



Circular 331 Job Creation Impact

A CASE STUDY OF THE UK LEBANON TECH HUB

Foreword

by the Rt Hon. Lord Reid of Cardowan
Executive Chairman, ISRS @ UCL

Digital networking is rapidly giving rise to a new age of commerce, with transformational shifts that are no less profound than those of the Industrial Revolution. As goods, services, people, organisations, capital and information become globally interconnected, emergent growth opportunities are increasingly limited only by imagination and ingenuity to build new business models that combine local and remote resources in innovative ways. Yet the keys to participation lie as ever in sufficient concentrations of education, entrepreneurship and capital.

Charting the dramatic rise of a new wave of knowledge-based companies that now dominate the apex of the Fortune 500, it is no coincidence that most have emerged from the great technology clusters of the world. These have served as engines of innovation, providing deep pools of the essential ingredients for success: universities and research institutes generating advanced technologies; motivated individuals with high levels of technical and commercial expertise; and a virtuous cycle of risk capital being reinvested by previously successful entrepreneurs.

The benefits to economies are substantial: Technology generates scalable products and services with large, long-term job multiplier and wealth creation effects; education empowers people with the knowledge and skills to innovate, not just once but many times; strong entrepreneurship generates successful business structures around the conversion of innovation to commerce; and, importantly, capital returned from investments is recycled to accelerate further growth.

However, these effects do not emerge quickly, as the network effect takes time to gather momentum. Thus they are highly dependent upon the foresight and patience of both the public and private sector to commit the necessary long-term resources and stay the course. The Banque du Liban's Circular 331 programme is an exemplar -- catalysing funding for innovative companies and generating a critical mass of the necessary surrounding infrastructure.

Lebanon's unique combination as a geopolitical nexus with an innately entrepreneurial culture, offers it advantages in the new digital economy. In a period of what we all surely hope will be long term stability, with patience and persistence of all of the players involved, we can expect to see this having huge long term positive impact upon the recovery, renewal and transformation of Lebanon's economy.

Rt Hon. Lord Reid of Cardowan

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About the UK Lebanon Tech Hub

The UK Lebanon Tech Hub (UKLTH) is a private-sector joint initiative by Banque du Liban, Lebanon's Central Bank, and the UK government through the British Embassy in Beirut. It aims to support the growth of the knowledge economy in Lebanon through the development of tech companies in the country and create opportunities for the brightest Lebanese talent to access international markets.

About the Institute for Strategy, Resilience & Security (ISRS) at UCL

Over the past decade the Institute for Strategy Resilience & Security (ISRS) at UCL has served as a pioneer and forum for next generation thinking. Founded by the Rt Hon. Lord Reid of Cardowan, ISRS provides analysis and assessment of the major issues of resilience with respect to national and global infrastructure and the ability of governments, regulators and businesses to respond to them. The Institute advises industry and the public sector on the persistent challenges to their agility, stamina and capacity in strategic decision making, so as to better face existential threats, risks, and disruptive innovation that are not addressed by conventional strategy and forecasting.

Acknowledgments

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Cover Image

The Temple of Baachus at Ba'albek, Bekaa Valley, Lebanon, one of the finest examples of Roman architecture from antiquity and site of the largest megaliths found anywhere. How these were quarried and moved remains unknown.

Circular 331 Job Creation Impact

A CASE STUDY OF THE UK LEBANON TECH HUB

ABOUT THIS STUDY

The Institute for Strategy, Resilience and Security was commissioned by the UK Lebanon Tech Hub (UKLTH) in November 2017, to follow the progress of companies that it had supported. This study reports our independent early assessment of the direct and indirect impact of UKLTH on these companies and also offer insights into the job creation effects of the Banque du Liban's (BDL) Circular 331 initiative, which was launched in 2013 to provide financial stimulus for the funding of early stage companies.

Quantitative, empirical and supporting anecdotal information data were gathered from introductory interviews and web-form based questionnaires with the founders, CEOs and senior leadership of 49 companies that had participated in the UK Lebanon Tech Hub's Accelerator and Nucleus programmes during the period 2015-2017. In addition, feedback was collected on opportunities to improve the current approaches being adopted by both the Lebanese Central Bank and UK Lebanon Tech Hub.

Microsoft Excel, IBM's SPSS and AtlasTi software were used for data analysis.

GLOSSARY

BC	Basic Circular of the Banque du Liban
BDD	Beirut Digital District
BDL	Banque du Liban, the Lebanese Central Bank.
CC	Central Council Banque du Liban
Circular 331	Intermediate Circular No 331 of the Banque du Liban, issued Aug 22, 2013 containing Intermediate Decision No 11512 which amends, by the addition of Article 8 bis, Basic Decision No 6116 of March 7, 1996 (Facilities that may be granted by Banque du Liban to Banks and Financial Institutions) attached to Basic Circular No 23.
Direct Employment	Full or part-time jobs occurring directly within a company
IMF	International Monetary Fund
Indirect Employment	Employment changes in the Company's suppliers and distributors
Induced Employment	Jobs resulting from direct and indirect employees spending more and increasing consumption from the additional income they receive in the local area.
Knowledge Economy	An economy where a high portion of economic growth and employment is a result of knowledge-intensive activities - creating, collecting, evaluating, analysing, synthesising and trading knowledge.
LBP	Lebanese Pound
Local Multiplier Effect	Describes the impact of knock-on effects that increase employment, or generate additional consumption of goods and services, within a defined geographic area. It connects the initial effect of a change in demand, to the total effect of that change on the regional economy. The total effect reported here is in terms of jobs.
Net Job Creation	Total effect minus job losses in competitors.
Secondary effects	Job creation through benefits of improved access to infrastructure, such as access to more reliable power allowing enterprises to produce more, and more efficiently.
Total Effect	The sum of direct, indirect and induced effects.
Tradable Sector	A good or service that can be sold outside of the metropolitan area in which it is produced.
Type 1 Multiplier	The sum of direct plus indirect effects, divided by direct effects.
Type 2 Multiplier	The sum of direct, indirect and induced effects, divided by direct effects.
UKLTH	Tech Hub SAL, company number 1021448, trading as the UK Lebanon Tech Hub.
Value Added Jobs	Economic benefit through higher wages/salaries, corporate profits and taxes.

EXECUTIVE SUMMARY

Faced with the cumulative burden of 37% youth unemployment and the highest proportion of refugees per capita in the world, Lebanon is under considerable pressure to create jobs.

In 2013, the Banque du Liban (BDL), Lebanon's Central Bank, launched the Circular 331 initiative to provide a stimulus for the growth of Lebanon's knowledge economy. It offered the country's traditionally conservative lending banks a seven-year interest-free facility guaranteeing 75% of investments in venture funds, early-stage companies and supporting accelerator/incubator infrastructure, up to a limit of 4% of the bank's capital. BDL reports that about US\$650m is now available, of which investment of US\$368m have been approved, US\$203m executed and \$132m are awaiting approval.

The UK Lebanon Tech Hub (UKLTH), was launched in April 2015 as a joint initiative of the Banque du Liban and the UK government's Department for International Trade. Although very early to assess job creation impact, the UKLTH has provided assistance to 88 companies over a three-year period, representing the single largest cohort of Circular 331 supported companies. Of 49 companies that responded to our survey about three-quarters were based in Lebanon, and half were incorporated from 2015 onwards.

Overall feedback from accelerated companies on their experiences with UKLTH was very positive, however of 78% that were eligible for Circular 331 funding, two thirds have yet to receive funding from the programme. Out of a total of US\$48.8 million of capital raised by surveyed companies, only US\$9.7 million was attributable to Circular 331.

We have estimated that 615 direct jobs and 1344 indirect jobs had been created since involvement with UKLTH, with an overall impact rating of UKLTH on company growth of about 50%. Highest areas impacts of UKLTH were as a catalyst for formation, in business direction, strategy, business development and networking. Opportunities for greater impact

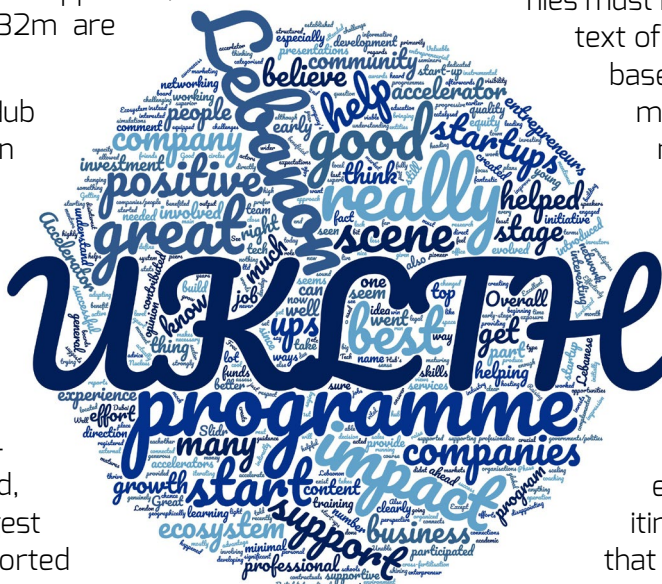
were in financing, technical support and staff hiring/retention.

While general awareness of Circular 331 was good, less than one in ten respondents was aware of the level of funding or of the amounts disbursed. Opinion of the programme are thus rarely grounded in fact, a knowledge gap that could easily be filled. We recommend setting up and maintaining a public portal, which publishes both meta-data that BDL holds and accumulates aggregate survey meta-data annually from all Circular 331 companies, as a mandatory condition of receiving funding.

Assessment of return on investment for job creation stimulus of knowledge-based companies must be grounded within the context of an appropriate expectation baseline. In the UK and USA, no more than half of all businesses will survive 5 years, and only one-third will survive 10 years, with venture-funded companies exhibiting an overall 75% failure rate. Equally, the world's most successful knowledge economy companies took many years to emerge as leaders, exhibiting low initial growth rates that belied their ultimate ascendancy. Building future multi-billion dollar Lebanese companies with large potential job multiplier and wealth creation effects, relies on the stochastic emergence and slow ramp up of highly scalable and internationally competitive products or services from a broad portfolio of funded companies.

With no reliable ex-ante predictors of success, the key therefore is staying the course with the Circular 331 programme through continuing to stimulate creative inception, allowing sufficient incubation time for development, ensuring sufficient early-stage patient capital and pushing company survival rates up through support of strategy and execution.

Inset: Word cloud generated from frequency analysis of qualitative feedback from respondents on their experiences with UKLTH.



1

Ensure long-term commitment to the funding programme

As measured by opinion and quantitatively observed within the entrepreneurial community as sampled by this study, the Circular 331 programme and UKLTH are having a strongly beneficial and recognised impact on Lebanon's nascent knowledge economy. Incubation time must be allowed for those successful technology companies that have generated truly scalable and internationally tradable products or services with large, long term job multiplier and wealth creation effects to emerge.

2

Reassess restrictions of domestic use of Circular 331 funds

The limitation that Circular 331 funds may be spent only within Lebanon should be reconsidered. A common concern many start-ups expressed around Circular 331 funding is the restriction it imposes on their overseas growth. Therein lies a conundrum: Circular 331 has rightly been created in such a way as to ensure that the benefits are felt in Lebanon and that capital flow is recycled with the domestic value chain.

However the issue that companies face is that to succeed through growing revenue and footprint internationally, they must have access to the wider global economy - the Lebanese market is only large enough to take most companies' growth so far. At this point, international business development, marketing and sales costs are an essential use of funds.

Thus while creating a funding platform restricting companies to stay in Lebanon may seem the most natural reaction to keep jobs, money and talent in the country, a side effect may be to disincentivise companies from accepting Circular 331 funding, which is perceived as a hindrance to be avoided, rather than a benefit.

