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THE FINTECH CLUSTER IN THE UNITED KINGDOM: AN ANALYSIS BASED ON MONESE

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TABLE OF CONTENTS

ABSTRACT

Emergent FinTech start-up companies have been growing year by year since 2008 as well as their adoption by society. As the FinTech industry is new and the United Kingdom is its leading centre, the aim of this study is to determine a well-functioning FinTech ecosystem by analysing why the FinTech cluster in the United Kingdom and more specifically in London is the most successful globally. Michael Porter's theory of competitiveness is used and a case study of Monese is conducted to identify the competitive advantages of the cluster. The results suggest that advanced physical, IT and digital infrastructure, financial services and technological talent availability and the presence of entrepreneurs with mixed technical and leadership talent are crucial for the FinTech cluster to be successful in a country as well as the government support and helpful organizations. The presence of related and supporting companies within a nation helps start-ups to effectively offer their services and to increase their adoption by generating partnerships. Also, the younger and more digitally aware are more likely to use FinTech services due to their behavioural and attitudinal preferences as well as foreign nationals residing in a country and individuals who have financial ties to other countries. Brexit might affect each FinTech sub cluster differently and its specific effects can be the future idea of research.

Keywords: FinTech, competitiveness, business environment, technology, service.

INTRODUCTION

Modern societies have reached the level where intellectual technology has a significant role in achieving or solving their common goals or difficulties. “Every once in a while, a new technology, an old problem, and a big idea turn into an innovation” (Kamen 2016). Entrepreneurs who are always seeking for the old problems had found their way in the financial sector during the global financial crisis in 2008 when the traditional banks were engaged in the critical situation. The industry had been somewhat steady and stable over the decades until it was encountered with new market entrants that influenced the sector due to the acceleration of digital innovation. In general, those new entrants excel at creating better, simpler and more convenient customer experiences by innovating, from a consumer's perspective, the complicated and tedious banking industry.

The UK is an outstanding leading centre in the FinTech sector since 2008. According to the EY report commissioned by HM Treasury, the industry resulted in £6.6b in revenue in 2015 and appealed £524m in investment. Also, 61,000 people were employed in the sector - 5% of the total financial services workforce, therefore, a greater number of people work in UK FinTech than in New York or in the joined FinTech workforce of Singapore, Hong Kong and Australia (Ernst & Young 2016). Major start-ups in the field, like Monese, Revolut, TransferWise, etc. are based in the UK, that include highly technological, mostly mobile-only applications. Those companies are engaged into the sub-clusters of FinTech including areas like savings and lending, payments and banking, investments and insurance, and software and data.

In today's world, it is essential to analyse in what type of ecosystem FinTech prospers since the industry is new. As the UK has always been a leading centre for the financial sector, it is not astonishing that FinTech is also highly developed in the country, therefore, analysing the UK environment in general and solely for Fintech gives a definite opinion about the robust ecosystem for the sector. Four major ecosystem attributes are needed for the FinTech industry to succeed - talent, capital, policy, and demand (Ernst & Young 2016). These four attributes are the key elements for the strength of the industry. The paper aims to draw a map of the FinTech cluster in the UK where it is visible the relevant drivers of success in the area and a short description of significant sub-clusters by emphasising on the start-up, Monese, that offers banking services as an alternative to the traditional banking.

Banking is essential, banks are not (Beck 2001) – there is a considerable chance that this statement will meet reality in the near future as the “FinTech (r)evolution is fundamentally changing the way

financial services firms operate and transforming the way we transfer, borrow, protect and manage our money" (Baldwin 2015). The presence of the strongly related industry motivates the sector to develop and innovate. At the same time, the emerging FinTech sector provides a new perspective of the market that opts traditional banks to embrace innovation and generate partnerships to meet today's customer needs.

The research focuses on determining a well-functioning FinTech ecosystem by analysing why the United Kingdom and more specifically London is the leading spot for FinTech (r)evolution. To reach the aim, the following questions are answered in the paper.

Q1: How competitive the United Kingdom is nationwide - what are the leading national comparative advantages and how far are the major clusters developed.

Q2: What are the key drivers of the FinTech cluster success in the UK and how they helped the sub-clusters of payments and banking to develop.

Michael Porter's national competitiveness diamond framework will be used to structure the comparative advantages the United Kingdom has in general globally and then apply it solely to the FinTech cluster in the UK. Firstly, the endowments, location, economic performance, and current fiscal and monetary policies will be described to determine the four interrelated decisive points for national competitive economic advantage - factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry. Then the FinTech cluster development in the UK will be described, and the national competitiveness diamond will be applied to the sector.

While describing the sub-clusters of the FinTech sector - money transfer and payments, insurance, borrowing, financial planning, and savings and investments, the paper aims to emphasize on the first sub-cluster – money transfer and payments. The firms in those fields are seen as direct competitors to traditional banks, and it is believed that the start-ups providing the service are the most successful as they grew by 51% during the last year (Walter 2019). Monese, UK based start-up company launched in 2015, offers its customers banking services, more precisely current account and money transfers, without having any physical branches and having partnerships to traditional banks like LHV and Barclays. The entire data is in the app that makes the banking process such as payments and deposits as simple as possible. As well as simplicity, the company is distinguished with its low fees on international transactions. "With over one million sign ups, and over 70% of incoming funds being salary payments, Monese is meeting a real need amongst

customers in Europe" (Koppel 2018). A case study of Monese has been conducted to answer the second question of the research problem and to identify the central ecosystem attributes that are needed to help the growth and innovation of a FinTech start-up company.

1. NATIONAL ANALYSIS OF THE UNITED KINGDOM

1.1. Theory of Competitiveness

Clusters, in general, are thought to be vibrant and lively areas, where people share their ideas, gather their world-class talent, innovate and develop businesses together (McKinsey & Company 2014). Therefore, clusters play a significant role in generating jobs that need high-skilled labor and their contribution to the country's economic growth is excessive. These clusters are mostly created accidentally and not by design, and they develop the type of market niches that are hardly anticipated by governments. The strength of the hubs is reached by the physical co-location and interaction of talented people, large corporations, small and medium-sized enterprises, world-class centers, proper infrastructure, enthusiastic investors and supportive government agencies (McKinsey & Company 2014).

Clusters affect competitiveness in both local and national context. As a result, they create new agendas for both locally and globally competitive business executives. They generate new ideas about how institutions such as top universities within a country can be part of competitive success and how government policies can contribute to the country's prosperity. The state of the business environment within a country strongly influences the sophistication of competition in a specific location (Porter 1998). For instance, a company can only employ highly advanced logistical methods in case of advanced transportation infrastructure locally, and service-oriented businesses cannot compete effectively without well-educated labor. Also, some factors like the legal system or tax rates equally affect all sectors while more decisive factors are cluster-specific (Porter 1998).

It is believed that clusters affect competition in three different ways. Firstly, they impact the productivity growth of different businesses in a specific location. Secondly, they drive the development pace of technology applied innovations that partly determines the future productivity progress. Finally, clusters stimulate new entrants in the market that broadens and reinforces the cluster itself (Porter 1998).

Michael Porter's Diamond Theory of National Advantage is used to analyse the business environment of the United Kingdom. It is a model designed by Professor Michael Porter that is intended to be used as a tool to understand the competitive advantage countries or groups have due to specific components and factors accessible to them. The model can be utilized for generating the elements of a competitive advantage either for an industrialized country in the international

marketplace or for a corporation within a national specific market. The author, Michael Eugene Porter, is a perceived expert on economic competition, business strategy and social matters who established the Institute for Strategy and Competitiveness at the Harvard Business School.

Michael Porter determines and theorizes the four interrelated decisive points for national competitive economic advantage and visually characterizes it by Porter Diamond as illustrated in Figure 2. The four categories are factor conditions, demand conditions, related and supporting industries and firm strategy, structure and rivalry (Porter 1990).

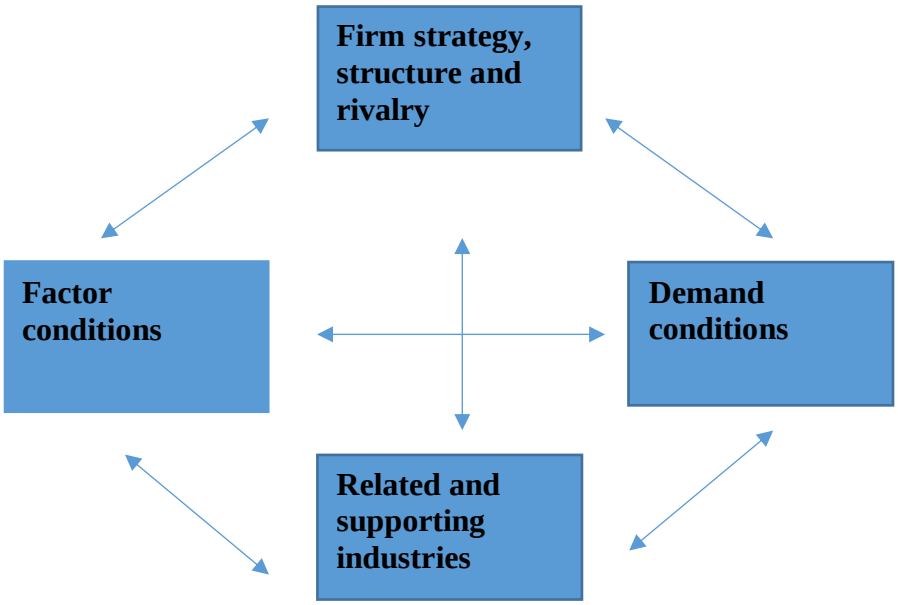


Figure 2. A graphical representation of Porter's National Diamond
Source: Porter (1990)

The Porter Diamond recommends that nations can build new types of factor advantages for themselves that are different from the naturally inherited factors such as location, natural recourses, population size or land area. The newly acquired components include technological advancements within the country, the talent pool of skilled labor and government support in terms of the policy and regulations that can be used for assessing comparative advantages. These factors are believed to be more critical by Porter as different companies can acquire them and, therefore, generate competitive advantage (Kenton 2018). Countries succeed in the industries where they are exceptionally notable in terms of factor conditions. World-class institutions within a nation create competitive advantage by the presence of specific factors and the ongoing work on their development (Porter 1990).

Demand conditions generate competitive advantage when a specific industry is more noteworthy within the domestic market rather than globally. According to Porter, variety, size, and nature of the customer base for products and services within a country determines at what extent the state can improve and innovate its national products and services. The higher domestic demand is for a specific industry, the more are companies striving to satisfy it which results in higher standards and early insights into the future consumer needs worldwide. Also, the bigger and most desired market segments within a country are the top priority for the nation's companies while smaller segments receive the least attention (Porter 1990).

