An investigation of whether there are any differences between Product Managers in the UK & USA.

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ABSTRACT

Why is London a less successful entrepreneurial eco-system than the San Francisco Bay Area and arguably Boston? This question is discussed in the context of access to funding and, more specifically the quality and quantity of talent pools. This thesis then focuses on the role of the Product manager as a key source of talent in the growth of technology firms, it attempts to understand if the Bay Area/Silicon Valley innovation eco-system has an advantage because it tends to train and retain high quality PMs as it contains either the headquarters of the largest technology companies or the offices where key products are built. It found that the Bay Area contains significantly more PMs who have worked for the biggest, most iconic technology companies and that alumni of these firms constitute a much larger population relative to the number of PMs in firms of 500 people or less in the Bay Area than in London or Boston. The Bay Area also has significantly more Product Directors currently working for the most iconic technology companies. In branch offices there seems to be a perception (amongst junior staff) that PMs gain better experience/or career progression than their peers when based in the Bay Area, but this is disputed by more senior people (as long as the branch office has a certain scale). It is possible that informal advantages accrue to those working in large Bay Area hubs and/or that the most career focused product managers self-select by going to the Bay Area.
To gather more quantitative data on this question, an exercise was undertaken to understand if there was a difference in the proportion of big tech product manager alumni founding startups between the three locations, and whether this was correlated with the success of startup fundraising and therefore the innovation eco-system. In the companies sampled, those based in the Bay Area had more than double the proportion of these alumni co-founders than London or Boston, but no substantive evidence was found that this gave the companies an advantage in terms of the amount of follow-on funding raised, but it did point to the possibility that these companies are more successful at raising any funding post Series A. However, more research is needed as due to the quality of data available, effective sample sizes were very small.

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Contents

An investigation of whether there are any differences between Product Managers in the UK & USA.

This paper aims to develop an understanding of the roles of Product Managers (PMs) within technology companies and to investigate if it is possible to identify differences in the quality, training and outlook of PMs in different locations. The implication of this being that the San Francisco Bay Area (which will be denoted as the Bay Area below used inter-changeably with Silicon Valley in this paper) may have a significant advantage over other innovation eco-systems (particularly London and Boston) due to the large number of big technology companies having their Head Quarters located there which may also result in branch offices there being larger than other locations. PMs in these HQs might have a better experience than those in the branch offices, giving them an advantage when they found or work for startup companies. Furthermore, the paper will perform some analysis on whether having a PM co-founder improves a startup's chances of success.

Rationale for this paper

The origins of this paper can be traced to a number of different debates. First, two interviews the author had with Venture Capitalists (VCs) in London during early 2015. The interviews were instigated to complete the "Interview a leader" assignment, (part of the Full-Time MBA at Imperial College, London Business School). The purpose of the assignment was to interview a leader in a chosen field "to find out their background, their career and how they gained their leadership position" (Imperial College London Business School, 2013). Being an MBA student with an interest in technology, innovation and entrepreneurship, the author was naturally intending to pursue a career in Venture Capital (VC) after completing his MBA. He met with two partners and it quickly became apparent that he did not have the right set of skills and experience to transition straight into VC post MBA, but whilst discussing their backgrounds and experiences conversation inevitably turned to the London/European startup eco-system. One of the Partners was adamant that although there was increasing access to VC funding for promising startups in London, the areas where the London eco-system needed to improve were all talent based. In particular, the VC stated the available pool of quality PMs and growth hackers was very shallow. For the purpose of this paper we will leave growth hackers aside and focus on PMs. The core argument was that even though there are many PMs based in London, often working for giant multinational technology firms such as Google, they are generally not as competent/qualified as their colleagues working in the Californian headquarters of these large customers. His reasoned that PMs in the branch office aren't likely to be working on products vital to the company's success or on its core product. As a result, they gain less (or a different) experience and skills and may well be coached or supervised by people who also have less skills and experience. The VC felt that this significantly affected a startup's performance, especially when it was scaling up to be a large company. It was this conversation that inspired the author to write this paper.

Hypotheses

This thesis therefore aims to investigate the following hypotheses:

H1: A large number of the potential PM recruits for startups in various locations are trained by the largest multinational technology companies.

H2: The skills that PMs learn/experience they gain outside of the Bay Area HQs of these big tech companies (and potentially the caliber of the PMs themselves) are at a lower level than those based in the San Francisco Bay Area.

H3: The proportion of startups founded by PM alumni of big technology companies will be greater in the Bay Area than in other locations.

H4: Startups with PM co-founders will be able to raise more funding following their Series A round than startups without PM co-founders.

The context of global startup eco-systems

The conversation recounted above was held in the context of London's performance as a location for successful technology startups. The VC told the author that once his portfolio companies reached a certain size, he often recommended that they relocate to California because they have trouble recruiting enough talented staff in Europe. At this point it would be useful to discuss the relative positions of global startup hubs. Two potential references for London's eco-system strength will be considered – size of VC investment and of talent pool.

Venture Capital

One of the key ways to measure a location's attractiveness to and record of building successful startups is the amount of VC invested in that location. On this criteria, in 2012, "The San Francisco Bay Area, which spans Silicon Valley and San Francisco proper, remains the world's leading center for VC investment attracting nearly $11 billion dollars, more than a quarter of all global venture investment" (Florida & King, 2016). The scale of the San Francisco Bay's dominance can be seen in Figure 1: Global venture capital investment.