3

Critically assess the flow through of Circular 331 funds to start up companies

With two-thirds of companies surveyed appearing not to have received any Circular 331 funding, introduction of programme appears not to have addressed the significant gap in funding that exists for early stage companies. We believe that further boosting availability of seed funding for ventures is essential. To quantify this need and understand if our study cohort is representative, we recommend a more comprehensive, critical assessment of the flow through of capital from funds to companies in Lebanon to understand better how much capital is actually reaching the start-up community and if it being held up at the venture fund level.

4

Create a portal that tracks and publishes comprehensive, transparent meta-data

We recommend setting up and maintaining a portal, which publishes both meta-data that the BDL holds and accumulates aggregate survey meta-data annually from all Circular 331 companies, as a mandatory condition for funding.

This study establishes a baseline but further longitudinal study will be needed to track and study impact trends as they emerge from the long-term effect of creation of Lebanon's knowledge economy ecosystem.

5

Consider ways that Circular 331 funds could be used to attract international funding

To help internationalise the startups it has invested in, BDL could also consider the creation of matching syndicated investment facilities. This would serve both to attract international funds and also potentially act as a mechanism whereby Circular 331 funds could still be deployed domestically, yet assist companies to raise funds that are unrestricted.

6

Increase focus on capital raising assistance to accelerated companies

Assisting accelerated companies with capital raising is the key opportunity for the UKLTH, through process management for faster and improved access to the Circular 331 programme, where companies are eligible, and through managing and driving the capital raising process with their accelerated companies.

In part this gap relates to the apparent insufficiency of seed funds in Lebanon, as there are simply too few domestic parties to pitch to. However stronger outreach and engagement of international venture capital firms and angels should be effected.

7

Combine accelerator activities with increased seed funding

The effects of the UKLTH accelerator would be further strengthened by the addition of a follow on seed fund, for which select participants could qualify.

Precedence for this exists, an example being London based Seedcamp which has transformed from an accelerator with fixed cohorts to taking in new companies on a rolling basis and writing larger cheques -- £100,000 at pre-seed stage and anchor funding of £250,000 in order to bring in other angel investors.



Introduction

The UK Lebanon Tech Hub

Genesis and Mission

The Banque du Liban's (BDL) Circular 331 initiative, which was launched in August 2013 to provide financial stimulus for the funding of early stage knowledge-based companies, has dramatically changed the Lebanese startup scene.

One of the recipients of the new wave of equity investments catalysed by this program has been the UK Lebanon Tech Hub (UKLTH), which was launched in April 2015 as a joint initiative of the Banque du Liban (BDL), Lebanon's Central Bank, and the UK government's Department for International Trade (formerly the Department for Trade and Investment).

UKLTH is located in the Beirut Digital District (BDD), in the Bachoura district of the center of Beirut City, a private and public sector partnership led by the Ministry of Telecommunications, in collaboration with Berytech and real estate development firm ZRE.

Its primary mission has been the creation of jobs in Lebanon through acting as an accelerator and mentoring hub for Lebanese knowledge economy startups, with a stated goal of the creation of 25,000 jobs and combined enterprise value of US\$1Bn by 2025.

Programmes

Since its inception, the UKLTH has held three programmes during 2015 - 2017, providing acceleration and scale-up assistance to a total of 77 start-up companies and an International Research Centre that focuses on transferring knowledge from academia to industry. The UKLTH's annual acceleration cycles has comprised a mix of workshops, mentoring and investment matching, with its year 2 programme followed by an additional 3 months of international acceleration, opening the doors to new markets.

Aims of this Study

In November 2017, UKLTH commissioned the Institute for Strategy, Resilience and Security to independently assess its job creation impact through following the progress of companies that it had supported. UKLTH is the largest of the accelerators/incubators under the Circular 331 initiative and therefore provides the biggest coherent sample of companies to survey.

Through interviews and questionnaires with the founders, CEOs and senior leadership of 49 companies that had participated in the UKLTH's Accelerator and Nucleus programmes during the period 2015-2017, ISRS has gathered quantitative, empirical and supporting anecdotal data, together with feedback on opportunities to improve the current approaches of UKLTH and the Circular 331 initiative.

"We will put Lebanon's entrepreneurs on the map, in the heart of the region's tech industry, drawing on one of Lebanon's most important sources of resilience, dynamism and hope. The real superpower, the Lebanese spirit."

Tom Fletcher CMG
UK Ambassador to Lebanon
2011-2015

"To promote the creation of quality jobs and increase employment levels, there are a number of useful policy changes that can be made. Creating an encouraging and efficient business environment, reforming social security and rethinking training to help workers get skills they need for high productivity jobs are key areas of reform underscored by the report."

David Robalino
Labor Team Leader,
World Bank

Co-author of the 2013 World Bank Report entitled: "Good Jobs Needed: The Role of Macro, Investment, Labor, Education, and Social Protection Policies" in cooperation with the Government of Lebanon

Our study queried both direct and indirect job creation in each company prior to their involvement in the UKLTH support programme, through estimates of the number of full-time equivalents before and after involvement and views on the extent to which UKLTH may have contributed to growth of the company.

Challenges in Lebanon

Decades of Instability

Lebanon distinguished cultural identity and rich diversity has been shaped as a unique geostrategic and geopolitical nexus at the crossroads of the Mediterranean Basin and the Arabian hinterland. Amid relative calm and prosperity, Lebanon was known as the "Switzerland of the East" and its capital, Beirut, as "the Paris of the Middle East". The latter part of the 20th century however saw the start of a period of near continuous political instability. In 1975 simmering sectarian tensions erupted into a full-scale civil war, lasting until 1990, concurrent with Syrian military occupation from 1976 until 2005.

Regional conflict again erupted in 2011 with the Syrian War. An estimated 1.5 million displaced Syrians have fled the violence of the war, half of whom are women and children, along with 31,502 Palestine Refugees from Syria adding to a pre-existing population of 277,985 Palestine Refugees in Lebanon. An estimated 35,000 Lebanese have also returned from Syria since 2010.

National Burden

The refugee crisis challenges not only Lebanon's social and economic infrastructure but also introduces a set of new tensions which threaten to undermine Lebanon's delicate social and political balance of power while amplifying inter Lebanese divisions.

It is estimated that refugees now account for 30% of Lebanon's population — the highest concentration per capita anywhere and as a result of this influx, Lebanon ranks among the most densely occupied countries in the world with a total land area of 10,452 km² and 587 people per sq. km of land area.

According to the Lebanon Crisis Response Plan 2017-2020 issued by the Government of Lebanon and the United Nations in January 2017, the national burden now includes up to 3.3 million people in need out of a total population of 5.9 million, including 1.5 million vulnerable Lebanese.

Moreover according to an annual vulnerability survey carried out by UNHCR, the UN Refugee Agency, the share of Syrian refugee households living in extreme poverty in Lebanon (income of less than US\$2.87 per person per day) is increasing and stands at 58% in 2017, up from 53% in 2016.

Public Services and Infrastructure

Instability has also placed a substantial ongoing burden on Lebanon's economy and infrastructure. Demand for public services and infrastructure greatly exceeds capacity to meet needs with the public health sector accumulating debt as Syrian patients are unable to foot their bills.

Lebanon today ranks #127 globally in fixed broadband speeds, but is making great progress in advancing mobile broadband, where it now ranks #30, above the USA (#44) and UK (#45) in average speeds, though costs may be prohibitive as a main means of ensuring connectivity.

Effects Upon Employment

As of late 2017, it was reported that Lebanon is plagued by one of the worst unemployment crises in its history, with the overall unemployment rate in Lebanon at 25%. Lebanon has a relatively young population, where two fifths of the population are under 25 and only one in seven is older than 55, who are bearing the brunt of the country's economic woes - unemployment among those under 25 is 37%.

This has been exacerbated further by a substantial "brain drain" of university-educated young people leaving the country to seek better paid and more stable working conditions abroad.

In 2013, the World Bank suggested that even without the influx of Syrian refugees the Lebanese economy would need to create 23,000 jobs per year, a six-fold increase, over the following decade, jobs just to absorb the growing number of new entrants.

In the face of these challenges and limited resources, the question arises how best to direct resources to provide gainful employment.

Banque du Liban Circular 331

Circular 331 Funding Mechanism

Intermediate Circular No 331 of the Banque du Liban, was issued abruptly on August 22, 2013. It contained Intermediate Decision No 11512 which amends, by the addition of Article 8 bis, Basic Decision No 6116 of March 7, 1996 (Facilities that may be granted by Banque du Liban to Banks and Financial Institutions) attached to Basic Circular No 23.

Circular 331, as it has come to be known, grants a seven-year interest-free facility to banks investing in BDL sanctioned start-ups, incubators, accelerators and venture capital funds, which must be invested in Lebanese Treasury bills (84 month rate of 7.08% at the time of publication) or other securities approved by the BDL. Supported investments must be Lebanese joint-stock knowledge economy companies supporting creative intel-

"A knowledge economy is an economy in which information is invested to create new and improved products and services with a high added value that constitutes a main component of the production process and generation of wealth.

The knowledge economy plays a key role in driving economic growth, creating job opportunities, increasing GDP per capita and ensuring sustainable development."

Riad Salamé
Governor, Banque du Liban

lectual skills with an enriching impact on the economic and social growth and on job creation in the Lebanese market. Circular 331 facilities are also not to be used outside Lebanon, except for the coverage of specific expenses.

Upon application, and subject to initial and annual compliance review by the BDL, the size of the granted facility is determined such that the net yield on the facilities invested by the benefiting bank is equivalent to 75% of the value of its participation in the Company, providing the equivalent of 75% guarantee coverage over the lifetime of the investment. Total investment by a bank was limited initially to 3% but has subsequently been amended by Circular 419/2016 to 4% of the bank's capital, and participation in a single Company may not exceed 10% of the 3%, except for venture capital companies whose share can reach 20%. In circular no. 416/2016, administrative fees were capped at a maximum of 2.5% of the invested amounts to limit costs.

BDL and the banks each take 50% of proceeds realized through the sale of the Company's shares or distribution of any dividends by the Company.

A further amendment, 408, in November 2015, limits the equity a 331-funded accelerator can take in a startup to 5%, and also provides for the BDL to participate in profits if a successful exit is achieved.

Lebanese banks have historically acted as conservative collateralised lenders and have lacked teams familiar with the evaluation, allocation and management of equity capital. Transfer of risk and management overhead to professional venture vehicles staffed by investors with skill sets and appropriate experience in investment both reduces cost of carry and provides the necessary diversification of risk that a broader portfolio grants. While in theory the banks may participate directly in start-ups, it is unsurprising that in practice most of the available capital has been channelled towards venture funds.

Fund Allocation & Disbursement

With no clear and unequivocal official figures available anywhere as to the amount of money that has actually been invested to date, considerable confusion has been sown in the media through misreporting and inaccuracy in describing the precise nature of Circular 331 and the sums involved.

The BDL itself has referred to an "initial platform" and "potential" of US\$400 million "available for the ecosystem", "pushed to...US\$500 million" in 2016 and now reports this figure to be US\$650 million in November 2017. This amount in fact refers to the level of capital that is in theory deployable by banks, were they to take full advantage of Circular 331 as a fraction of their capital.

A Financial Sector Assessment of Lebanon published in De-

“The purpose of Circular 331 was to kickstart the knowledge economy sector in Lebanon. We believe that the digital economy is going to play a major role worldwide and if Lebanon fails to develop the sector it will hurt our economy in future. We also believe that this sector has the potential to create significant employment opportunities, especially for young Lebanese. We know that Lebanon has the human resources necessary to succeed in this sector.”

Riad Salamé
Governor, Banque du Liban

cember 2016 by the IMF and World Bank reported that of the US\$400 million available, US\$243 million had already been committed and around US\$60 million has been disbursed.