In general, companies that generate partnerships and alliances with related or supporting industries create additional value for their consumers and, therefore, become more competitive. Their presence has vital importance to the growth of a specific sector as the partners facilitate innovation by exchanging ideas. The basic concept is that national competitive strengths are usually related to clusters of the industry. It is also vital for a country to have suppliers who are global competitors and are not only dependent on domestic trade. Organizations can promptly source from foreign materials, segments, or technologies without a noteworthy impact on innovation or execution of the business' products. The equivalent is valid for other techniques, such as electronics and software, where the industry characterizes to a limited application area (Porter 1990).

Strategy, Structure, and Rivalry demonstrate how firms are organized and managed as well as their rivalry in the domestic market. Competition in the national context plays a significant role in the development of specific firms and corporations within the sector. Mostly, it drives innovation and technological advancement that results in an improved competitive advantage. Consequently, domestic performance in particular industries is directly connected to the strategies and the structure of the firms in those industries. It should also be noted that companies and individuals in different countries have different aims they seek to achieve. Those aims show the characteristics of local capital markets and the compensation practices for executives (Porter 1990).

1.2. Country background

The United Kingdom (UK) is a sovereign country that unites Great Britain island - England, Scotland and Wales, Northern Ireland and smaller islands like Isle of Man, Anglesey, Jura, Skye and so on. The country is located off the north-west coast of Europe with the only land border to the Republic of Ireland. The United Kingdom has the 12th longest coastline in the world, being

surrounded by the Atlantic Ocean with the North Sea toward the east, the English Channel toward the south and the Celtic Sea toward the south-west. Furthermore, the UK has maritime borders with Germany, France, the Netherlands, Norway, and Denmark. The location of the United Kingdom is illustrated in Figure 1. The constituent countries, Scotland, Wales, England and Northern Island, have its capitals – Edinburgh, Cardiff, London, and Belfast, respectively. The capital of the United Kingdom as a whole is London, which is among the world's leading commercial, financial, and cultural centres (Encyclopaedia Britannica 2019).

Figure 1. The location of The United Kingdom
Source: Worldatlas (2019)

The United Kingdom is a constitutional monarchy as well as a parliamentary democracy. The country's leader of the nation is the ruling king or queen, and the leader of the government is the prime minister, who is the head of the majority political party in the House of Commons (Encyclopaedia Britannica 2019). The division branches of the national government are legislative, judicial and executive while the prime minister has the leading role and assigns members of the cabinets. The head of state, the monarch, should always follow the advice of PM and member of cabinets. The supremacy of Parliament is expressed in its legislative edicts, which are defining on all. However, people may dispute in the courts the legitimacy of any action under a particular law (Encyclopaedia Britannica 2019).

The UK was classically invested with a hearty agricultural area, natural recourses that helped to develop industrial production, and harbors and conduits that advanced trade, the investigation of new lands and transportation. England was genuinely blessed with abundant coal and iron reserves that gave vital energy for new industry, just as the essential material from which new industrial machinery was built. The UK coal industry peaked in 1913 and has been relentlessly diminishing for over 100 years since then. However, the revelation of oil and gas in the 1960s renewed the UK's energy supplies (Woolf 2007). The UK positions first in oil creation and second in natural gas production in the European Union even though the creation is declining after some time (USEIA 2016). The UK's sporadic coastline gives many natural harbors appropriate for supporting large merchant lines, including eighty business ports. Besides, the different inner rivers and conduits gave efficient early business transportation just as hydroelectric power (Woolf 2007). At last, a high level of the general land is farmable, with 71% of the entire area equipped for supporting horticulture, regardless of whether arable or field land.

The United Kingdom has a great story of the main achievements and inputs into science, art, and finance. For instance, gravity, hydrogen, and penicillin were first revealed by British scientists while Stephen Hawking made revolutionary steps in cosmology. Also, William Shakespeare is considered as one the world's most remarkable writers while Tim Berners-Lee, the computer scientist, designed the World Wide Web. Furthermore, the United Kingdom offers an immense variety of highly ranked universities such as Oxford, Cambridge and Imperial College London (Encyclopaedia Britannica 2019).

1.3. Economic performance

The United Kingdom has a GDP of approximately $2.622 trillion, and a population of 66M people – this makes it the third largest country by both size of the economy and population in the European Union, behind Germany and France (Trading Economics 2018). The country is believed to be OECD high-income country, and it is statistically ranked as 22nd in the world for its GDP per capita that accounted for $39,720 in 2017 according to the World Bank.

Appendix 1, figure A represents the GDP at current market prices starting from 1999 to 2018 expressed in million dollars. At this moment, the GDP value of the United Kingdom is 4.23% of the entire world economy (Trading Economics 2018). In the given period, the peak was more than $3 trillion while today the deviation is approximately $37.8 million.

For the country to support its enlarging international ocean trade in the 17th century, it developed itself in the finance industry, by creating high-level banking, financial, insurance, and shipping operations. The Big Bang, as the 1986 Thatcherite changes of UK budgetary administrations is frequently noted, enabled banks to gain by new open doors through globalization and financial development. This development made a banking framework with huge asset reports, noteworthy practical and topographical decent variety and multifaceted nature, an abnormal state of influence, and broad system interconnectivity, hardening the UK's situation as a common financial center point (Davies 2010). The United Kingdom and more precisely London has always been a popular world financial centers, being the capital of financial industry before triggering the article 50, Brexit, that let New York lead the world in terms of Finance. London and New York have competed for the top place of this index for a long time, and the questions arising for the future shape of the economy due to Brexit might have determined their latest switch in positions (Celic 2018).

The service industry has a prominent role in economic development in the United Kingdom Economy. As the industry has a lower barrier for new entrants, British entrepreneurs have found their way in the retail, public, business, and financial sectors as well as leisure and cultural activities. The service industry now provides about two-thirds of the GDP and three-fourths of total employment (Encyclopaedia Britannica 2019). The UK's largest trading partner is the European Union. In 2017, total exports to the EU was estimated to be £274 billion - 44% out of UK exports, while imports from the EU were £341 billion - 53% out of UK imports (Ward 2018). Out of these exports to the EU, 40% is accounted for the service industry where the financial services were more than half of it. However, taking Brexit – an exit from the EU into consideration, these numbers might not be the same in the future as access to the EU market can be diminished.

According to Trading Economics, labor market productivity in the United Kingdom, measured by the value of output produced for each hour worked, has increased by 0.5% in 2018 as illustrated in Appendix 1, figure B. There was more significant growth in the service industry rather than manufacturing – 0.8% and 0.3% respectively. However, productivity is a unique problem for the economy as in 1960 it had the top level of production in Europe and since then the UK labour market increased by approximately 2% per year for 50 years. Even though the financial crisis in 2008 has slowed down the growth rate for almost all developed economies, the United Kingdom has more dramatic results. The most productive firms in the country have diminished their pace of growth after the crisis. They are failing to advance on each other at the same level as their forerunners did (Schneider 2018).

1.4. Monetary and fiscal policy

Since the worldwide financial crisis of 2008, the UK government has been executing different strategies to combat the retreat and invigorate economic development. The Great Recession had an especially articulated impact on the UK economy, given the noteworthiness of the financial segment to the overall economy. High consumer debt joined by falling real estate prices, and in general global monetary stagnation prompted a recession in the British economy (Davis 2016). The Labor government reacted by ordering upgrade projects to raise total demand and balance out the financial markets.

The United Kingdom's financial authority is the Bank of England while the Parliament gives orders to it. The BoE is entrusted with watching a 2% inflation rate to keep up financial steadiness through low inflation (Bank of England 2019). Although the UK government decides the Bank's objectives, the BoE still has a free rule to determine monetary policy and regulatory measures. The interest rate is controlled through the Bank of England Base Rate. Set by the Monetary Policy Committee (MPC) as a feature of money related adjustment required by the UK government. Over the past few years after the global financial crisis, as illustrated in Appendix 2, figure A, the Bank Rate was 0.5% as the economy needed low-interest rates. After some time, the economy started to proliferate and required less support; therefore, in August 2018 the Bank Rate reached 0.75% and has been the same since then (Bank of England 2019).

Fiscal policy of the United Kingdom is determined with the cooperation of the Chancellor of the Exchequer, who create a Budget statement and make proposals for taxation changes, and the House of Commons, that enacts the suggestions (UK Parliament 2019). The budget deficit over the last five years is shown in Appendix 2, figure B as measured by the percentage of GDP. It has been diminished to 2% of GDP in the fiscal years of 2017-2018 which is a good result compared to the peak of 10.8% in 2009.

1.5. National competitiveness of the United Kingdom

Cluster development has played a critical role in the success of the United Kingdom in terms of the Global Competitiveness Index. The United Kingdom is believed to be the eighth most competitive economy globally with an index of 82, that makes its economy the fourth strongest in Europe according to the data given by the World Economic Forum. The indexes of different factors

that determine the overall score are illustrated in Appendix 3, figure A. Even though Brexit abates the United Kingdom's business sector as the integration with the EU is moved back, the country currently still has one of the most competitive economies in the world. On the one hand, the performance can be clarified with its historical strengths – an active business dynamism ranked as 7th, a leading innovation system rated as 7th and very well-functioning markets with a rank of 4th. Strikingly, the nation's performance is similarly solid crosswise over product, labour, and financial markets. On the other hand, the United Kingdom seems to be less arranged to leverage progressing fast technological change and has a weak ICT adoption compared to its peers (Schwab 2018).

1.5.1. Cluster development

According to the report made by McKinsey & Company, there are 31 most massive clusters identified in the UK that are 8% of its total businesses and generate 20% of the UK output. Overall, 4 million people are employed that makes 15% of the full labour force and they receive higher salaries compared to neighbouring regions. As the service industry is highly developed in the United Kingdom, 70% of the entire Gross Value Added from the clusters is in the service sector; however, only 10 out of 31 are service-oriented (McKinsey & Company 2014).

Appendix 4 illustrates the top 31 clusters in the United Kingdom, where it is seen that Financial Services London is a significant leader. As well as the financial services cluster, Business Services, Information Technology, and High Tech clusters are also highly developed. These clusters are especially critical while considering the improvement of the FinTech cluster in the UK as FinTech itself involves each of them. They give access to world-class human capital and foundation. It should be noted that the UK's Financial Services cluster is also leading globally, while the Business Services cluster is strongly related to the financial services sector mostly concentrated in London McKinsey & Company 2014).

