 immigrants originating from 21 countries with a combined net worth of \$250 billion. Sergey Brin, the co-founder of Google is the wealthiest with a net worth of \$37.5 billion.

According to [1] growth rates of immigrant entrepreneurship in the high-tech are going fast. The finding of [7] grants further support to the positive impact of immigrant high-tech businesses. It was revealed in this study that high-tech firms that have at least one immigrant in their founding teams display better performance in some respects with those that were founded by American-born entrepreneurs. Indeed, the general view indicates that high-tech firms have considerably higher growth rates than firms in other sectors and industries [4].

Further to this, [4] contend that high-tech companies are engines of local economic development. Therefore, high-tech immigrant firms, as being involved in non-traditional sectors, contribute significantly to job creation and growth in many established economies. In the U.S. context, previous research suggests that immigrant entrepreneurs make important contributions to high-tech areas such as Silicon Valley ([6], [14]). This contribution is gauged in terms of extent and quality of the operations. The Information Technology Industry Council (ITIC), which is the global voice of the tech sector, reports that the rate of Silicon Valley business with at least one immigrant founder is 43.9% while these companies employed around 560,000 workers nationwide and generated \$63 billion in sales in 2012. In this regard, encouraging immigrant high-tech entrepreneurship and addressing the factors that cultivate an environment in which entrepreneurs may be more successful are crucial actions for growth that cities may wish to consider [2].

Specifically in high-tech businesses, the study of [9] through a representative sample of high-impact firms in high-technology industries in the United States, found that about 16% of the sampled companies have at least one immigrant founder and that 77% of the immigrant entrepreneurs already have U.S. citizenship (probably second generation immigrants). In line with this, [15] also reports that in Silicon Valley, engineers from China and India run roughly one quarter of all technology businesses started. Furthermore, evidence from the study of [1] suggests that immigrants also represent 17.3 % of high-tech entrepreneurs and 20 % of the high-tech workforce.

Recently, concerns regarding the growing constraint imposed by the American policy towards immigrants through a backlog in the visas that allow immigrants to start new businesses have been in rise. This comes despite the existence of various evidence (see [13] and [16]) that goes in favor of further attraction and nurturing of high skilled foreign workers and entrepreneurs: First, H-1B visa holder creates 1.83 American jobs and the H-1B visas awarded between 2010 and 2013 expected to more than 700,000 jobs for U.S.-born workers by 2020. Second, H-1B visa holders are particularly valuable to small businesses that hire an additional 7.5 workers for each H-1B worker hired. Third, H-1B workers complement – instead of displace – U.S. workers and thus raises wages for U.S.-born workers because of different specializations and roles.

Fourth, H-1B visa denials in the 2007 and 2008 H-1B visa lotteries cost U.S.-born workers as many as 231,224 tech jobs and as much as \$3 billion in aggregate annual earnings in the two years that followed, and lastly, foreign nationals in the US were found inventors or co-inventors in over a quarter of international patents applications filed in 2006 in the U.S. and contributed over half of the international patents filed by a multinational firms. Given this situation, many immigrant scientists and entrepreneurs are now leaving the U.S., while countries like Canada,

Australia, Singapore, China and Chile, are developing policies to attract them. U.S. may, thus, be in a disadvantageous position of losing ground as a magnet for global entrepreneurs [17].

## CONCLUSION AND RECOMMENDATION

This paper discusses high-tech immigrant entrepreneurship in terms of requirements and drivers along its contribution to the economies of the host country. The U.S., especially through the well-known Silicon Valley, is a place where greater opportunities are available for immigrants to start and sustain high-tech firms. From the educational system to the labor market, foreign-born individuals are likely to acquire necessary skills and knowledge over the business environment. The U.S. business environment, which imposes fewer restrictions on immigrant entrepreneurs compared to other countries like Europe, has direct implications on the extent as well as performance of immigrant entrepreneurship. Opportunity structure, globalization, the outsider effect and network support from the home country in forms of demand and supply of various entrepreneurial resources add significantly to the performance of the immigrant high-tech firm in the U.S.

As we shall see then, many successful immigrant entrepreneurs and their firms are now contributing significantly to the broader economy. Their contribution might be found in other host countries as well and might extend to their home countries although this is not discussed in this paper. Contribution takes many forms including; job creations, revenues, export, and innovation and so on. Yet, given that limited research has been conducted that far regarding aspects of high-tech immigrant entrepreneurship, future research is needed in other countries known for their high-tech clusters such as Europe and West Asia, to see whether high-tech immigrant entrepreneurs are behaving differently as compared to the U.S. We also recommend new research to undertake empirical assessment on motives of entry and performance of immigrant entrepreneurs; perhaps also longitudinal research that focuses on returnee high-tech entrepreneurs.

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