A later study by the Fletcher School in February 2017 reported that a total of US\$46.5 million was estimated to have been invested in startups. This study estimates that of US\$500 million available at the end of 2015, US\$225 million had been committed by banks of which USD \$197.3 million had been invested in venture funds, with only US\$5 million invested directly in startups. It would appear that the majority has been allocated to the larger Lebanese VC funds such as Berytech Fund II, Division 1, Middle East Venture Partners (MEVP) Impact Fund and Leap Ventures. US\$22.5 million has been invested in support organisations, including Bootcamp by AltCity, Smart ESA, Speed@BDD, Torch and the UK Lebanon Tech Hub.

According to Executive Magazine, in the six years to 2013, three venture funds raised US\$23.5 million, of which US\$17 million was deployed, while in the three years following 2013, nine venture funds raised around \$384 million, of which \$116 million was deployed, including three accelerators and 123 start-ups accelerated.

Most recently, as detailed in the Financial Times in November 2017, Marianne Hoayek, central bank director in charge of the Circular 331 programme reported approved investments of US\$368 million so far, of which US\$203 million have been executed and investments worth a further US\$132 million are awaiting approval.

This lack of clarity means that it is all too common for media sources to conflate the size of the facility made available by BDL with the smaller sub-fraction actually disbursed to companies by venture funds. This has led to a perceptual gap with many wondering “where has the money gone” and an expectation of levels of return commensurate with investment of the full advertised amount.

Expectations for Survival and Growth

Successful creation of high-growth, early-stage businesses

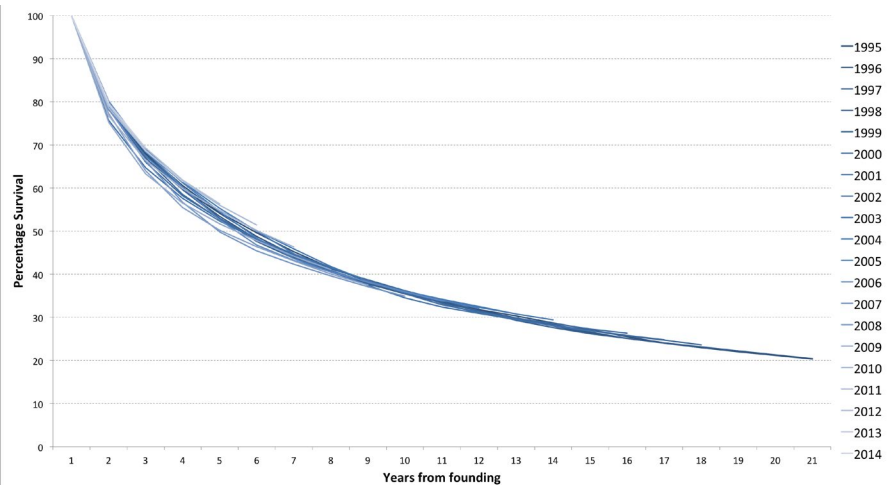
Before considering positive or negative effects on business or job creation, it is important to understand normal baselines for business creation, incubation, growth trajectory and survival.

In Lebanon as in other countries, micro, small and medium size (“SME” or “MSME”) companies make up the majority of all businesses, estimated at 93 to 95% – 225,000 MSMEs, according to the definition adopted by the Lebanese Ministry of Economy and Trade in 2014 which combines both the number of employees within the company and the annual turnover.

Survival rates of US businesses

By year started and number of years since founding, 1994-2015

Source: US Bureau of Labor Statistics



- **Micro Enterprise:** Less than US\$300,000 and less than 10 employees
- **Small Enterprise:** Less than US\$3 million and less than 50 employees
- **Medium Enterprise:** Less than US\$30 million and less than 100 employees

For comparison, in the United States, small businesses (defined as businesses with fewer than 500 employees) account for 99.7% of all business and 49.2% of private-sector jobs, though importantly 64% of net new private-sector jobs.

A similar picture exists in the UK, where SMEs, defined as businesses with less than 250 employees account for 99.9% of all businesses (micro, 96%) and 60% of all UK employment.

Overall business birth rate varies in a band of 10-14% annually, while except during the 2007-2008 global financial crisis, business death rate has been slightly lower, in a band of 9-12%, with business births outnumbering business deaths by 87,000 in 2016, up 31,000 on the previous year.

The company startup is sometimes portrayed as a relatively new phenomenon or a trend that has increased. In actual fact we have witnessed a decline. According to the Census Bureau data reported by the Kauffman Foundation and the Brookings Institution, the number of new companies as a share of all US businesses has fallen 44% from 1978 to the present.

A large number of start-up businesses are created on a continual basis, with only a small proportion receiving the assistance of accelerator programmes, incubators and external funding,

In both the US and UK, survival statistics are similar and demonstrate remarkable consistency over more than two decades of measurement, with less than 5% variance. The longer a company has been in business, the more likely it is to stay in business. Roughly two-thirds of business survive two years in business, half of all businesses will survive 5 years, and one-third will

survive 10 years. After 20 years, only a fifth will be in business.

Typical Growth Trajectories of Tech Startups

Technology companies are built on *applied* knowledge, creating products or services that use technology as a force multiplier on human effort. Yet barriers to adoption generally create a substantial lag in new tech replacing the old, thus high growth rates take time to emerge and job creation impact in the knowledge economy cannot be driven linearly with investment. Incubation time must be allowed for those successful technology companies that have generated truly scalable products or services with large, long term job multiplier and wealth creation effects to emerge.

Research by CB Insights analysed a cohort of technology companies that raised seed funding in 2009 and 2010, and followed them all the way through to the end of 2015. Of 1027 seed-backed companies analysed, only 40% were able to raise a second round of funding and 791 never achieved an investor exit, becoming either self-sustaining or the “living dead”. Less than 1% ultimately becoming a “unicorn” (revenue >\$1bn). Sufficient portfolio scale is therefore necessary if the Circular 331 programme is to have demonstrable results.

Examining the growth rates of the most successful “unicorn” e-commerce companies shows that they invariably had 5-10 year incubation periods where direct employment growth rates were slow. Thus when judging the return on investment for job creation in high technology, early-stage companies measurement it is important to baseline expectations against what may be reasonably achieved in the short term. Initial compound annual growth rates for even the most successful companies did not reflect their ultimate success. Furthermore, only a small percentage of surviving SMEs may turn into high-growth firms; but these high-growth firms make important contributions to job creation and productivity growth.

Incubators and Accelerators Programmes

According to statistics from the International Business Innovation Association (InBIA), there are approximately 7,000 business incubators and accelerators worldwide, with over 90% being non-profit and focused on incubator programs for community economic development. As these are businesses, competing in their own right for funding, deal-flow and profitable opportunities, each offers what it claims to be unique and attractive features to entrepreneurs. Despite considerable heterogeneity, some broad common features differentiate accelerators and incubators.

Incubators are typically physical spaces, available on relatively flexible and often subsidised terms, that provide additional services, generally including training, access to networks and

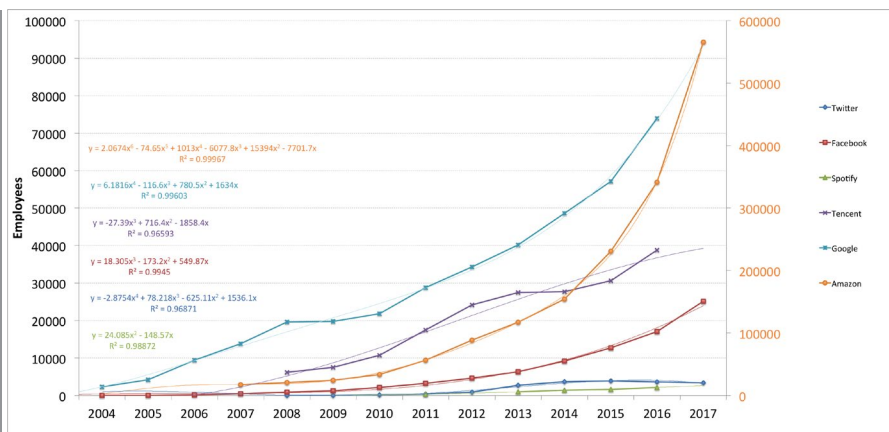
technology

noun

- *The application of scientific knowledge for practical purposes, especially in industry.*
- *Machinery and equipment developed from the application of scientific knowledge.*
- *The branch of knowledge dealing with engineering or applied sciences.*

Headcount growth rates of the world's most successful knowledge economy companies

Source: Company Annual Reports



specialist equipment. Incubators typically charge fees to residents, rather than relying on the future value of equity in the businesses they support. Admission is generally on ad-hoc basis and although there may be some selectivity, provided that companies can pay the requisite fees they may be accepted. Residency may be of a variable length, typically 1-5 years, but often with an upper limit.

Accelerators typically provide seed funding and mentoring services to nascent firms in exchange for equity in the company. In effect the accelerator is acting as a seed-stage fund, with contestants are rigorously selected from a pool of candidates, based on a view of their likelihood to succeed. In addition to small amounts of cash (typically US\$20-\$50,000) companies are offered intensive, boot-camp training comparable to entrepreneurship classes at a collegiate level. Additionally office space, guidance, mentorship, networking, management services, knowledge, and access to expertise may be offered in a package, but this is generally time-limited from 1-6 months. The goal is “fast-test” validation and honing of entrepreneurial ideas, often with assistance to pitch the concept to investors.

Accelerator	Equity %	Funding	In-kind	Other	Length
Capital Factory Austin, TX	5%	\$20,000	Yes		3 months
DreamIT Ventures Philadelphia, PA	Option to give 6-8%	\$50,000 convertible		Right to invest up to \$500k in next round at 20% discount	3.5 months
LaunchBox Digital	4-8%	\$15,000 - \$30,000			3 months
TechStars six US cities and London	6%	£12.5k and	Office space	Optional £60k convertible debt note	3 months
Y Combinator Mountain View, CA	7%	Previously \$14-20k, now \$120k	Office space		3 months

The leading “self-recognised” causes of startup business failure

are “lack of market need” and “ran out of cash”. However objective studies view these failures as primarily due to incompetence, lack of experience and lack of management expertise.

This gap arises because matching a product to a “must have” market need is a hard task, usually requiring considerable feedback and iteration. Limited resources and a finite time to execute a competitive idea mean that choosing the correct path down which to advance a company is of critical importance. Incubators and accelerators provide a hot house environment and formality for the pressure-testing of ideas that entrepreneurs may never achieve alone.

In the UK, of those programmes able to quantify the number of start-ups still operating, the survival rate for start-ups reached almost 92%, compared to a two-year survival rate of 75.6% for all small businesses.

Network Effects of Hubs and Recycling of Human Capital

The roots of Silicon Valley can be traced back to Stanford university and its relationship with the intelligence community and military/industrial complex during the Cold War. Fairchild Semiconductor had a substantial founder effect on a wave of companies that followed it, leading to the birth of other giants such as Intel.

Similar founder effects have been observed on high tech clusters as far afield as Istanbul and Reykjavik. The key is that the growth of companies builds critical mass of specialist expertise and skilled human resources, without the overhead and time lag of relocation. Any subsequent business “failure” merely recycles them into successor companies.

Therefore investment into technology companies, even when they fail as individual companies should be seen as long-term investment into the technology ecosystem that ultimately benefits successors. Furthermore, failure offers valuable lessons learned, business insights and experience for the individuals involved, leading them to create more focused and resilient organisations in subsequent careers.

Potential for Network Leverage of the Lebanese Diaspora

An estimated 8-14 million Lebanese reside in other countries, compared with a domestic population of only 4 million. The diaspora owes its origins to an exodus process with its roots in the 1860 Lebanon conflict in Ottoman Syria, with the largest proportion residing in North and South America. Remittances from Lebanese abroad to family members within the country were estimated at US\$8.9 billion in 2014 and accounted for 18% of the country’s economy.