It is significant that over 60% of leading non-European Tech organisations that have a European headquarter have picked London as their base, driven by the language, business foundation and high quality of life (Techworld 2015). These land and topic ability covers are hard to recreate and give advancement and focused development. Even though the bunches, as a rule, are topographically boundless, service clusters are packed in the London region, while Production led groups, for instance, Aerospace, Industrial Manufacturing, Electronics, and Automotive are dispersed all through the nation. Service clusters in this manner advantage extraordinarily from geological focus. Service-oriented clusters situated in London and the South East record for

roughly 70% of the entire Gross Value Added (GVA) from the UK's most prominent groups (McKinsey & Company 2014).

1.5.2. Factor conditions

In terms of Factor Conditions, the United Kingdom has some significant national advantages as well as disadvantages. As illustrated in Appendix 3, figure A, labour force skills in the UK is ranked as 13th, which is not an outstanding result compared to its overall competitiveness report. However, taking a more in-depth look in Appendix 3, figure B, it is highlighted that finding a skilled employee is not difficult in the country (Schwab 2018). Moreover, for instance, London has the most reliable financial services human capital in the world as the city has the most significant and most massive financial services local cluster, and the UK, in general, has a decent talent pool with excellent access to the financial enterprise. (Ernst & Young 2016). It should also be noted that a remarkable number of the top universities in the world are located in the UK, supplying human capital exceptionally qualified for the country's leading service industry.

Physical infrastructure gives a hand to the clusters to be more developed and connect to the world. The UK has more than 40 commercial airports all over the country, while there are five airports in London specifically. For instance, people located in the South East and London can access international connections, 180 destinations in 90 countries, from the Heathrow Airport. Also, there are fast connections between the UK cities via train as there are more than 2500 stations in the country, for example, it takes approximately 5 hours to get from London to either Glasgow or Edinburgh, while only 45 minutes are needed from Glasgow to Edinburgh. The government has prioritised the IT and digital infrastructure as it helps to grow tech and financial services clusters, more precisely, they invested in the Fiber optics and digital foundations development (McKinsey & Company 2014).

As discussed in the above chapters, productivity can be seen as a negative factor for the United Kingdom. Even though the service industry had slightly higher productivity growth (0.8%) the overall results are dramatic compared to other high-income countries and their previous findings (2%).

1.5.3. Demand conditions

Demand conditions in the United Kingdom are very profitable for the development of the clusters as the country ranks 7th with its market size (Appendix 3, figure A). Demand for the service

industry is considerably high that motivates British entrepreneurs to innovate in the retail, public, business, and financial sectors as well as leisure and cultural activities. For instance, there is a healthy home market demand for financial services as the country has always had a leading role in the financial industry. Therefore, the pressure on related corporations to innovate and improve is higher. The EU market has a strong significance on the UK market in terms of import and export, Brexit might be a threat as the access to the EU market can diminish.

1.5.4. Related and Supporting Industries

As discussed above, 10 out of the 31 most essential clusters in the United Kingdom are service-oriented, and they provide 70% of the total Gross Value Added. The services clusters are geographically concentrated in London, including financing, accounting, law, information technology, and business services while production-oriented groups are spread throughout the country. The financial services sector generated 119 billion GBP revenue to the UK economy in 2017 that is accounted as 6.5% of the total output whereas 50% of the sector's output was contributed from London and 1.1 million people were employed (UK parliament 2018). As the UK financial industry is highly developed and leading in the world, innovative start-ups and entrepreneurs are provided by venture capital and equity financing by the financial markets to help them grow. For instance, the FinTech sector was financed by 524 million GBP in 2015 (Ernst & Young 2016).

1.5.5. Strategy, structure, and rivalry

As the financial services sector in the United Kingdom is highly developed, it attracts foreign direct investments, creates jobs and generates main capital projects in the country. Moreover, the industry attracted over double the FDI than any other sector in the United Kingdom in 2016. London attracts most FDI in the financial services sector compared to other financial centres, and this fact indicates that London is the world's leading net exporter in the field with total net exports of 68 billion GBP in 2017 (City of London 2018). Even though Brexit seems a threat for maintaining the competitiveness, it is estimated that the UK financial sector still will be double the size of any other European financial center. Some important firms in the UK have decided staff relocation within other European countries, but for now, none of the European cities has gained a clear advantage due to this fact and the United Kingdom remains at the same level of competitiveness (Allen 2018). It should also be noted that since the service and financial industries are both highly developed in the United Kingdom, it is not easy for a new entrant to become

popular unless it offers innovations. Therefore, there is increased motivation in the country to innovate and create digitally advanced services.

2. DESCRIPTION AND MAPPING OF THE FINTECH CLUSTER

2.1. Historical (r)evolution of FinTech

A new technology that is meant to develop and automate the usage and delivery of financial services is called FinTech, and the word itself is a combination of Financial Technologies. Specific software and algorithms are used on computers and mostly on smartphones to help different firms, businesses and individuals to better manage their financial operations (Kagan 2019). Generally, FinTech is a large sector with a lengthy history as technology has been part of financial services since the 1950s, and it played a crucial role in the sector's development. Last 65 years are believed to be the path FinTech took since its creation until today with ongoing innovation and evolution. (Desai 2015).

Starting from 1950, each decade gave a significant development for the financial industry globally by implementing innovative technology. In the 1950s, credit cards were first introduced to the world that eased the stress of carrying cash on an everyday basis. The ATMs (automated teller machines) were established in the 1960s that substituted bank tellers and branches. In the next decade, electronic stock trading started on exchange trading floors. The 1980s brought more advanced data and record-keeping methods as well as a greater variety of mainframe computers in banks. In the last decade of the XX century, the Internet in general and e-commerce business models prospered that resulted in the establishment of stock brokerage web pages meant for retail investors and substituted old fashioned stock brokering model (Desai 2015). These radical innovations during the given five decades generated the financial technology infrastructure that people use on a daily basis. It should also be noted that risk and treasury management, as well as data analysis and trade processing, became more sophisticated due to the developments mentioned above (Desai 2015).

Before the 2008 global financial crisis, even when the FinTech initially emerged in the XXI century, the FinTech sector involved the necessary technology applied to the back-end systems of recognized financial institutions meaning more B2B model FinTech companies rather than consumer-oriented. However, the industry managed to shift to B2C model businesses in the service sector, and, consequently, the term obtained a more consumer-oriented definition (Kager 2019). In other words, the traditional FinTech acted as ‘facilitators’ – large technologically innovative

companies supporting and helping to develop the existing financial infrastructure, while the emergent FinTech acts as 'disruptors' – small start-up firms competing with the traditional financial industry by providing different, technologically advanced and innovative solutions to the existing problems in the sector (Ernst & Young LLP 2015). An example of the traditional FinTech can be Fiserv, a company that provides technology solutions to the existing financial institutions while an emergent Fintech is a start-up company Monese that offers its customers simplified mobile-based banking services with low transactions costs as an alternative to the traditional banking.

For today, FinTech embraces technological innovations and its automation in the financial industry. For instance, advancements in financial education and advice, retail banking, lending and borrowing, payments and transfers all over the world, fundraising, insurance and much more (Kager 2019). As there is no worldwide classification or comprehensive directory of FinTech companies, an EY report defined a FinTech firm as the ones that are involved in one or more of FinTech business activities illustrated in Appendix 5. These business activities are related to the usage of innovative business models and technology to enable, improve or disrupt financial service (HM Treasury, EY and Innovate Finance 2017). The start-up companies in the B2C section make partnerships with the B2B section firms and they all together, as part of the emergent FinTech industry, improve and innovate the existing market. For instance, online digital-only banks without branches may use fraud detection software to prevent identity theft or other fraudulent actions. However, the companies with activities from the B2B section can be used by different corporations not involved in the FinTech industry. For example, a big corporation may use a B2B FinTech start-up to identify and manage the financial risk from their suppliers or customers.

2.2. Cluster description

The paper aims to analyse the emergent FinTech cluster in the United Kingdom. As discussed before, the UK has an exceptionally prospered service industry and the country, more precisely London has always been a leader in the financial sector. Therefore, the government of the United Kingdom is dedicated to supporting the FinTech cluster development in the country. There are 29 FinTech companies in the world worth more than $1 billion, and seven are based in the United Kingdom (Walters 2019). The FinTech industry in the UK generated 6.6 billion GBP revenue in 2015 and attracted 524 million GBP investment as well as employing 5% of the entire financial sector workforce that accounted for 61 000 people. Thus, the United Kingdom has the biggest

market size in this field compared to other significant FinTech clusters worldwide – California (4.7 billion GBP), New York (5.6 million GBP), Germany (1.8 billion GBP). In terms of employment, the UK comes after New York that has 74 000 FinTech staff (Ernst & Young LLP 2016). Moreover, in 2018 Venture Capital investment in the FinTech sector in the United Kingdom reached $1.7 billion while challenger banks took 29% of total VC deals. Revolut, a leading challenger bank in the UK, received a fundraise of $250 million and was among the top ten biggest worldwide VC deals in 2018 (Peyton 2019).

The FinTech cluster in the United Kingdom can be seen as a synthesis of Financial Services and Technology clusters creating a disruptive new industry (Davis 2016). As those two clusters are mostly concentrated and developed in London, as illustrated in Appendix 4, the FinTech industry shares the same location. However, there are other concentrated hubs such as Edinburgh, Manchester, and Leeds that are also notably growing (Ernst & Young LLP 2016). It should also be noted that Venture Capital funding in London tech companies has been significantly higher than other UK tech firms for each year since 2013, while the total Venture Capital investment in major European FinTech clusters is the biggest in London with 39% share. Also, London comes second, after San Francisco, in terms of FinTech companies' concentration in the cluster (Walters 2019). According to the survey commissioned by the HM Treasury, 80% of the 245 FinTech companies having headquarters in the UK are based in London while the 20% are found in other hubs such as Manchester, Cambridge, Edinburgh, and others (HM Treasury, EY and Innovate Finance 2017).

The sub clusters of the FinTech B2C sector in the United Kingdom is analysed below as illustrated in Appendix 5 to give a better understanding about what the industry offers its customers and why the services are believed to be innovations. As the paper aims to emphasise on money transfer and payments, B2C companies are thoroughly analysed. The sub clusters of the FinTech cluster shifted to consumers (B2C) and offering financial services are as follows: money transfer and payments, insurance, borrowing, financial planning, savings, and investments.