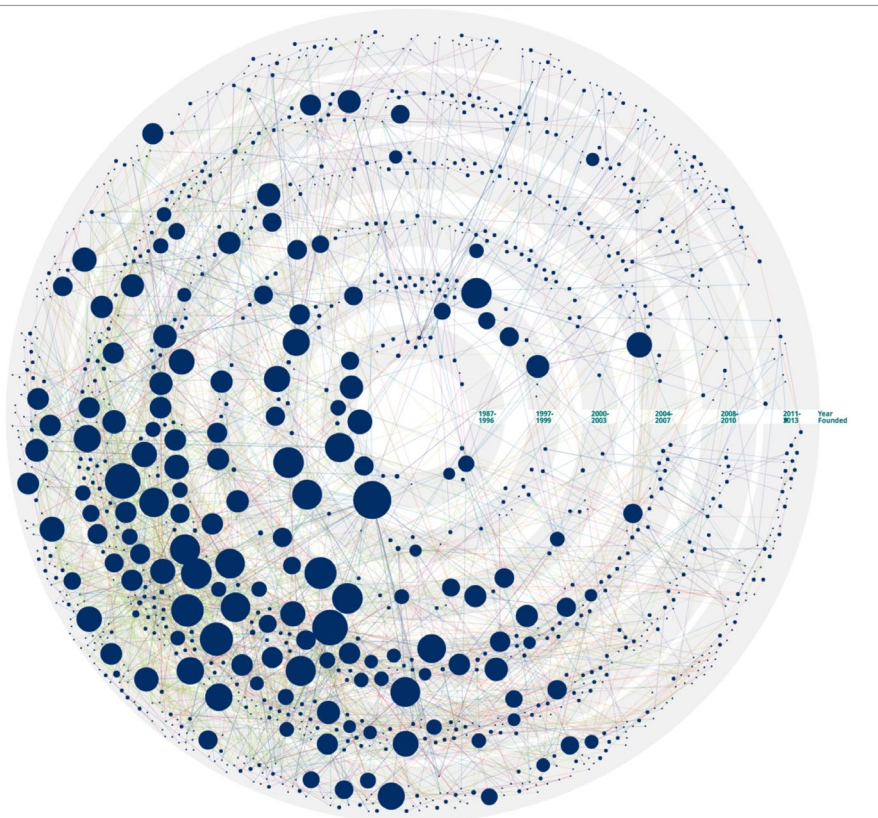
Although of the diaspora, only 1.2 million are Lebanese citizens, with the majority not having an automatic right of return under

Connections between technology firms

A study by Endeavor Insight⁴² examined links within New York's venture community, tracking mentorship, inspiration, investment, former employees and founders. This has shown clearly how over a decade connections between entities within the tech sector grew from 45 in 2003 to 2070 in 2013.

The study reports: "Connections between successful founders and new entrepreneurs are a critical driver of the sector's growth. Data from over 2,500 companies shows that top-performing tech entrepreneurs are more likely than their peers to start new companies, encourage their employees to do the same, mentor, angel invest, and inspire new entrepreneurs. In turn, new founders who are connected to or influenced by these top-performing founders are more likely to be successful than other local tech entrepreneurs."

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current law, this global body of people identifying themselves as ethnically Lebanese has the potential to be a large untapped resource for investment, skilled workers and cooperation.

Job Creation and Multiplier Effects

To properly account for the the job-creation effects of a particular economic stimulus or activity one must look beyond direct jobs generated to also consider: (a) indirect jobs, (b) induced jobs, (c) second-order "growth" effects, and (d) net job creation.

Such *multiplier effects*, as they are referred to, originate from the work of John Maynard Keynes, one of 20th Century's most important economists, who first described the concept in his seminal book, "The General Theory of Employment, Interest and Money". Multipliers naturally vary greatly depending on the regional and country context, economic maturity as well as industry or company specific factors such as capital intensity and business cycle stage.

Employment multipliers typically look at ratios between:

- **Direct Employment:** Full or part-time jobs occurring directly within a company.
- **Indirect Employment:** Employment changes in the Company's suppliers and distributors.
- **Induced Employment:** Jobs resulting from direct and indirect employees spending more and increasing consumption from the additional income they receive in the local area.

Earlier studies investigating the impact of job creation have argued for the benefits of focusing on the creation of skilled jobs, on the basis that for every skilled job directly created, demand for local goods and services generates more additional jobs in the local economy, than when unskilled jobs are created.

The more recent work of Enrico Moretti and others has modeled that increasing employment in a *tradable* industry, one that produce goods and services which may be exported from a region, (e.g. agriculture, manufacturing, IT and professional services), also results in an increase in local employment in the *non-tradable* sector, comprising goods and services that are not easily exported, such as construction, real estate, education and food service.

Moretti estimates that for every unskilled job created in the tradable sector, one additional job is created in the non-tradable sector. However for each *skilled* jobs created in the tradable sector, a much larger effect is observed, with 2.5 jobs being created in local goods and services. This effect arises because skilled workforces demand higher wages and as the number of people working increases in an area, the equilibrium wage and the demand for local goods and services increases. Since this demand can only be met locally (e.g. restaurants, cinemas, sports centres, beauty salons, clinics, etc), there is an increased need for more local employment – usually a large portion being low-skilled but also some high-skilled jobs.



In their recently published book, *The Second Machine Age*, Erik Brynjolfsson and Andrew McAfee rely on economist Paul Krugman to explain the connection between invention and growth:

Paul Krugman speaks for many, if not most, economists when he says, "Productivity isn't everything, but in the long run it's almost everything." Why? Because, he explains, "A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker"—in other words, the number of hours of labor it takes to produce everything, from automobiles to zippers, that we produce. Most countries don't have extensive mineral wealth or oil reserves, and thus can't get rich by exporting them. So the only viable way for societies to become wealthier—to improve the standard of living available to its people—is for their companies and workers to keep getting more output from the same number of inputs, in other words more goods and services from the same number of people. Innovation is how this productivity growth happens.

Methodology

Our Approach

Earlier Studies

In preparation for the survey and to identify key issues that ISRS would address, our team undertook a comprehensive literature review, identifying more than 100 relevant published reports, studies, press releases and other relevant documents. These were compiled into a library covering the following topics:

- Socioeconomic studies of Lebanon and the MENA region
- Reports on employment and refugee status in Lebanon
- Job multiplier effects
- Network and founder effects of technology hubs
- Performance of startup, high-growth and SME companies
- Methodologies of incubators and accelerators

A bibliography can be found at the end of this publication.

Survey Design

Of a total possible 76 companies, 88 people were initially contacted in 72 companies, of which 11 were considered no longer relevant and 3 companies were no longer active.

Of the 58 companies that could be included in the study, we were able to interview 53, with a remaining 5 not responding.

Initial orientation interviews were conducted with all participants to ensure understanding of the study, assess participating business and feasibility of data gathering, and orient participants to the study. Based on the initial interviews, a detailed questionnaire was developed to gather quantitative data.

Of those interviewed we received 49 completed study responses.

A full list of survey participants by company name is available at the end of this publication.

Survey Sampling

Questionnaires were set out as web-based forms to be completed electronically. Data were automatically collated, exported to a spreadsheet and cleaned. Data was further processed using SPSS, Atlas Ti and Microsoft Excel. Final results are presented in this report.

Survey Questions

Data points that were gathered:

- Name and contact details of participant
- Role of survey participant
- Company's main business
- Year of Incorporation

- Location of headquarters or principle office
- Location(s) where most business occurs
- Eligibility for Circular 331 funding
- Level of Circular 331 funding
- Total amount of other funding
- Level of planned/pending funding
- Opinion on total level of Circular 331 allocation
- Opinion on percentage of Circular 331 disbursement to companies
- Opinion on benefits and concerns of Circular 331
- Ways in which Circular 331 could be improved
- Year of participating in the UK Lebanon Tech Hub
- General views on value of UKLTH
- Qualitative opinion of benefits to the company of participation in the UKLTH
- Quantitative opinion of benefits to the company of participation in the UKLTH
- Outlook for future growth of the company
- Types of indirect jobs created
- Staff who have left the company to create other companies
- Dollar value spent on contracted/outsourced services
- Change in expenditure by employees on local goods and services
- Any other comments - free form

GICS Classification

Based on interview responses and publicly available information, companies were manually assigned against the Global Industry Classification Standard (GICS®) to a sub-industry, and to a corresponding industry, industry group and sector. The GICS methodology has been widely accepted as an industry analysis framework for investment research, portfolio management and asset allocation. Its universal approach to industries worldwide has contributed to transparency and efficiency in the investment process, and the GICS methodology supports the trend towards sector-based investing. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of, Standard & Poor's Financial Services LLC (S&P) and MSCI. "GICS" is the trademark of Standard & Poor's Financial Services LLC (S&P) and MSCI.

Survey Limitations

Companies that had ceased to exist could not be contacted and which were excluded from the study may have the effect of

skewing data and opinions gathered in the study towards the remaining successful operations.

Out of a total of 58 companies that we attempted to contact, those that were non-responsive may represent companies that had been unduly successful or those that were failures.

Careful consideration was made in planning study questions to minimise bias towards positive or negative responses. Responses however were the opinions of a single individual, generally the founding CEO of the company, which may not fairly reflect opinion of a company's entire leadership team.

This survey is being conducted in all cases less than three years after companies have participated in the UK Lebanon Tech Hub and 27 out of 49 companies are less than 5 years old. This provides for relatively few data points from which to infer growth rates. This study should serve as a starting point for annual reviews, from which longitudinal data will serve to provide greater insight.

As 53% of participants in the survey are those who took part in the UKLTH's first year of operation, responses are heavily skewed towards those participants. We have captured differential ratings of the tech hub between cohorts, however the most recent cohort of 2017 is of small sample size (N=5).

Earlier Studies Of Job Multiplier Effects

Earlier studies of job multiplier effects authored by Moretti (2010), Greenstone, Hornbeck, Moretti (2010), Kline and Moretti (2017), Moretti and Thulin (2013), and Su (2017) attempt to model indirect and induced effects. While serving as general examples that are likely to be replicated in other geographies, the unique nature and characteristics of Lebanon as an environment means that a direct translation is not possible. We have therefore attempted to estimate a range of induced effects in addition to captured direct and indirect employment creation.

Job Multiplier Effect Calculation

To calculate impact of the UKLTH on job creation, the survey captured data on direct employment, prior to and after involvement in the tech hub, for full-time and part-time employees, contract resources and contract spend, as well as an estimate by participants of whether local services spending was increasing or decreasing. This was further modulated by an impact factor, calculated from the average of nine impact points captured by our questionnaire, reflecting the degree to which job creation may be directly attributable.

“Technology” is about the creation of a product or service that uses technology as a force multiplier on human effort. Successful technology companies generate scalable products or services with large, long term job multiplier and wealth creation effects. In particular the software as a service (SaaS) model of producing goods and services generates companies that can scale very fast with low operating overhead as they lack inventory, with little to no burden of warehousing and need a lot of resources or infrastructure to grow rapidly.

However it takes time to develop technology, form a viable business model around the new technology, overcome barriers to innovation and replace incumbents. Barriers to adoption create a lag in new tech replacing the old, so measuring the true effects of tech on growth requires looking over a sufficiently long time-frame to see beyond the adoption barrier lag and account for network effects.



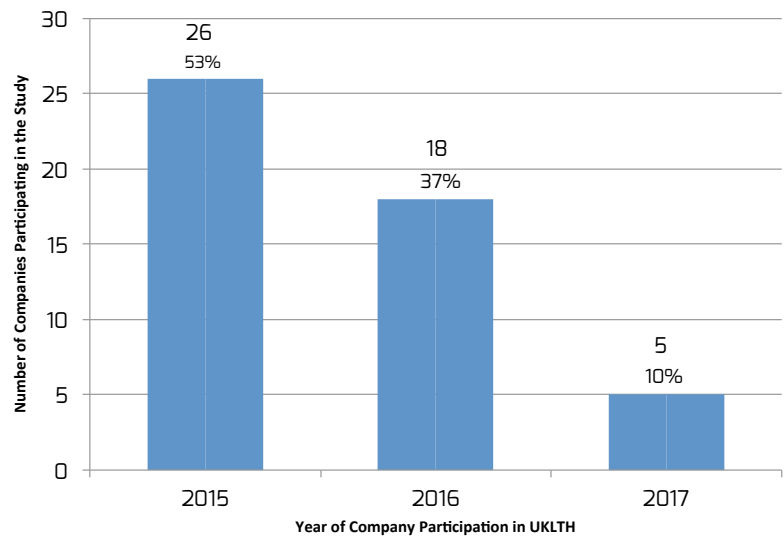
Key Findings & Discussion

OUTCOMES OF INTERVIEWS & QUESTIONNAIRES

Study Participation

Companies

Since its foundation in 2015, three cohorts of companies have passed through the UK Lebanon Tech Hub. Of a total possible 76 companies, 88 people were initially contacted in 72 companies,



of which 11 were considered no longer relevant and 3 companies were no longer active.

Of the 58 companies that could be included in the study, we were able to interview 53, with a remaining 5 not responding. Of those interviewed we received 49 completed study responses.

Final study participation corresponded to:

- **2017** 5 / 6 companies
- **2016** 8 / 25 companies
- **2015** 26 / 45 companies

Participating Executives

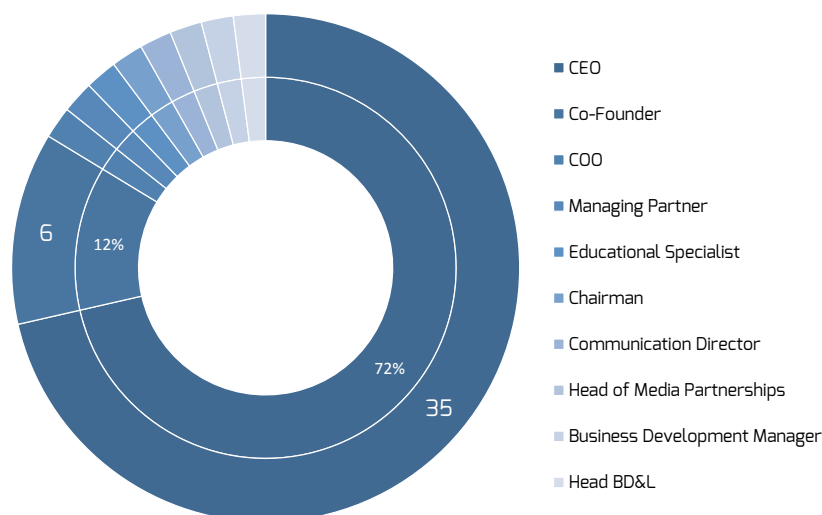
The majority of participants were both C-suite executives and also founders or co-founders of their respective companies.

- 41 (84%) identified as founders or co-founders of their respective companies.
- 35 (71%) identified as CEO
- 32 (91%) of CEOs were also founder or co-founder.
- 8 others held a variety of senior business roles.

Fig 2

Respondent roles within their company

*Absolute number
% of total participants*



Company Profile

Incorporation Date and Age of Companies

Surveyed companies had incorporated from as early as 2000 to one which had incorporated as a spin out in 2018 after its parent had passed through UKLTH. A sharp increase in company incorporation is clearly visible in 2015, reflecting and positively correlated ($PCC=0.195$) with the UKLTH being rated as “instrumental” by 12 companies and of “high impact” by a further 6 as a catalyst for business formation. The subsequent decrease observed needs to be assessed in the context of the skew of participants towards the 2015 cohort.

Mean age of companies from foundation to participation in the Tech Hub was approximately 2.4 years old ($SD=3.75$) and mean age from foundation to the time of survey was 4.8 years. In total 20 (41%) companies were founded either during the same year or after participating with the UKLTH.

Location of Headquarters and International Focus

82% (40) of companies had their headquarters located in Lebanon, heavily concentrated in Beirut, with the majority of the

Fig 3

Company incorporation profile

Absolute number

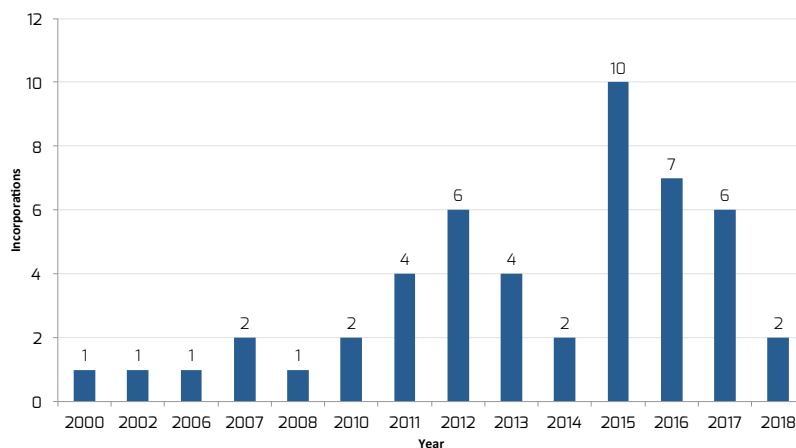
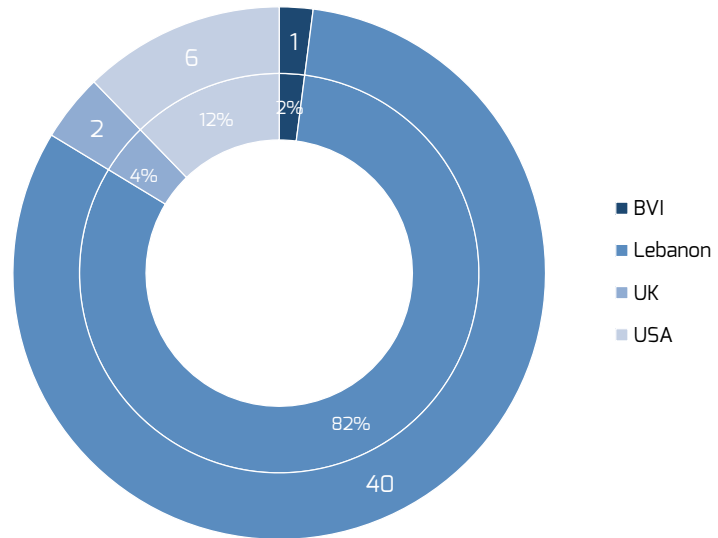


Fig 4
**Location of
company
headquarters**
Country



remainder distributed across the US (6) and three companies located in the UK and BVI. In all cases non-Lebanese headquartered companies also had a Lebanese operating subsidiary.

Two-thirds of companies declared that most of their business included international locations, reflecting that while Lebanon itself may be a base, its limited size as a marketplace means that international expansion is a natural course to pursue for companies with a tradable, knowledge-based product,

GICS classification

Based on combined interview, questionnaire and publicly available information, companies were classified according to sector, industry group, industry and sub-industry against S&P's Global Industry Classification Standard (GICS®) framework, and assigned GICS-4 and GICS-8 codes.

By industry sector almost half (49%) are IT companies, with consumer discretionary (37%) and healthcare (8%) making up the second and third largest segments. Further breakdown to sub-industry (GICS-8) illustrates the exclusively knowledge economy focus of surveyed companies, with the largest clusters around *Internet software & services* and *application soft-*

Fig 5
**GICS sector
classification**
*Absolute number
% of total participants*

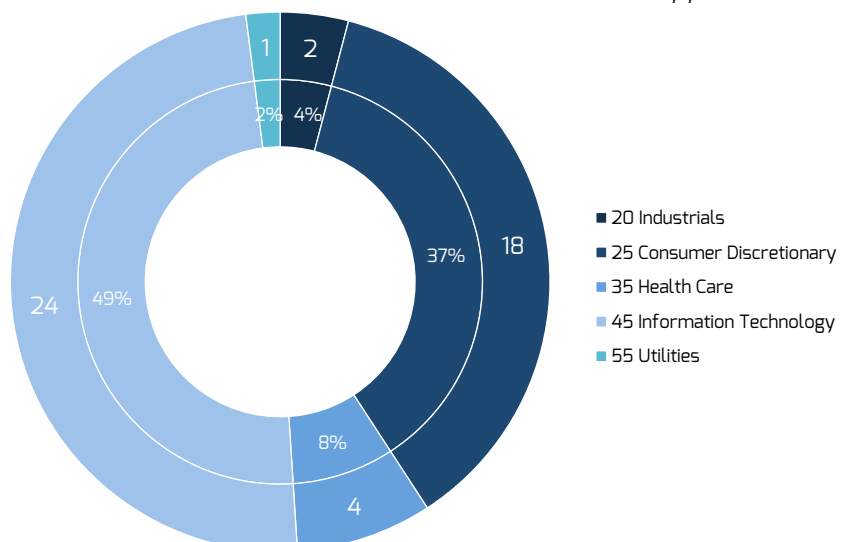
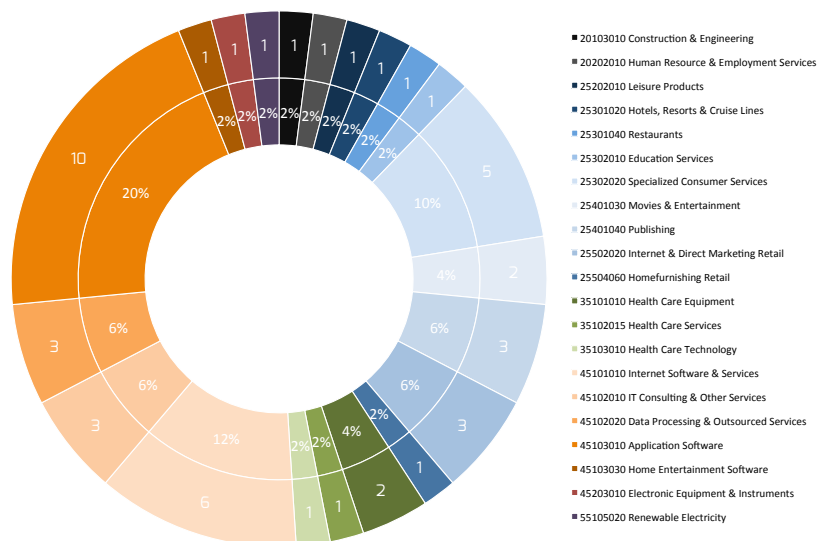


Fig 6
GICS sub-industry classification

*Absolute number
% of total participants*



ware shown in Figure 6.

Funding

Total funds raised by companies

A total of US\$48.8 million was reported to have been raised across all companies surveyed in this study, of US\$39.1 million (80%) came from non-Circular 331 sources, principally local and regional venture capital (VC), angel investors and high net worth individuals.