2.2.1. Money transfer and payments

New online banks that have no branches and are mobile-only applications, as well as apps offering transfers and mobile payments, are disrupting traditional banks by providing as low transactions costs as possible and making the process the simplest ever been (Carey 2019). The value proposition of this sub cluster is higher access to the service with lower fees. Some of the

companies in this sub cluster are e-money institutions like Monese or TransferWise regulated by FCA while others already have a banking license – Revolut. E-money institutions grew by 51% during the last year giving a prediction that more than half of payments service suppliers in the United Kingdom will be digital-only. This fact provides a clear indication that traditional banking might be phased out soon as digital becomes the keystone of the financial services industry (Walter 2019). In case a person is new in the United Kingdom it is not easy to open a bank account, for instance, acquiring NINO number is obligatory. These e-money institutions like Monese offer them a regular bank account with a MasterCard – a customer can open an account by uploading a passport or other type of identity card and making a short video call. On the bank, account salary can be received as per usual, and transactions can be made to 30 countries outside the UK by converting money on the interbank rate. Also, a person living in the EEA area can open a European bank account in Monese and for instance make a SEPA transfer from the UK to any European country without any additional fees or make an international transfer from the UK account with zero fees while for example, Barclays has 5/15 GBP fee on SEPA transfers and 25-40 GBP on other international payments.

2.2.2. Insurance

The sub cluster of insurance FinTech sector is often referred to as InsurTech (Insurance Technology). InsurTech business model companies mostly emphasize their services either on new prospects for insurance such as personalized product offerings and risk selections giving a full flexibility to the customer to buy very specific insurance with free will of when and how often to buy or on finding a solution to an existing problem such as efficient data control and analysis. As a result, the firms usually offer a faster, more flexible and less expensive options to their customers compared to traditional insurance companies (Howe 2017). The companies in InsurTech often make partnerships to the incumbent insurance firms; for instance, RightIndem partners with Allianz and processes insurance claims online for the company (Davis 2016). 28% of InsurTech start-up companies in the United Kingdom made partnerships with big insurance corporations in 2016 while next year the result increased to 48%. Therefore, it is safe to assume that the sector's solutions will become a general business for the insurance industry (Howe 2017).

2.2.3. Borrowing

Fintech borrowing refers to lending based on digital platforms collecting the data sources in a non-traditional way – synthesis of investments and savings offering higher return rates (usually from

3% to 10%), rather than the traditional method (MEDICI team 2019). What distinguishes these firms from typical bank lending is that customers have higher, faster and more convenient access to credit as the companies make decisions based on more current data. Lending Works is a FinTech company representative of this sub cluster headquartered in London that received $13.4 million funding and offers personalised loans to its customers with 4.5-6% interest rates.

2.2.4. Financial planning, Savings and investments

The FinTech companies in the financial planning sub cluster help its customers to make financial decisions as efficiently as possible by comparing different products to each other or budgeting their finances. Innovators found a solution to the problem that everybody faces by using technology. For the savings and investment sub cluster, a UK based start-up Nutmeg is the best example. The Nutmeg app is an online wealth management tool that makes investments available on an online platform with starting capital of 100 GBP. The company's customers make decisions about where to invest their funds on their risk selection and their long-standing goals. The aim of the investment can be a big idea like a wedding, or a pension or just a new piece of furniture. However, the app itself is aimed initially at consumers who wish to save funds for more than ten years. The fees are as low as possible – 0.75% fee in case of investments less than 100 000 GBP and 0.35% for the entire managed portfolios (Carey 2019). The service is reached by making portfolios of exchange-traded funds (ETFs) to meet the customer's chosen risk or return selection and their long-term goals (Davis 2016). In terms of savings, the app Chip is one of the leaders in the sub cluster. The app offers its customers to connect their bank account and give out their transaction history and based on it Chip can calculate how much the customer can afford to save. The money, usually around 20 GBP, is saved automatically in every few days assuming that the difference is not noticeable or the consumer can manually add the funds into their Chip account.

2.3. Mapping the cluster around Monese

Monese, a company headquartered in London, represents the sub cluster of money transfer and payments. It is an e-money institution regulated by FCA and operating within the European Economic Area that offers regular bank accounts to its customers without having any physical branches. The company’s major direct competitors are Revolut, Monzo, Starling Bank, Atom, N26 and Loot, while they altogether are challenging the traditional banks. According to the EY global consumer banking survey, the main reasons to become a consumer of mobile-only banks are: less

costly rates and fees, improved online customer experience and functionality, increased access to various products and services, ease of setting up an account, and improved quality of service (Ernst & Young LLP 2017b). CREALOGIX survey suggests that 14% of people who has at least one bank account in the United Kingdom are customers of challenger banks and their fundamental reason is the ease of use (CREALOGIX 2019). Monese has a fast and easy onboarding process - creating an account in less than 2 minutes without requiring a proof of address or credit history. It offers accounts in two currencies – GBP and EUR that allows its customers to move and manage money smartly from one place. Thus, the customer segment for Monese is people in need of cross-border banking services - foreign nationals residing outside their country of birth or local nationals with financial ties to another country. The company has more than 1 million customers for today while around 3 000 people sign up daily and $3 billion move each year through Monese accounts. Monese has received $60 million investment in Series B Funding from IAG Group (on behalf of Avios), PayPal and Kinnevik.

Regulatory developments played a crucial role in launching the challenger banks. Financial Conduct Authority of the United Kingdom established Project Innovate in 2014 with the primary purpose of supporting FinTech start-up companies to navigate the regulatory system. As a result, FCA managed to offer direct help to more than 200 firms by developing their propositions and gaining authorisation. The FCA also established the New Bank Start-up Unit with the Prudential Regulation Authority at the beginning of 2016 that provides new entrants in the market with all necessary information about successfully navigating the regulatory process. The main aim is to offer support to existing and prospective challenger banks through five steps: initial stages, pre-application, application, mobilisation and post-authorisation (MarketLine 2017). After launching the app, Monese and its direct competitors start interacting with different institutions and partners that are helping them to offer their services successfully.

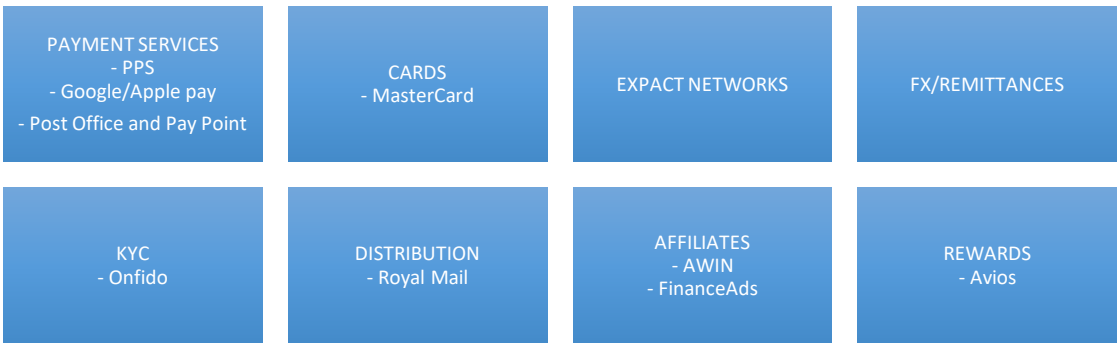


Figure 3. Cluster map
Source: Monese (2019)

2.3.1. Payment services

PrePay Solutions (PPS) is a processing partner of Monese that handles and processes all incoming and outgoing payments except the international transfers. PPS is a full e-money issuer company based in London and jointly owned by Edenred and MasterCard that offers a variety of services such as processing, eWallet provision and much more. Monese customer can receive BACS and CHAPS payments in their accounts and process and receive UK faster payments and SEPA transfers with the help of PPS. BACS and CHAPS payments are received to Monese accounts directly through PPS (Monese 2019).

PayPal is one of the investors of Monese in the B Series Funding (Monese 2019). PayPal provides access to both global and local scale by allowing individuals and businesses to send and receive payments online conveniently, securely and cost-effectively using their email addresses. Monese customers can link their GBP and EUR accounts to PayPal.

Android users in the United Kingdom can make contactless payments without the physical Monese card using Google pay, while IOS users can do it through Apple Pay. A Monese card can be added to Apple Pay and can be used outside the UK as well in ten other European countries. This service is very attractive for customers as it is innovation and not all traditional banks have implemented it so far. Monese's globally mobile customers have a strong appetite for digital payments and wallets (Monese 2019). Over 80% of Monese users with Apple Pay supported devices believe Apple Pay to be essential.

Monese customers can top up cash to their UK accounts through either Post Office or Pay Point in the United Kingdom. Pay Point top-ups are instant and costlier while Post Office top ups take one working day to be processed. Monese also offers its customer to top up their accounts using their debit cards issued by another bank or using SOFORT. SOFORT Banking is an instant bank transfer method that customers based in Austria, Belgium, Germany and Switzerland can practice to transfer funds directly to merchants from their bank accounts. Monese currently only provides SOFORT top-up channel for customers who are based in Germany, Austria, Spain, Italy and Belgium and have a EUR account (Monese 2019). Many German customers have chosen Monese for this feature.

2.3.2. Cards and distribution

Monese has a partnership with MasterCard, a global leading payment solutions company, that provides customers with debit cards. MasterCard offers 3-Domain Secure system, a security protocol to prevent fraudulent transactions with debit or credit card online. Monese enrolled in this service to make online shopping safe for its consumers by authenticating the cardholder's identity at the time of purchase. The cards are delivered to customer's addresses by Royal Mail. The card costs 4.95 GBP/EUR on starter pricing plan while on plus and premium plan it is free (Monese 2019).

2.3.3. FX and Remittances

International transfers are firstly received to Monese shared IBAN in LHV bank for both GBP and EUR accounts, and then they are manually allocated to the relevant accounts that are identified by indicating Monese ID in the reference number field. For incoming international transfers, only GBP and EUR currencies are accepted while customers can send money in 14 currencies. Depending on the currency, the outgoing international payments are processed through two different companies based in London which are platforms that allow international payments to be performed and be sent as SWIFT payments (Monese 2019).

2.3.4. Expact networks

Expact networks are demand driven partnerships that help Monese to be famous in its customer segment. Monese partners with organizations in London that help foreign nationals reside safely. Those organizations refer its customers to Monese to offer them an easy service for opening a bank account in the United Kingdom (Monese 2019).

2.3.5. Know Your Customer

Onfido is a London based B2B software company that helps businesses prevent fraud by making identity verification. Monese has a partnership with Onfido, and the company supports Monese's ground-breaking proprietary KYC technology. Monese customers take a photo of their identity cards and then record a video selfie. Onfido software supports the onboarding and KYC process, whilst Monese makes sure the ID is correct and matches the person in the video selfie by applying document verification and facial biometrics technology (Bingham 2019). In case the system cannot identify whether the document is fake or not or whether the person is same or not, a verification

specialist in Monese makes necessary checks on the case and either opens an account or not (Monese 2019).