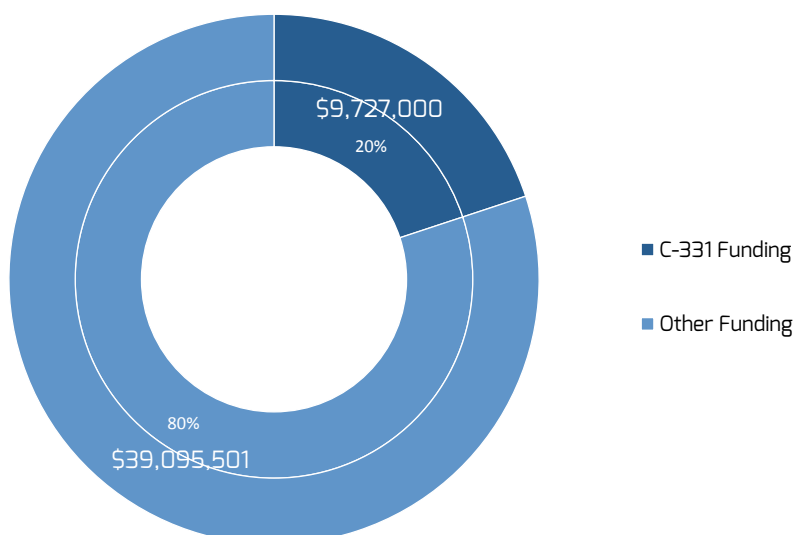
Eligibility and receipt of Circular 331 Funding

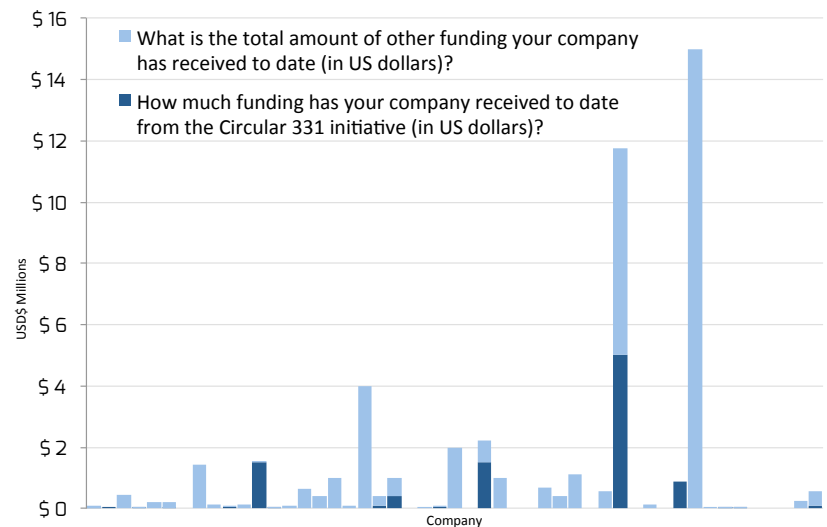
78% of companies (38) reported eligibility for Circular 331 funding, however two-thirds of companies (33) reported not having received any Circular 331 funding. Of the 38 eligible companies, just 16 (42%) reported having received Circular 331 funds.

In total US\$9.73 million (20% of total funds) was declared from Circular 331 funding. This was heavily skewed towards a small number of large disbursements, with 11 out of the 16 companies receiving less than US\$ 100,000, either directly or

Fig 7
Total Funding

*\$USD total funds raised
Percentage of total funds*





in the form of contribution from an accelerator.

Current plans to raise more capital

Companies reported ongoing plans to raise a further US\$26.6 million, yet despite the majority of participants being eligible for the Circular 331 programme, examples of comments echo sentiments that it was not necessarily always viewed as an efficient mechanism.

- “Too hard to get funding from 331”
- “Final documents were signed in June 2017, and while non-331 money was received in September 2017, 331 money is still pending as of February 2018 due to BDL red tape”
- “We will not raise any more 331 money in future rounds.”

A comprehensive list of comments are in the appendices.

Views of Circular 331

As part of this study, we assessed participants views and understanding of the Circular 331 programme. Given observed widespread variation in reporting the amount of funds allocated and disbursed to companies, we wondered if senior executives at

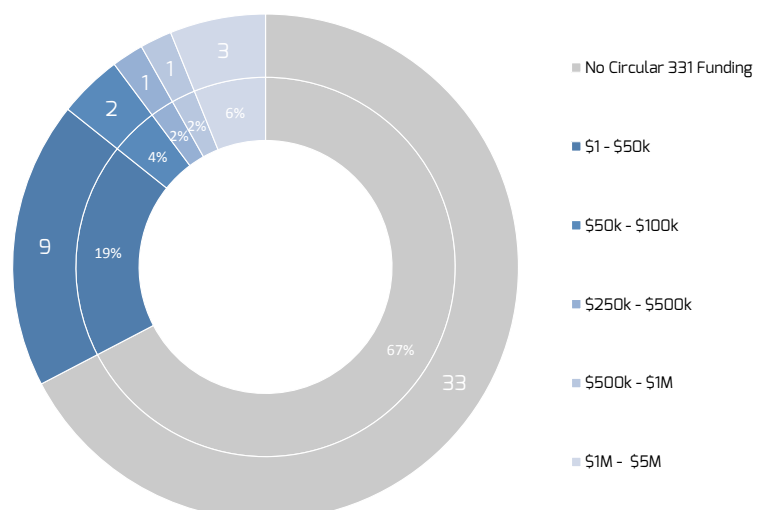
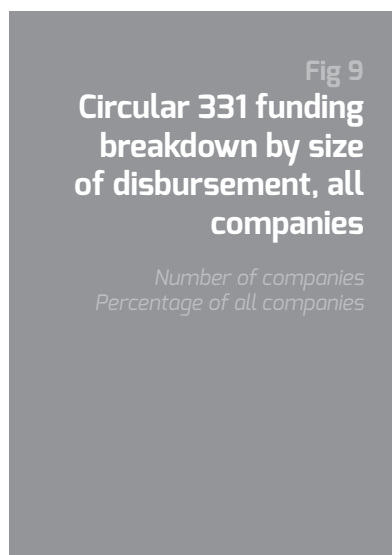
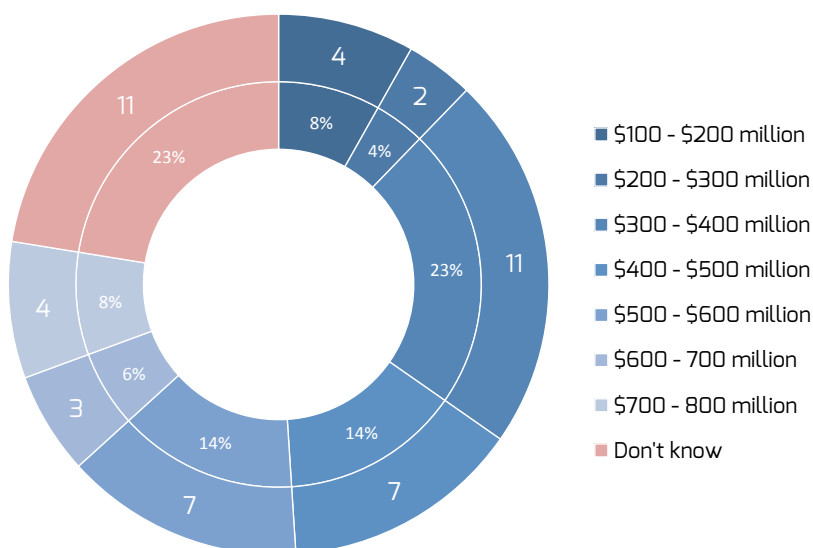


Fig 10
How much money
do you think
has been allocated to
support businesses
under the Central
Bank's Circular 331
initiative?

Number of participants
% of total participants



the companies themselves had an accurate picture of the size and status of the programme and thus were judging its achievements to date appropriately.

We asked participants to estimate how much money they thought had been allocated to support businesses under the Circular 331 initiative, and what percentage of Circular 331 funds had been disbursed to the companies in question.

While the respondents' average estimated allocation of US\$442 million and average disbursement of 35% or US\$157 million are powerful demonstrations of the *wisdom of the crowd*, figures 10 and 11, illustrate broad uncertainty and a wide distribution of opinion around both the total allocation of funds to the Circular 331 programme and also the percentage disbursed to companies to date.

Almost one quarter of participants said that they did not know the allocation and more than one third said that they did not know the percentage disbursed.

Assessing the Impact of Circular 331

Fig 11
What percentage
of the Circular 331
funds do you think
has been disbursed
to the companies in
question?

Number of participants
% of total participants

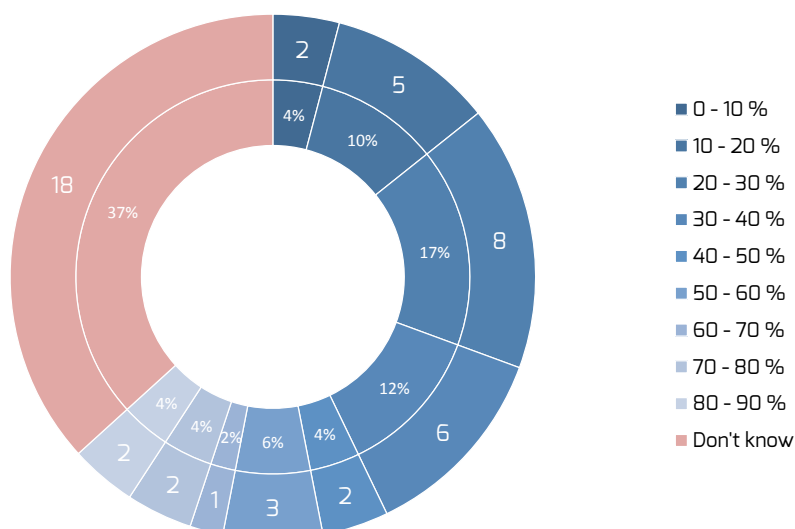




Fig 12
Circular 331
Feedback

Positive benefits wordcloud

All words from feedback
mapped according to word
frequency analysis



Positive benefits feedback

Many respondents viewed Circular 331 as a great idea and initiative with the most frequently held view that it has “ecosystem” benefits as well as economic benefits for Lebanon, through promoting entrepreneurs and entrepreneurship. A number of respondents also volunteered that the benefits of the scheme were under-appreciated by some given that the scheme is merely in its infancy.

Feedback on concerns

Although few respondents expressed fundamental concerns with Circular-331 as a concept, consistent concerns emerged from participants focused around the basic need frustration of how to “get the money”. Considerable frustration is apparent in how long the process takes or how slow this was, and that banks and venture capital companies are receiving the bulk of the capital with little pressure on them to disburse funds. In particular a commonly held view is that the banks and other administrators of the initiative remain risk averse, slow and cautious in decision taking, out of step with a start-up culture.

Fig 13
Circular 331
Feedback

Concerns word- cloud

All words from feedback
mapped according to word
frequency analysis





Suggestions for Improvement

Feedback revolved around use of funds and how “the money” could better reach start-up companies. Improving the funding process, putting in place personnel with greater understanding of venture, improved transparency and enabling funding to be deployed outside of Lebanon were consistent themes emerging from our request for candid feedback.

Assessing the Impact of the UKLTH

Key Findings

Attitudes towards the UKLTH were overwhelmingly positive, with 88% of respondents expressing general views ranging from positive to very positive about their experience, of which more than two thirds were very positive.

From studies of world-leading business accelerators, we summarised nine best-in-class impact factors for a business accelerator to gather a balanced view from respondents who were asked to rate the impact that UKLTH had on their businesses across these areas:

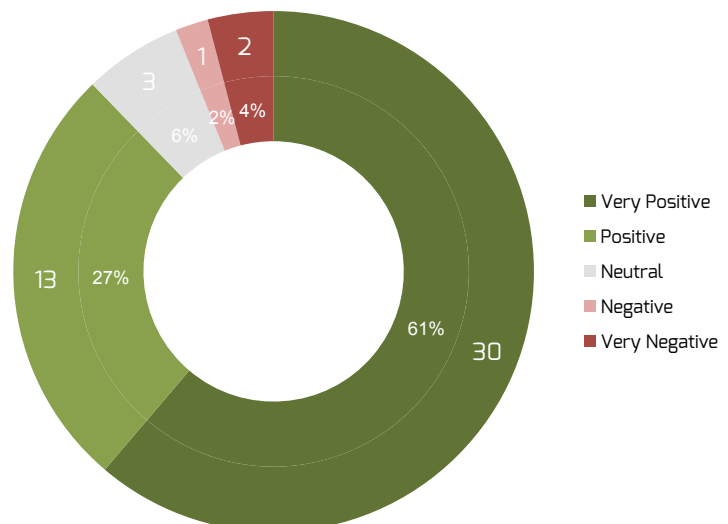
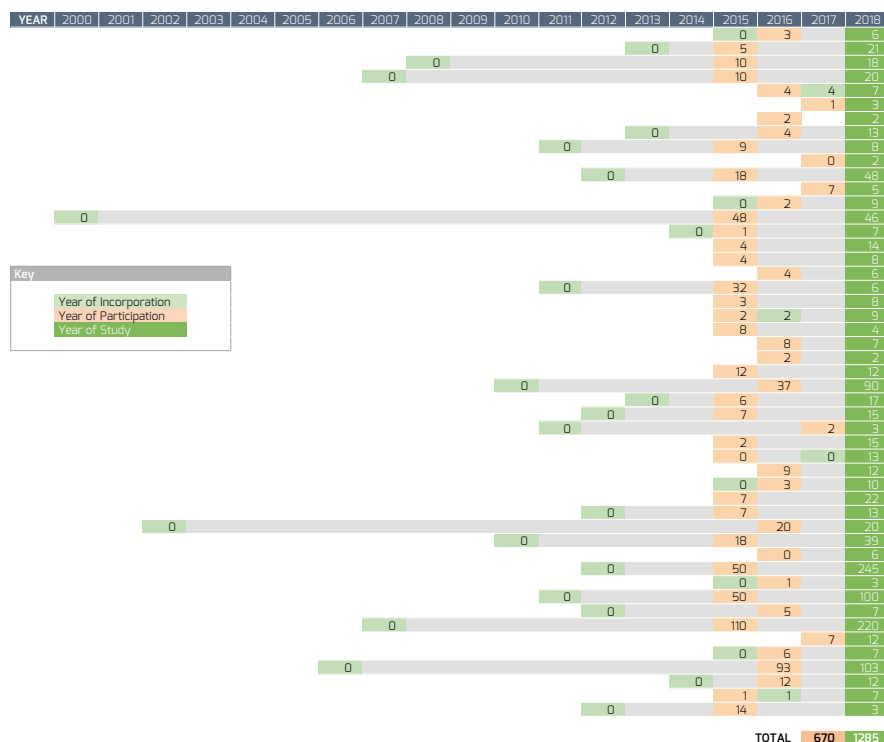


Fig 17
Changes in
Companies' direct
employment (full-
and part-time) from
year of participation
in UKLTH to present
day

*Number of full-time and
 part-time direct employees
 reported by surveyed
 companies*

*Year of incorporation shown
 when it occurs before or after
 participation, or not shown
 where it falls coincidentally
 with year of participation*



Job Creation

Direct and Indirect Job Creation

Of companies surveyed, 1032 full-time and 253 part-time employees were reported, together with an additional 1344 full-time equivalent (FTE) contract resources, or US\$11.7 million of contracted spending annually.

Accounting for reported roles at the time of entry into the UKLTH, at least 615 jobs, comprising 458 full-time and 157 part-time roles have been generated since involvement of companies, as shown in Figure 17. Applying the same growth rate for part-time employees to contract resources, we estimated an additional net increase of 834 FTE equivalents for consulting resources.

Totalling FTEs across all categories and assuming that part-time employees are on average 50% FTE equivalents implies a net total increase of 1371 full time equivalents.

Attribution to UKLTH

To provide an estimate of attribution, individual impact ratings per company were calculated as the mean reported impact across nine areas of business. On average across all areas and all companies, this calculated as 43% for full-time employees, 31% for part-time employees and 21% for contract resources.

Individual company impact factors were used to modulate job creation metrics to generate per company FTE increases that could be reasonably attributed to the effects of the UKLTH on reported FTE change.

Adjusting for impact factors and finally scaling this up proportionately for a total number of 72 companies that have been involved with the UKLTH and discounting those that we know are no longer in existence, we reach a total estimate of 583 FTEs, as shown in Figure 18.

Induced Jobs

As yet respondents have indicated marginal induced job creation however this may be very hard to detect at an early stage as effects are likely to be diffuse. In the area of the BDD, the high concentration of start-ups may be having an impact on restaurants.

An earlier WIPO Study on the Economic Contribution of the Software Industry in Lebanon labour estimated a conservative multiplier at 1.6. Using this ratio would imply the possible creation of an additional 933 induced jobs, giving a total effect of 1517 FTEs, adjusted for the impact and full scale of the UKLTH. Determination of net job creation with respect to corresponding losses in competitors was deemed beyond the scope of this study.

Calculated multipliers

Our calculations suggest a Type 1 Multiplier of 1.79 and estimated Type 2 Multiplier of 4.67, based on an assumed induced multiplier of 1.6, as shown in Figure 18.

The New Lebanese Knowledge Economy Landscape

Figure 19 illustrates the knowledge-focus of surveyed companies as a tensor map with planar axes of GICS Industry Area and GICS 8-digit, with height representing the number of companies in each category. The highest concentration of companies is around Application Software, with secondary peaks around Internet Software & Services, Internet & Direct Marketing Retail, Publishing and Specialised Consumer Services.

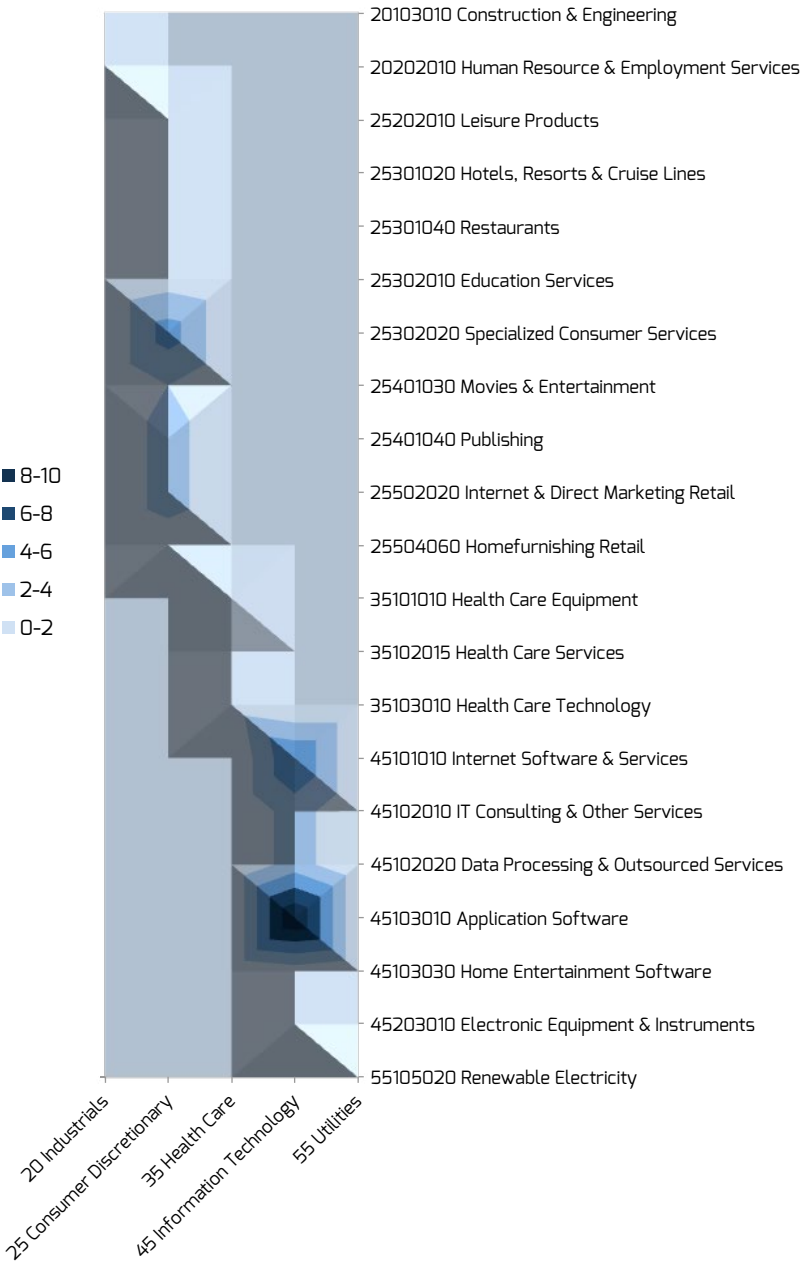
Fig 18
Reported direct, indirect and estimated induced employment and job multipliers

¹ Estimated 50% FTE

² Estimated using data from WIPO Study on the Economic Contribution of the Software Industry in Lebanon study

	Jobs Prior to UKLTH	Jobs Post UKLTH	Net FTE Change	Average Impact Factor	Impact Adjusted FTEs	Scaled up for UKLTH
Full-time	574	1032	458	43%	197	289
Part-time ¹	96	253	79	31%	24	36
Consultants	510	1344	834	21%	176	258
Induced ²	1888	4206	2193		635	933
Total Direct	670	1285	537		221	325
Total Direct + Indirect	1180	2629	1371		397	583
Total Effect	3068	6835	3563		1032	1517
Type 1 Multiplier						1.79
Type 2 Multiplier						4.67

Fig 19
The UKLTH Knowledge Economy Landscape
Distribution of UKLTH companies surveyed, classified according to GICS Industry Area and GICS 8-digit classification



Conclusions & Recommendations

Introduction

Our study suggests that job creation is occurring, albeit at a pace that reflects the combination of low expected initial growth rate demonstrated by even highly successful e-commerce companies and baselined against the normal attrition rate of companies.

Pushing survival rates up through superior strategy and execution, while generating an entrepreneurial ecosystem that gathers steam through recycling human capital is a medium, not a short-term effect. Just as the world's most valuable knowledge economy companies, with large induced job creation effects, took time to generate, so building multi-billion dollar Lebanese companies that do the same will require staying the course.

Thought must be given to how best to support those companies that are beyond start-up phase and looking to grow abroad to increase revenue, but still be based in Lebanon and help create local jobs. This may require adjusting the terms and conditions of Circular 331 to enable funds to be directed towards genuine international growth. The Circular 331 programme may further benefit from adjustments through improved communications so that the impact of this important initiative is fairly judged on actual monies disbursed, rather than theoretically committed.

Circular 331

The Circular 331 programme is perceived positively in general as a boost to the economy and catalyst for Lebanon's entre-

Executive feedback

"331 is amazing for the country as a whole - creating a movement - the change is insane. Do I feel that our government is equipped to understand what a startup needs - no way!"

"331 was a great idea - in 3-4 years it has made a big difference in terms of the Lebanese start-up industry"

"Revolutionary and best thing that ever happened to the country. Still in infancy stage, created an ecosystem that would never have existed. Unthinkable only a few years ago."

"Too early to say anything negative. Only 3 years - we will figure out better ways to do things differently in the future. Things still in a state of flux. Ceasing a brain drain. Giving hope to entrepreneurs. Whatever drawbacks can be easily corrected."

"This 331 initiative is a really vibrant, positive initiative in the country for entrepreneurs and it is the reason why I came back into the country from the US. It is a really good programme and much better than what we normally do here in Lebanon. I really believe that if they spend more, it will help even more the ecosystem."

preneurial ecosystem, details of its mechanism, how much investment is actually available and how much has been actually disbursed remain fragmented and confused.

Less than one in ten respondents was aware of the level of funding from Circular 331 or of the amounts actually disbursed, indicating that expectations could be better managed and a knowledge gap that could easily be filled.

Executive feedback

"No clue on what the real numbers are for funded allocated - lots of data but no one knows what is real and not real."

"Am very familiar with 331. Don't know how much was disbursed, but I heard a serious amount of money was set aside."

"Am familiar with 331 as I'm a lecturer in entrepreneurship at Beirut Uni. This is a \$400 million question. I heard it recently went to \$600 million, but I don't know how much was actually spent."

"A lot could be done to improve comms, e.g. a centralised website for people to have info and ask questions, to request funding - involving partners also in this, e.g. VCs and UKLTH"

"I know about 331 as I'm part of the ecosystem but don't know how much are set aside or disbursed. Even if the numbers are there, no one believes them. There is no transparency on what money was there, where it went etc - I bet most of it goes on management fees. It would be good to get some figures or comms which one can trust."

"331 is a good idea, but many people don't really understand how it works. There is a general impression it is inefficient and also many people don't know how to get VC funding."