2.3.6. Affiliates and rewards

Avios is one of the investors of Monese in the B series funding. Avios are reward points that customers can collect when spending money on flights, hotels and car rentals with British Airways and hundreds of Avios partner brands. Monese customers can link their Avios account with Monese. Once connected, their Avios will appear as a separate account alongside the UK or current European account. Customers can get a straightforward overview of how to make the most of their Avios – whether collecting or spending – through a few simple taps. This service is only available for customers in the UK with GBP cards (Monese 2019).

2.4. Cluster diamond

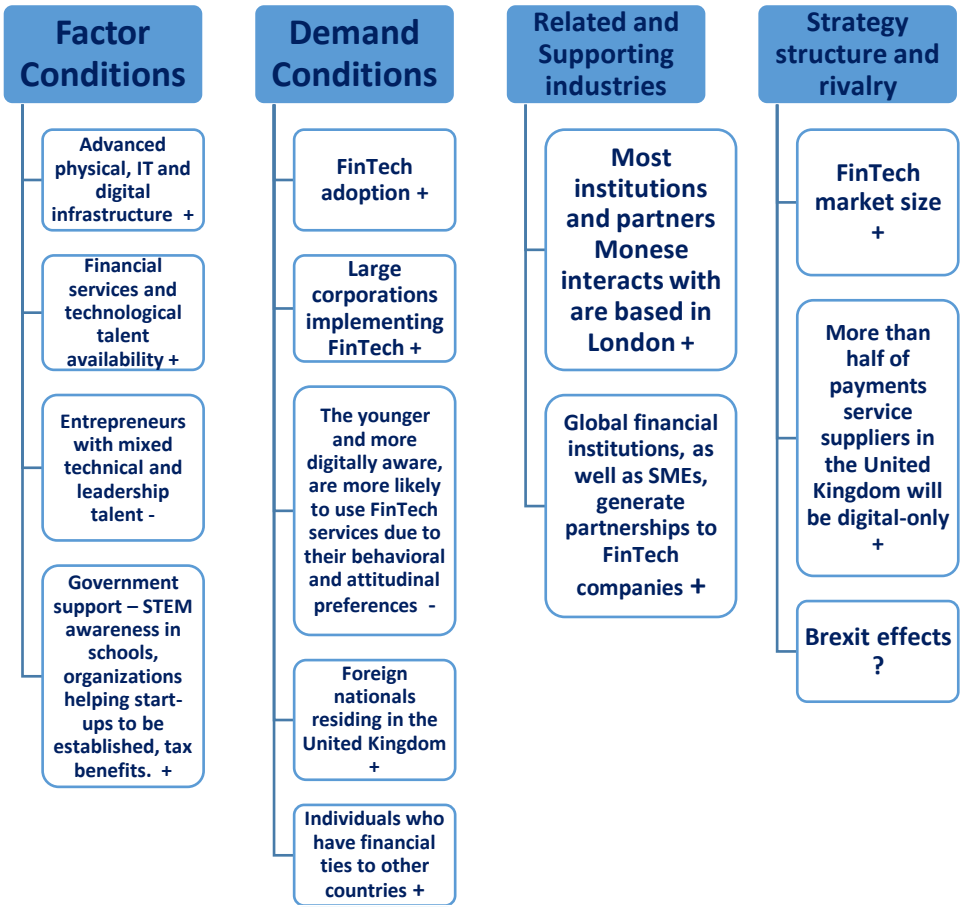


Figure 4. FinTech cluster diamond in the UK
Source: author's conclusions

2.4.1. Factor Conditions

As discussed before, the United Kingdom and more precisely London has a highly-advanced infrastructure that is profitable for every cluster development in the country. Connecting to the world from London is quite comfortable with the existing airports and moving around different cities within the country is the simplest by high-speed trains. Also, public transport in London is affordable and efficient. The government invests in the IT and digital infrastructure development that directly gives a hand to the FinTech cluster evolution.

On the other hand, it is costly to live and rent an office in London. London has the second most expensive rental costs of commercial real estate while Hong Kong comes first and Berlin is the least expensive among the FinTech hubs. However, outside London, such as Leeds, Manchester or Edinburgh, the rental prices are at about three times lower (Ernst & Young LLP 2016).

The United Kingdom has the second biggest FinTech workforce in the world and is ranked as second in terms of talent between the primary FinTech cluster based on two factors: talent availability – FinTech workforce covering key skill sets and their ability to meet all necessary requirements, and talent pipeline – an ability to meet the upcoming demand and to maintain the infrastructure, while California is a leader (Ernst & Young LLP 2016). It is believed that technical, financial services, and entrepreneurial talents are necessary for FinTech success. The UK has the second biggest workforce employed in the FinTech sector as illustrated in Appendix 6, figure A, but comes first with the number of people employed in the financial services sector. Therefore, there is the greatest number of people with extensive knowledge of financial services, that is essential for FinTech development, in the United Kingdom compared to other FinTech hubs. Also, the UK is ranked third with a global entrepreneurship index, as seen in Appendix 6, figure B, because it is challengeable to find entrepreneurs with mixed technical and leadership skills. Moreover, the United Kingdom needs more domestic technical talents such as coders, developers, and engineers, consequently, the government encourages STEM (science, technology, engineering, and mathematics) awareness in schools as well as adding computer science and coding courses in school (Ernst & Young LLP 2016).

The government of the United Kingdom is supporting the FinTech cluster with its existing policies that have been developing for several years, and it is now believed that the country has the most influential FinTech policy environment that makes it the major strength. It is easy to get a seed capital investment for a newly born start-up company with the help of UK Angel CoFund and EIS.

Project Innovate and New Bank Start-up Unit, created by FCA, supports authorisation for technology-driven businesses and involves a Regulatory Sandbox – an opportunity to try out new products and services within an exceptional environment. The government has tax-based financing regulations to promote sector development: EIS (1994) is a tax exemption for investors in minor high-risk trading firms, SEIS (2012) is a tax exemption for investors in risky start-up projects, VCT Scheme (1995) implies tax relief for investing in VCTs (Venture Capital Trusts), Entrepreneurs Relief (2008) includes capital gains tax exemption for selling entrepreneurial company's assets, R&D tax credits (2002) implies tax relief on spending for research and development purposes and Innovate Finance ISA (2016) makes P2P loans eligible for ISA investment (Ernst & Young LLP 2016).

2.4.2. Demand Conditions

The average of FinTech adoption worldwide is 33% while the United Kingdom resulted in 42%. It is believed that money transfer and payments sub cluster plays a critical role in increasing awareness of FinTech as most digitally active customers use the service (Ernst & Young LLP 2017a). Corporates are very important source of FinTech demand, the size of SMEs in the UK is the biggest in Europe (5.2 million) while 27% of the firms made tech infrastructure improvement using FinTech in 2015 and some of them, who got rejected to get a loan in a traditional bank, gained access to substitute finance providers in the FinTech sector. Also, many SMEs are using payment software FinTech companies to expand globally (Ernst & Young LLP 2016). As London has always been a leading financial centre, the country does not lack demand for simplified financial services. Generally, specific customer segments such as the younger and more digitally aware, are more likely to use FinTech services due to their behavioural and attitudinal preferences (CREALOGIX 2019) and as shown in Appendix 3, figure B, there is a room for improvement for the digital skills among the population in the United Kingdom (Schwab 2018). Also, a significant number of foreign nationals residing in the UK need a bank account as they do not meet all the necessary requirements for traditional banks. Challenger banks and mostly Monese can fulfil the demand and enable those people to work and receive a salary on their bank account as per usual. Moreover, a lot of people with financial ties outside the United Kingdom benefit from FinTech companies as they simplify the process of sending and receiving money internationally.

2.4.3. Related and Supporting Industries

The service industry is exceptionally developed in the United Kingdom whereas solely financial services generated 119 billion GBP revenue in 2018 (UK Parliament 2018). Also, the number and quality of financial institutions and tech companies in the country are considerably high. As discussed above, demand from corporates side for FinTech is quite strong in the United Kingdom. Therefore, global financial institutions, as well as SMEs, generate partnerships to FinTech companies. Cluster map around Monese shows how strongly the company is connected to related and supporting industries. Most companies Monese partners with are based in London – PrePay Solutions, Onfido, FX/remittances connected companies. Consequently, the presence of highly developed financial institutions and financial service providers plays a critical role in the existence and advancement of FinTech companies. As the United Kingdom has always been a leading country in the finance industry, the need of technological advancements in the sector is most relevant to the country, therefore, the motivation to innovate the industry is higher.

Venture Capital industry is beneficial for the London FinTech cluster development as it provides capital for new entrants in the sector and helps them to grow. However, a big part of the funding is financed from the United States as the locals feel like investing in the FinTech sector is risky due to lack of knowledge on asset class (Davis 2016).

2.4.4. Strategy, Structure, and Rivalry

The market size of the FinTech industry in the United Kingdom is 6.6 billion GBP while in California it is 4.7 billion GBP and in New York 5.6 billion GBP. Therefore, the number of FinTech companies in the country is considerably high, and competition plays a critical role in their development (Ernst & Young LLP 2016). Money transfer and payments sub-cluster is the most competitive and successful as it is most adopted and developed (Walter 2019). Brexit seems to be a threat to the country's highly competitive FinTech industry in terms of the business environment as the customers might evaluate using the services riskier and FinTech companies might find it challenging to offer the same quality services due to some changes to financial regulations after Brexit (Davis 2016). However, Brexit might be a good deal for a firm like Monese, as the company makes the process of moving money from the UK to European countries as simple as possible by offering GBP and EUR accounts in one app.

Conclusion

The research aimed to analyse how a thriving business environment of FinTech looks like on the example of the United Kingdom and a challenger bank Monese based in London. Firstly, the national competitiveness of the United Kingdom was studied using Michel Porter's theory of competitiveness to understand how the country is distinguished internationally thoroughly. The theory suggests that four interrelated decisive points – factor conditions, demand conditions, related and supporting industries, and strategy, structure and rivalry define the competitive advantages of a country. To reach the aim and identify the four points, the endowments, location, economic performance, and current fiscal and monetary policies of the United Kingdom were analysed. Secondly, the cluster map around Monese was described as well as the FinTech cluster in general, its sub clusters and its revolution as the basis of cluster diamond analysis. Finally, Michael Porter's theory was applied to the FinTech sector in the United Kingdom, and the major attributes of the prospered FinTech ecosystem were identified.

The results of the study about competitive advantages of the United Kingdom suggests the following:

- Factor conditions: Physical infrastructure is in good shape as moving around cities in the and connecting to the world is very easy. The government prioritises IT and digital infrastructure, therefore, the tech and financial services clusters are exceptionally developed. Skilled labour, in general, is not a strong part of the country. However, human capital in the financial services sector is outstanding. Productivity is a weak part, but in terms of the service industry it is in good shape.

- Demand conditions: Demand for service industry is significantly high highlighting on the financial services as the United Kingdom has always been a leader in the financial sector. The EU has substantial importance on exports and imports. Therefore, Brexit is a threat due to diminished access.

- Related and supporting industries: There are 31 most significant clusters in the United Kingdom and ten are service oriented. Most service-oriented clusters are concentrated in London. Innovative start-ups and entrepreneurs are provided by venture capital and equity financing by the financial markets to help them grow.

- Strategy, structure and rivalry: Financial industry is the most competitive in the United Kingdom as well as the service industry that motivates entrepreneurs to innovate. London attracts the most FDI in the financial services sector compared to other financial centres.

The FinTech cluster in the United Kingdom is a joint hub of Financial Services and Technology clusters creating emergent start-up companies. The sub clusters of FinTech sector are money transfer and payments, insurance, borrowing, financial planning, and savings and investments. Money transfers and payments are most adopted worldwide as well as in the United Kingdom. Monese is a representative of that sub cluster and has more than 1 million sign-ups and challenges traditional banks.

In terms of factor conditions of the FinTech cluster, the United Kingdom is outstanding. The UK has the second largest workforce employed in the FinTech sector and stands second in terms of financial services and technological talent availability. However, it is challengeable to find entrepreneurs with mixed technical and leadership skills. Government supports FinTech cluster development with its existing policies and encourages STEM awareness in schools. Project Innovate and New Bank Start-up Unit helps start-ups in the FinTech cluster to navigate the regulatory system.

Money transfer and payments sub cluster is most adopted and demanded in the country by individuals. Large corporations and SMEs also use FinTech software for their service developments. Foreign nationals residing in the United Kingdom actively use challenger banks to acquire a bank account easily. Also, individuals who have financial ties to other countries benefit from FinTech companies that offer simplified and less costly international transfers.

The cluster map around Monese showed that most institutions and partners Monese interacts with are based in London. Therefore, related and supporting industries of FinTech cluster in the United Kingdom is highly developed and helpful for the start-ups to function. Also, global financial institutions, as well as SMEs, generate partnerships to FinTech companies.

As the FinTech market size is the biggest in the UK the competition is high and challenging, however, the government supports new entrants to be successfully established. Brexit seems to be a threat to the industry due to potential changes in financial regulations. However, Monese can benefit from it as it simplifies money movement between the United Kingdom and Europe.

Brexit effects on FinTech cluster in the United Kingdom would be a great area of research for the future reference as different sub clusters will be differently affected and identifying who will benefit from Brexit gives a clear idea of future business decisions.

LIST OF REFERENCES

Allen, K. (2018) "UK finance industry dominates European scene" Accessible: https://www.ft.com/content/88cdec40-b03c-11e8-8d14-6f049d06439c (09.04.2019)

Bank of England (2019). "Visual summary - Inflation Report February 2019." Accessible: https://www.bankofengland.co.uk/inflation-report/2019/february-2019/visual-summary (09.04.2019)

Beck, H. (2001). "Banking is essential, banks are not. The future of financial intermediation in the age of the Internet." Accessible: https://link.springer.com/content/pdf/10.1023%2FA%3A1009927623530.pdf (26.03.2019)

Bingham C. (2019) "Fintech: Established thinking" Accessible: https://augmentum.vc/news/onfido-fts-fintech-one-to-watch/

Carey, S. (2019). "Top FinTech startups in the UK." Accessible: https://www.techworld.com/picture-gallery/startups/uk-fintech-startups-watch-3634859/ (27.03.2019)

City of London (2018). "London leads the world in financial services FDI projects" Accessible: https://news.cityoflondon.gov.uk/london-leads-the-world-in-financial-services-fdi-projects/ (09.04.2019)

CREALOGIX (2019). "Banking challengers: what's attracting new users" Accessible: https://info.crealogix.com/crealogix-uk-banking-challengers-survey-report-2019 (27.04.2019)

Davies, R. (2010). "Evolution of the UK banking system". Research and analysis done by the Bank of England.

Davis, J. (2016). "The UK's FinTech cluster leveraging the UK's strengths in financial services, technology, and entrepreneurship." Accessible: https://www.ivey.uwo.ca/cmsmedia/3341220/hbs-2016-london-fintech-cluster.pdf (26.03.2019)

Desai, F. (2015). "The evolution of FinTech." Accessible: https://www.forbes.com/sites/falgunidesai/2015/12/13/the-evolution-of-fintech/#1f52b60f7175 (16.04.2019)

Encyclopaedia Britannica, (2019) "United Kingdom." Accessible: https://www.britannica.com/place/United-Kingdom (04.04.2019)

Ernst & Young LLP. (2015). "Landscaping UK Fintech." Accessible: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/341336/Landscaping_UK_Fintech.pdf (26.03.2019)

Ernst & Young LLP. (2016). “UK Fintech: On the Cutting Edge.” Accessible: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/502995/UK_FinTech_-_On_the_cutting_edge_-_Full_Report.pdf (26.03.2019)

Ernst & Young LLP. (2017a). “FinTech Adoption Index 2017” Accessible: https://www.ey.com/Publication/vwLUAssets/ey-fintech-adoption-index-2017/$FILE/ey-fintech-adoption-index-2017.pdf (16.04.2019)

Ernst & Young LLP. (2017b). “Customer experience: innovate like a FinTech”

HM Treasury, EY and Innovate Finance (2017). “UK FinTech Census 2017.” Accessible: https://www.ey.com/Publication/vwLUAssets/EY-UK-FinTech-Census-2017/$FILE/EY-UK-FinTech-Census-2017.pdf (27.04.2019)

Howe, J. (2017). “When do we stop talking about insurtech?” Accessible: https://pwc.blogs.com/fintech/2017/09/when-do-we-stop-talking-about-insurtech.html

Kagan, J. (2019). “Fintech” Accessible: https://www.investopedia.com/terms/f/fintech.asp (09.04.2019)

Kamen D. (2016). “Speech at the fifth annual Forbes billionaire philanthropy conference. 8 June 2016.” Accessible: https://www.forbes.com/sites/chloesorvino/2016/06/09/dean-kamen-inventor-success-segway-water-purification-toyota/#6f29295555e2 (26.03.2019)

Kenton, W. (2018) “National Diamond” Accessible: https://www.investopedia.com/terms/n/national-diamond.asp (27.03.2019)

MarketLine (2017). “Retail Banking, still difficult for new entrants, but they are growing in significance”

McKinsey & Company (2014). "Industrial Revolutions: Capturing the Growth Potential". A report conducted with the Centre for Cities. Accessible: https://www.mckinsey.com/~/media/mckinsey%20offices/united%20kingdom/pdfs/web_industrial_revolutions_final.ashx (09.04.2019)

MEDICI team (2019). “10 UK-Based FinTech Startups for Higher Returns Through P2P Lending” Accessible: https://gomedici.com/10-uk-fintech-startups-higher-returns-p2p-lending/ (27.03.2019)

Monese (2019). Frequently asked questions and other general information Accessible: https://support.monese.com/hc/en-gb (04.05.2019)

Peyton, A (2019). “UK fintech investment reaches record $3.3bn” Accessible: https://www.bankingtech.com/2019/02/uk-fintech-investment-reaches-record-3-3bn/ (09.04.2019)

Porter, M. (1990). “The Competitive Advantage of Nations” Accessible: https://hbr.org/1990/03/the-competitive-advantage-of-nations (27.03.2019)

Porter, M. (1998). “Clusters and the New Economics of Competition” Accessible: https://hbr.org/1998/11/clusters-and-the-new-economics-of-competition (27.03.2019)

Schneider, P. (2018) “The UK’s productivity puzzle is in the top tail of the distribution” Accessible: https://bankunderground.co.uk/2018/03/29/the-uks-productivity-puzzle-is-in-the-top-tail-of-the-distribution/ (27.03.2019)

Schwab, K. (2018). “The Global Competitiveness Report” Accessible: http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf (06.04.2019)

Smith, O. (2018). “How Monese, A Challenger Bank For European Migrants, Reached The Holy Grail Of Finance” Accessible: https://www.forbes.com/sites/oliversmith/2018/04/30/how-monese-a-challenger-bank-for-european-migrants-reached-the-holy-grail-of-finance/#704fa5e71815 (26.03.2019)

Trading Economics (2019). “United Kingdom - Economic Indicators” Accessible: https://tradingeconomics.com/united-kingdom/indicators (27.03.2019)

UK Parliament (2018). “Financial services: contribution to the UK economy” Accessible: https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06193 (27.03.2019)

UK Parliament (2018). “The Budget and Parliament” Accessible: https://www.parliament.uk/about/how/role/check-and-approve-government-spending-and-taxation/the-budget-and-parliament/ (27.03.2019)

USEIA (2019). “United Kingdom” Accessible: http://www.eia.gov/beta/international/country.cfm?iso=GBR (10.04.2019)

Walters, R. (2019) “The UK Fintech Revolution” Accessible: https://www.robertwalters.co.uk/content/dam/robert-walters/country/united-kingdom/files/whitepapers/RW-VacancySoft-Fintech-Market-Report.pdf (27.04.2019)

Woolf, A. (2007). “Focus on the United Kingdom” Milwaukee, WI: World Almanac Library.