Of 78% that were eligible for Circular 331 funding, two thirds have yet to receive funding from the programme thus far. Out of a total of US\$48.8 million of capital raised by surveyed companies, only US\$9.7 million was attributable to Circular 331.

A major opportunity exists to communicate this more clearly and quantitatively through a more comprehensive study performed under the auspices of the Central Bank. Gathering comprehensive programme meta-data on every bank, accelerator, incubator, VC fund and company that has been part of Circular 331 initiative is critical to measure its impact in terms of wealth and job creation.

KEY RECOMMENDATIONS

- The limitation that Circular 331 funds may be spent only within Lebanon should be reconsidered. A common concern many start-ups expressed around Circular 331 funding is the

Executive feedback

"We cannot pay Google or Amazon with 331 which makes the funding useless."

"The biggest issue though is that all companies have to be located and employ only in Lebanon, with IP staying in Lebanon - which means it is choice between 331 or growing. Unless your plan is to grow in MENA and then get bought by a big-shot, unfortunately 331 is a set of golden shackles. To meet the needs of driving local economy and also allow freedom, 331 needs to be relaxed."

"Most start ups in Lebanon using 331 funding are doing so in fear that it will limit their future growth."

"Had many offers but never pursued them because of limitations such as have to stay in Lebanon, which doesn't make sense for the business."

"\$600 million set aside by Central Bank, with >\$200 m invested. But lots of restrictions on how it is invested."

restriction it imposes on their overseas growth. Therein lies a conundrum: Circular 331 has rightly been created in such a way so to ensure that the benefits are felt in Lebanon and that capital flow is recycled with the domestic value chain. However the issue that companies face, is that for many of them to succeed through growing revenue and footprint internationally, they must have access to the wider global economy - the Lebanese market is only large enough to take most companies' growth so far.

- At the point therefore that the most successful companies will want to spread their wings, Circular 331 is perceived as a hindrance to be avoided, rather than a benefit. Thus while creating a funding platform restricting companies to stay in Lebanon may seem an effective mechanism to keep jobs, money and talent in the country, a side effect may be to scare companies away from accepting the funding. BDL

Executive feedback

"No clue on what the real numbers are for funded allocated - lots of data but no one knows what is real and not real."

"Am very familiar with 331. Don't know how much was disbursed, but I heard a serious amount of money was set aside."

"Am familiar with 331 as I'm a lecturer in entrepreneurship at Beirut Uni. This is a \$400 million question. I heard it recently went to \$600 million, but I don't know how much was actually spent."

Executive feedback

"Our second round of capital is closing now - 331 funding. Very inefficient process. Key actors within the process are very unknowledgable: funds, lawyers, auditors, bankers... virtually no VC experience; absolute disaster; no standard process. Everything open to interpretation. 99% of fund managers have no clue; no assumptions. Almost a year to get from term sheet to close."

"The challenge is the Lebanese financial system and time it takes to actually get things done - it doesn't move quick enough and there is too much red tape, which doesn't fit with the start-up scene."

"The cycle and length of time for end recipients to receive the money is far too long considering these are start ups - it isn't unheard of for it to take 6 -9 months by which time companies go bust as they don't have cash."

"There are many contradictions in the mandate of trying to help start-ups and how it is done. The process is very slow, and you deal with traditional bankers who are risk averse, don't understand modern technologies and the startup world. it can take 8 months dealing with them."

"It is absolutely ridiculous that a seed company has to wait over a year to get money - it's a miracle start-ups survive."

"The banks are traditional, slow to move, and don't understand tech, agritech or entrepreneurship. Frankly they don't give a damn about startups."

"The idea behind 331 was great: the Central Bank guarantees 75% of banks' investment in risky endeavours, i.e. start ups - and this should create jobs and lift the economy. The reality of how it has unfolded is different: there are essentially 4 or 5 funds between each bank, meaning the dealflow is very tight and one failure in one place means all routes are denied to people. The banks just end up getting cheaper money and the VCs get management fees regardless of performance."

"The way the whole thing is structured, there is no pressure for the VCs or banks to do anything or invest the money. There are many stories of banks or VCs taking the 331 money and putting it in high interest earning accounts or spending it on high fees."

could consider matching and syndicated investment facilities to attract non-331 funds to help internationalise the startups it has invested in

- We recommend setting up and maintaining a portal, which publishes both meta-data that the BDL holds and accumulates aggregate survey meta-data annually from all Circular 331 companies, as a mandatory condition for funding.
- With two-thirds of companies surveyed appearing not to have received any Circular 331 funding, introduction of

programme appears not to have addressed the significant gap in funding that exists for early stage companies. We believe that further boosting availability of seed funding for ventures is essential. To quantify this need we recommend a more comprehensive, critical assessment of the flow through of capital from funds to companies in Lebanon to understand better how much capital is actually reaching the start-up community and if it being held up at the venture fund level.

The UK Lebanon Tech Hub

The UKLTH has supported 76 companies over a three-year period, representing a large single cohort of Circular 331 supported companies. Attitudes towards the UKLTH were overwhelmingly positive, with 88% of respondents expressing

Executive feedback

"It was the very time that I felt all the taxes I was paying into the Lebanese system was coming back to help me. This was a wow moment."

"It was the best programme we've had in Lebanon. The amount of things we learnt and were able to implement was humungous. I personally learnt a lot and so did the business. It is difficult to quantify the impact of the programme, but it by far exceeded my expectations and we are still implementing some of the things we learnt."

"331 was a good idea, but it needed some accelerators like UKLTH to help companies/people with the skills and approach, in order to make it sustainable."

"UKLTH has had a very big impact on the start up scene and entrepreneurs. For sure it is best thing that has happened in terms of capacity building, scaling up companies, training and skills development."

"I genuinely feel they are doing something positive. They are generous with their time and help and advice over and above the contractuals. You get out what you put in and we have had a good experience. They have had a really great impact on start up scene, with cross-fertilisation of thinking with other companies located in hub."

"The Accelerator programme helped with skills development, a startup space with facilities, mentoring, networking"

"The year we spent at UKLTH was pretty transformative for us, as it really helped us to change how we work - strategy, financials, organisation."

"The whole concept of being in a regimented programme helped us focus on the business plan, strategy. the training, networking and business programme validation was great."

Executive feedback

"I think it has improved since I attended, but at the time it was very much classroom, educational, rather than what is needed which is more mentoring, access to good networks, investors....I have heard this is now changing - they seem to be becoming more practical."

"Of course if a business is not in the right space or mature enough to take all the things onboard, then it is their issue, not the UKLTH. I say that because I know some companies might say they didn't benefit etc, but that is either because they weren't ready or they didn't implement the things they were taught."

"The great thing is UKLTH is willing to learn and adapt their programme - I went through the first batch and now the 3rd batch is slightly adapted

"The programme has evolved from it's first batch and they've been quick to identify what works and needs to improve."

"Very very helpful; business plan, connections, workshops, weekly meetings; connected with investors but didn't work out; don't give any money; clarified the business but didn't solve the issue of sustaining the business."

"We spent \$30K to be part of the UKLTH programme, with the understanding that if we got through we would get a lot of investment - but the expected support never really materialised."

"The programme was great - I have a lot of experience with such programmes from my time working in Silicon Valley - but the challenge was that the ecosystem was not ready. What should be done is to create network connections with many companies so that introductions can be made - i.e it should be more than just an education programme. That part, helping to make connections with companies, was really missing."

general views ranging from positive to very positive about their experience, of which more than two thirds were very positive.

The UKLTH has clearly taken on-board lessons learned with its early cohorts in 2015 and 2016, with very much improved overall scoring in 2017, now ranking the impact of the Tech Hub as Moderate-High.

Highest areas impacts of UKLTH were as a catalyst for formation, in business direction, strategy, business development and networking. Opportunities for greater impact were in financing, technical support and staff hiring/retention.

KEY RECOMMENDATIONS

- Assisting accelerated companies with capital raising is the key opportunity for the UKLTH, through process management for faster and improved access to the Circular 331 programme, where companies are eligible, and through

managing and driving the capital raising process with their accelerated companies.

- In part this gap relates to the apparent insufficiency of seed funds in Lebanon, as there are simply too few domestic parties to pitch to. However stronger outreach and engagement of venture capital firms and angels should be effected internationally.
- The effects of the UKLTH accelerator would be further strengthened by the addition of a follow on seed fund, for which select participants could qualify. Precedence for this exists, an example being London based Seedcamp which has transformed from an accelerator with fixed cohorts to taking in new companies on a rolling basis and writing larger cheques -- £100,000 at pre-seed stage and anchor funding of £250,000 in order to bring in other angel investors. At seed stage, Seedcamp will invest up to £400,000 in syndicate rounds of up to £2 million if a lead investor exists. The rationale is explained by Seedcamp Investment Partner Tom Wilson, "By unlocking a slightly larger cheque at the very, very earliest stage, we think it will allow the companies to get to that next round in an even stronger position".

Job Creation

Of companies surveyed, 1032 full-time and 253 part-time jobs are currently being employed by companies that have been in-

Executive feedback

"Definitely the BDD has changed and become more dynamic. It was one of the reasons we went there. Initially there was nothing there. Now there are restaurants, life coaches, yoga, pet food startups - definitely there is an increase in lifestyle companies, which is starting to anchor people there and increase spend locally."

"Definitely see local restaurants increase in response to our people spending more locally."

"Definitely there are changes locally. More cafes, restaurants, food deliveries to the office, more tech gadgets being bought, online subscriptions, more fashions items, more gym memberships etc."

involved with UKLTH, as well as 1344 FTE equivalent contract resources, or US\$11.7 million of contracted spending annually.

Accounting for pre-existing roles and estimating the degree to which job creation may be directly related to the impact of the UKLTH we estimate that approximately 560 attributable FTEs may have been created.

As yet respondents have indicated marginal induced job creation however this may be very hard to detect at an early stage. In the area of the BDD, the high concentration of start-ups is having an impact but more local research to assess the BDD's effect as a technology cluster on Beirut and its immediate surroundings could be covered in further research.

In the context of tech start-up cycle job creation expectations should account for the long incubation times and slow ramp up required to generate success. Setting an expectation baseline, in the UK and USA, half of all businesses will survive 5 years, and one-third will survive 10 years.

While a linear employment boost can be achieved through funding the non-tradable sector, new knowledge economy companies have the potential for breakout, non-linear growth in a small number of high success cases. The apparent high failure rate of tech start-ups needs to be understood in the context that job creation impact in the knowledge economy cannot be driven linearly with investment.

Experimentation and failure of these companies is a vital part of the evolutionary process of developing new business models, products and services that are a better fit for the global economy than previous models. Long term job creation impact in the knowledge economy is therefore supported through the generation of an entrepreneurial ecosystem, supported by deep pools of competency that are recycled between high technology companies. A total of 83 people are already reported to have left respondent companies to start others.

KEY RECOMMENDATIONS

- As measured by opinion and quantitatively observed within the entrepreneurial community as sampled by this study, the Circular 331 programme and UKLTH are having a strongly beneficial and recognised impact on Lebanon's nascent knowledge economy. Incubation time must be allowed for those successful technology companies that have generated truly scalable and internationally tradable products or services with large, long term job multiplier and wealth creation effects to emerge.
- This study establishes a baseline but further longitudinal study will be needed to track and study impact trends as they emerge from the long-term effect of creation of Lebanon's knowledge economy ecosystem.

Study Participants

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BIM POS	John Balian	CEO
Bluering	Fares Kobeissi	CEO
Brate	Shadi Tabbara	CEO
CardioDiagnostics	Ziad Sankari	CEO
Carpolo	Ralph Khairallah	CEO
ChefXChange	Karl Naim	CEO
Dox	Nicolas Jamal	CEO
EasyCat	Fadi Sabbagha	Co-Founder
Elementn / Scriptr	Marc Salem	Co-Founder
Figurit	Haramoun Hamieh	CEO
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Circular 331 Job Creation Impact

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