Worldatlas (2019). “Geography Statistics Of United Kingdom” Accessible: https://www.worldatlas.com/webimage/countrys/europe/unitedkingdom/uklandst.htm (27.03.2019)

APPENDICES

Appendix 1. GDP and Labour Productivity of the UK

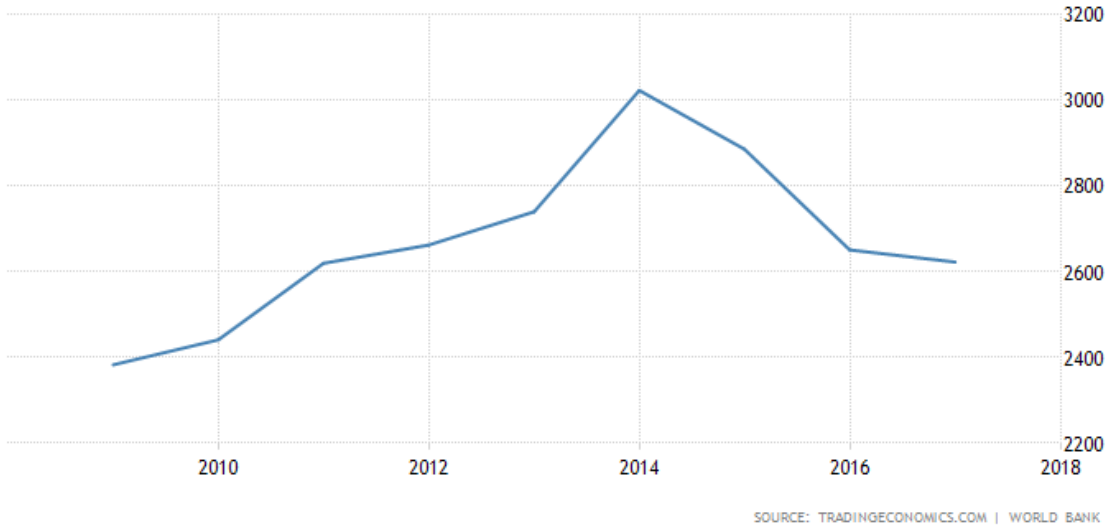


Figure A: Gross Domestic Product (GDP) at current market prices (million$)

Figure B: Labor Productivity as measured by output per hour
Source: Trading Economics

Appendix 2. Official Bank Rate and Government Budget Balance of the UK

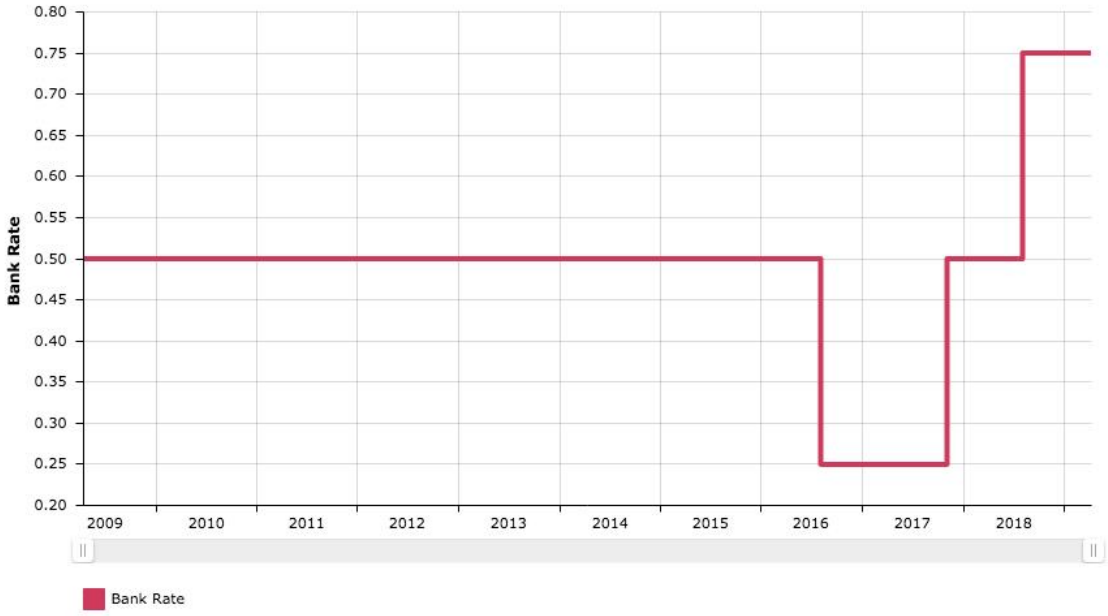


Figure A: Official Bank Rate
Source: Bank of England

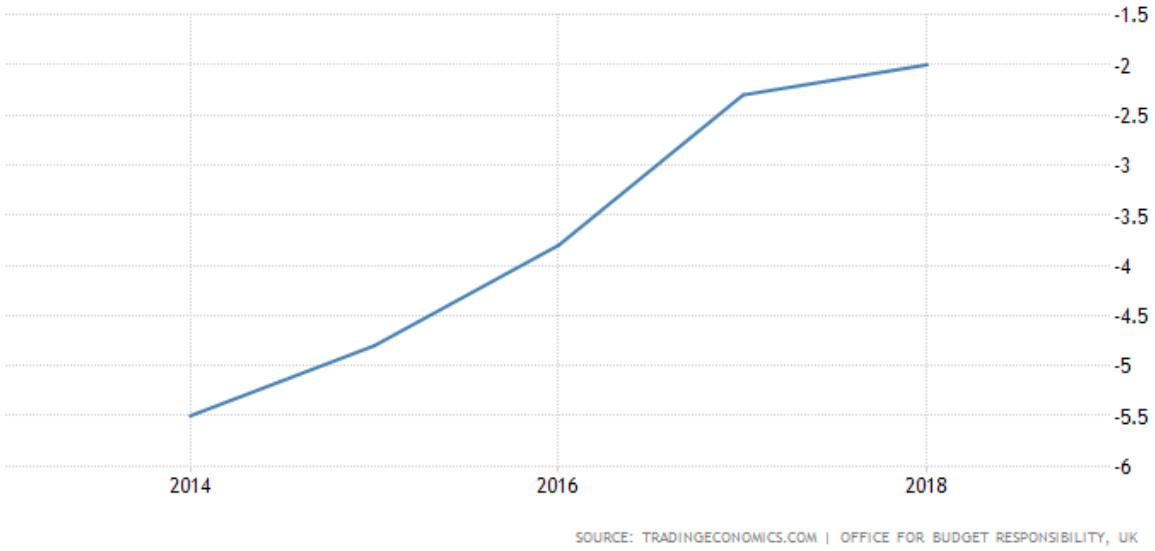


Figure B: Government Budget Balance
Source: Trading Economics

Appendix 3. Detailed global competitiveness index of the UK

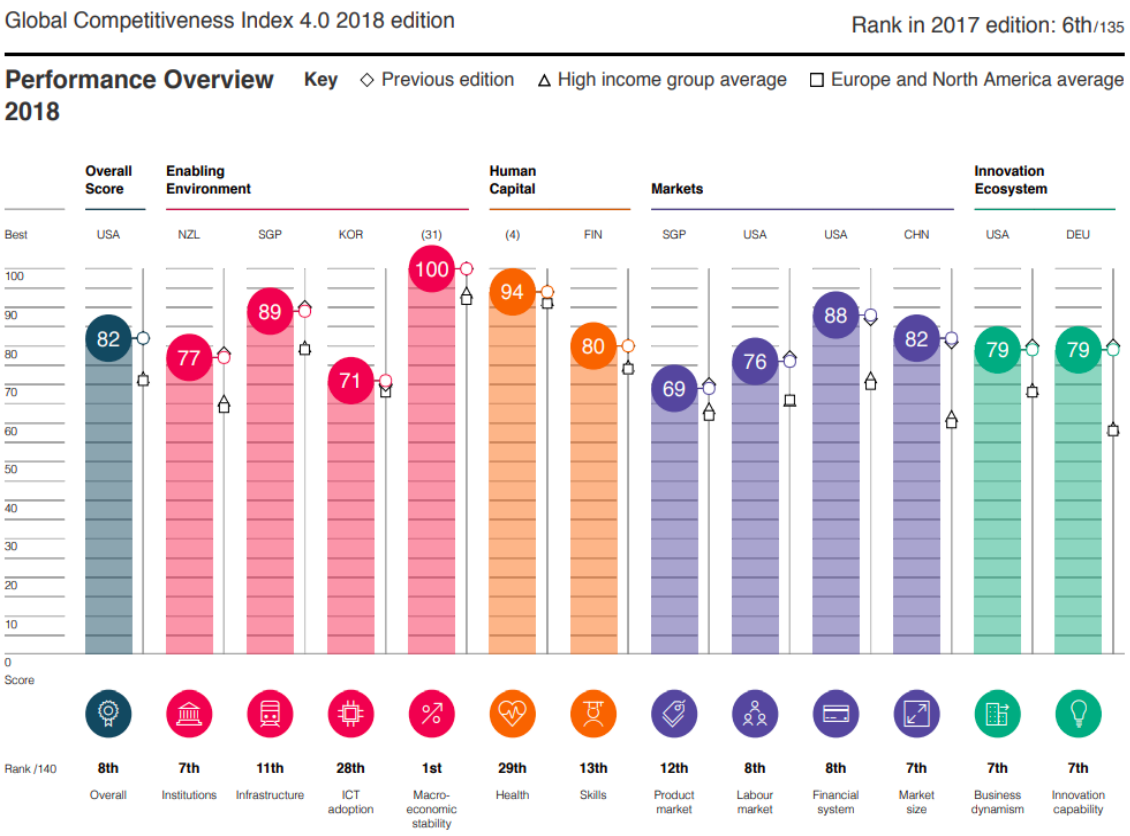
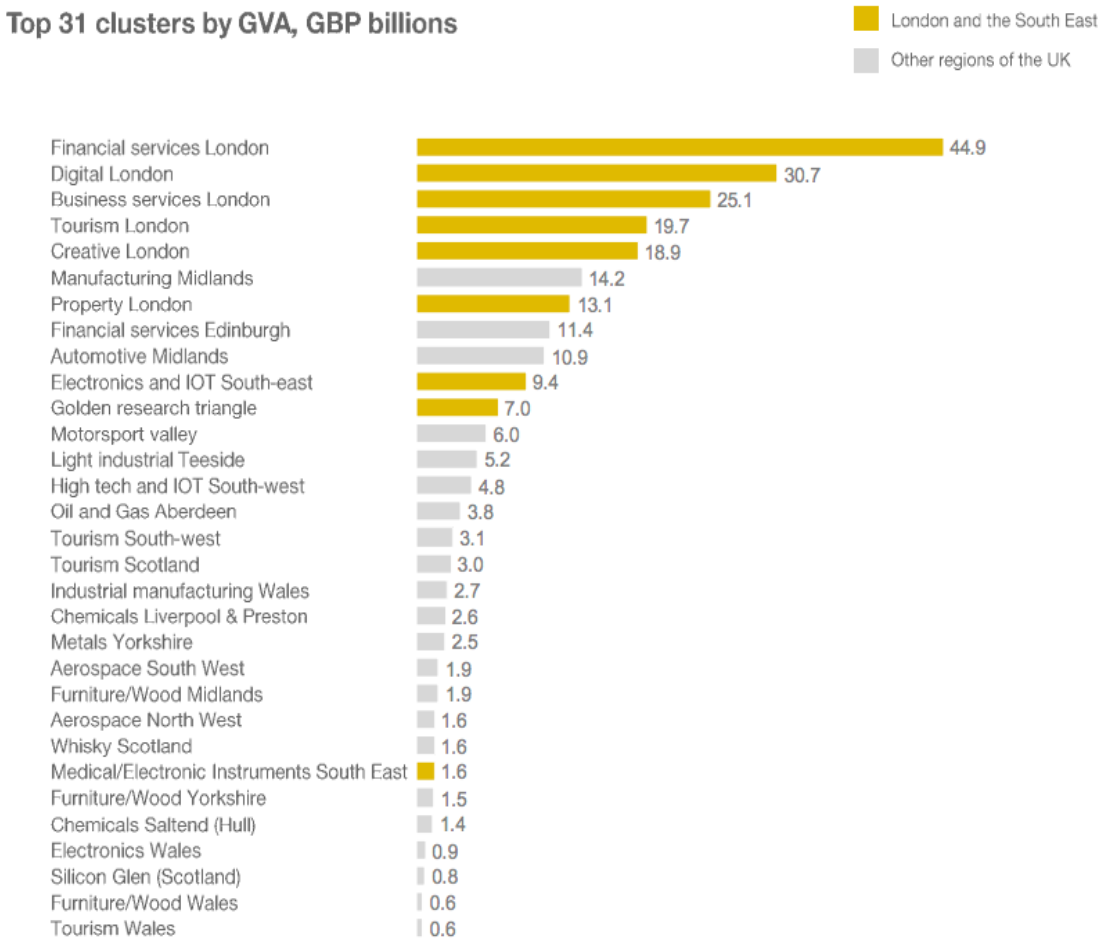


Figure A: Global Competitiveness Index of the United Kingdom, 2018

Pillar 6: Skills 0-100 (best)	-	**80.2** ↑	**13**
6.01 Mean years of schooling Years	12.7	84.6 =	14
6.02 Extent of staff training 1-7 (best)	4.8	63.4 ↑	24
6.03 Quality of vocational training 1-7 (best)	4.7	62.0 ↑	28
6.04 Skillset of graduates 1-7 (best)	4.8	63.7 ↑	28
6.05 Digital skills among population 1-7 (best)	4.9	65.5 ↑	32
6.06 Ease of finding skilled employees 1-7 (best)	5.2	69.2 ↑	8
6.07 School life expectancy Years	17.4	96.9 =	12
6.08 Critical thinking in teaching 1-7 (best)	5.1	67.6 ↑	10
6.09 Pupil-to-teacher ratio in primary education Ratio	17.4	81.5 =	59

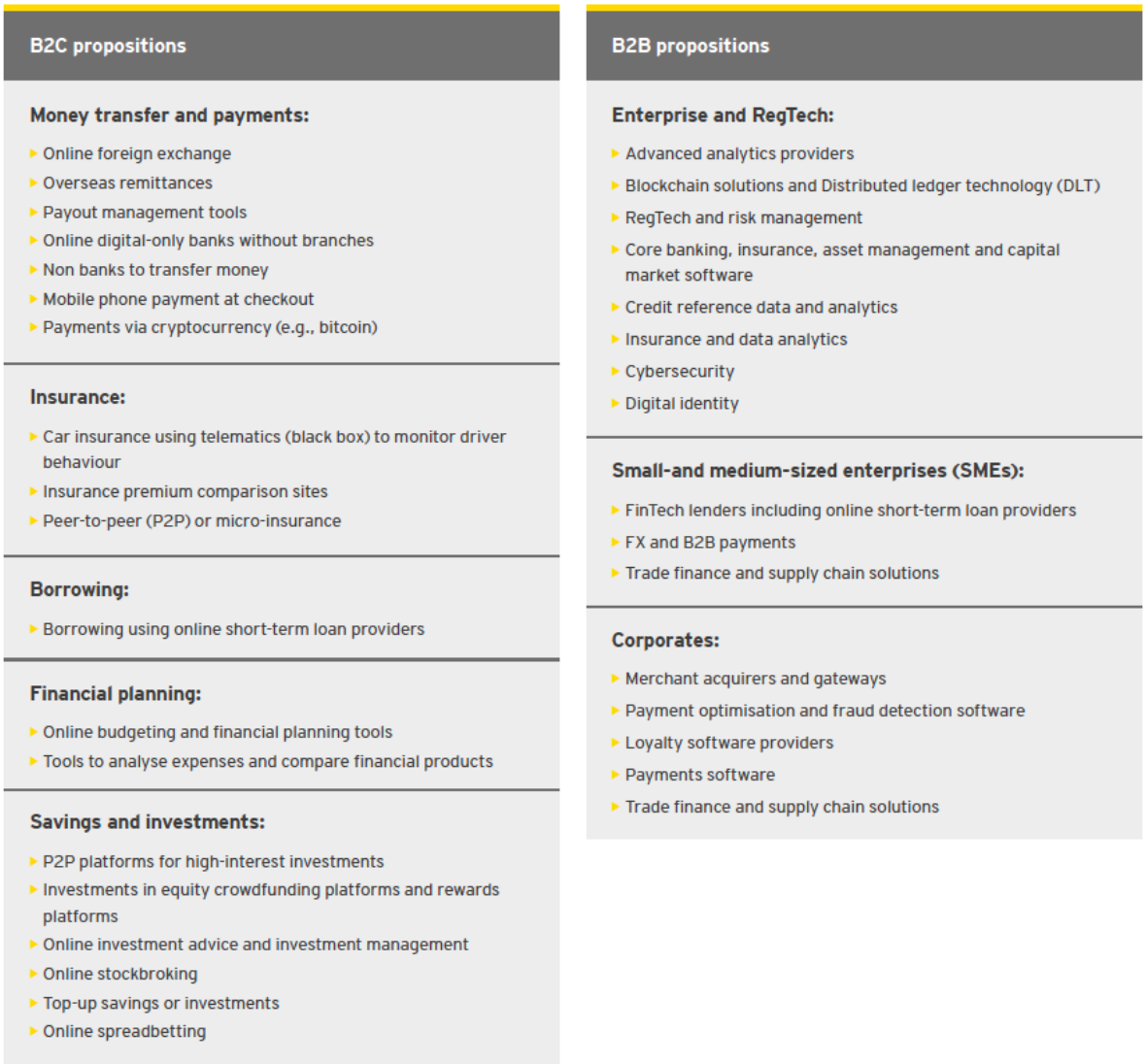
Figure B: Detailed statistics of skills - first column: value; Second column: score; Third column: rank
Source: Schwab (2018)

Appendix 4. Top 31 clusters by GVA in the UK



Source: McKinsey & Company (2014). "Industrial Revolutions: Capturing the Growth Potential"

Appendix 5. Scope of FinTech sector



Source: HM Treasury, EY and Innovate Finance (2017)

Appendix 6. Talent availability in the FinTech cluster

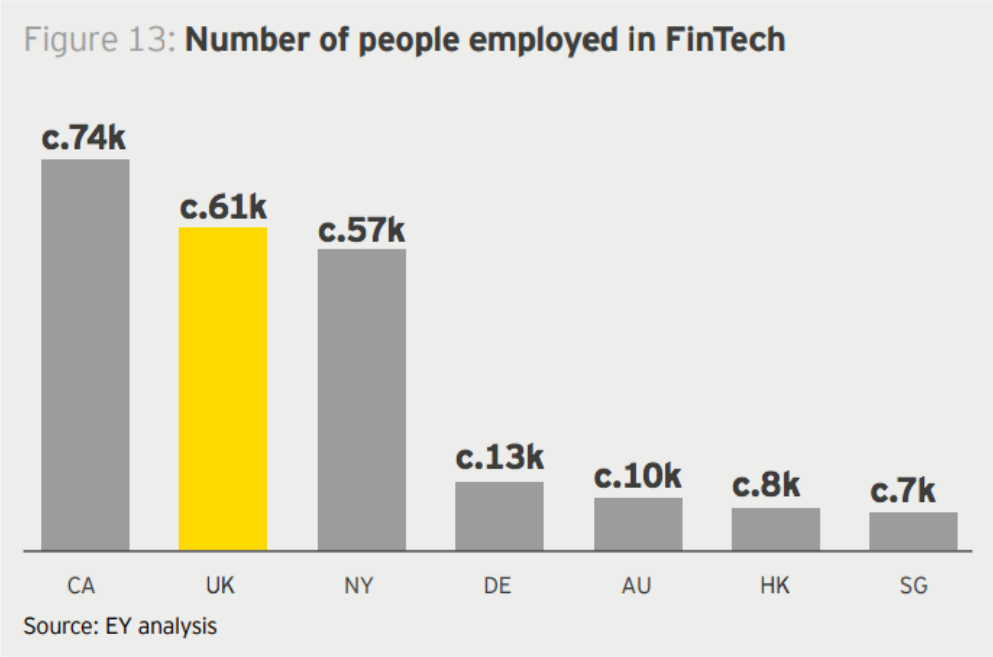


Figure A

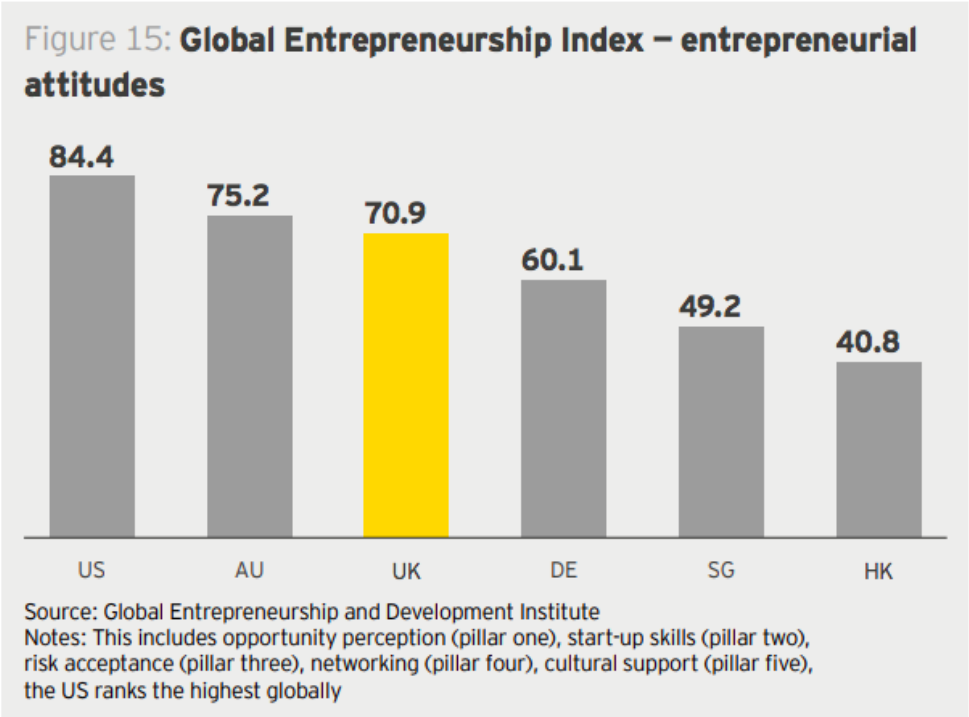


Figure B
Source: Ernst & Young LLP. (2016)