Indeed, "in 2012 Just two broad regions — the San Francisco Bay Area and the Boston-New York-Washington Corridor — account[ed] for more than 40 percent of global venture investment"(Florida & King, 2016). Florida & King found that London came in 7th in the world for global VC investment in 2012.

More recently, there are signs that this mis-match in VC funding is slowly starting to change. For example, US based funds have increasingly been looking at and investing in companies based in London. According to the Financial Times "US technology investors provided more than half of all the money raised by London-based start-ups [in 2014] (Ahmed, 2015)". Indeed, The Financial times goes on to note that "The availability of finance for companies as they become bigger is often cited by European start-ups as the reason they relocate to Silicon Valley. But American VCs have increasingly been stepping in to fill the funding gap." (Ahmed, 2015). According to Notion Capital, US investors are increasingly looking at the London eco-system because of "the combination of tax incentives, favorable regulatory regimes, simplified immigration for key workers and entrepreneurs, national and local government support, and a concentration of co-working spaces and accelerators suggest that the tech economy in London – and the UK – is being built on a sustainable foundation" (Frank, 2015).

The idea that London is catching up in terms of the funding eco-system is further re-enforced by the huge increases increase in VC investment in recent years. According to London and Partners "London-based tech companies raised a record $2.28 billion during the period [2015], representing a 69 per cent increase on the $1.3 billion raised in 2014." ("UK tech firms smash venture capital funding record," 2016). Furthermore, prominent London based VC and blogger Nic Brisbourne noted in March 2016, that he feels that the London eco-system has hit 'critical mass' stating that, "inevitably we have been sub-critical mass for much of that time, and it's been painful. Many of our best entrepreneurs have taken the difficult decision to leave their home country and go to Silicon Valley because the startup ecosystem is stronger (most importantly, because there's more finance) and the companies that remain have, on average, found it more difficult to raise capital, often resulting in smaller raises, less ambitious plans, and slower growth. Over the last year or two I've felt that changing. It's not possible to define critical mass and therefore to pinpoint the moment it's been achieved, but the recent proliferation of new startups and new funds (including ours) feels like Munger's lollapalooza result……it has definitely got a lot easier recently, at least in part because the volume of investors and high quality founders reached a point where there was lots of opportunity for everybody and confidence spiraled" (Brisbourne, 2016).

Figure 2: London Tech Investment per year 2010-2014 ($ millions), shows that the growth rate of VC investment into London based companies appears to be increasing.

The position of London funding is perhaps best summarized as follows "while capital flows have increased, funding remains a prominent concern for London's technology community. A third of companies surveyed for Tech City UK's Tech Nation report identified access to funding as a challenge. From seed capital to follow-on funding, gaps in the supply of capital have been identified across the spectrum. A majority of respondents to the Tech London Advocates (TLA) survey (59.5%) for the report pointed to the pre-seed and seed stages as the most difficult at which to obtain capital, while the 2014 Scale Up Report highlighted the absence of follow-on funding as a significant constraint on the development of high growth companies in the UK" (Coutu, 2014) & (Tech City, 2015) via (Tech UK, Tech London Advocates, & Centre for London, 2016).

Skills

From the author's time studying for an MBA at Imperial College, London he came to perceive a real and continuing problem in the UK's capital with start-ups and scale-ups ability to hire skilled people. Whilst interacting with the Imperial College and wider London eco-system the author had conversations with entrepreneurs or startups hunting for people they felt had the right skills to help their companies, but were struggling to find them.

This seems to be validated by empirical research, "Ask a London technology entrepreneur what keeps them awake at night, and a shortage of available talent will often be the answer. An industry survey conducted by Tech UK in 2014 found that 93% of tech firms believe the skills gap has a direct negative impact on their business" (Weidinger, 2014). That is a sentiment reflected by available data on the technology skills shortage. Recent research from O2 suggests the UK will need to fill 766,000 new digital jobs by 2020, and to train almost 2.3m digitally skilled workers to meet that demand" ("O2 | Development Economics," n.d.) via (Tech UK et al., 2016).

In her much publicized "Scale-up" report, Sherry Coutu listed "Finding employees to hire who have the skills they need" (Coutu, 2014) first in order of importance for why companies can't scale in the UK. Her report goes on to describe the shortage of key skills that scale-ups face in the UK, "The scale-up companies interviewed for this review were clear that they struggle most to access people with technical and business skills, including young and more experienced candidates.... **These skills are vital for rapidly scaling businesses to develop products and services, navigate new markets and develop their business structures** [text put in bold by author]. Many scale-ups said that they often have difficulties finding competent talent and often have to recruit overseas." (Coutu, 2014).

A shortage of product managers?

A Tech London Advocates survey (Figure 3 London Tech Advocates Survey Results) of over 300 participants during late 2015 and early 2016 found that not only were skills shortages by far the biggest challenge for London's technology businesses, but also that PMs were the third most urgently required role of the respondents behind only software developers/engineers and data scientists.

There is also significant evidence of a lack of quality PMs in London. In 2013, Matt Kauffman, The UK Director of Engineering of Yammer a start-up purchased by Microsoft commented on the lack of quality PMs available in the UK, "Kauffman also noted the difficulty in finding savvy product managers in the UK. In the US product managers tend to do both technical and analytical work at the same time. A common profile is a person who has some background in engineering and software development, who then goes on to do an MBA in product management so they can understand the real cost of building stuff. These type of product managers probably exist here but they are lots easier to find in the States" (Marshall, 2013).

The UK government has recognized that a shortage of quality PMs exists on a national level and therefore added PMs to the Shortage Occupation Lists for the UK, with the Migration Advisory Committee "recommending that the government eases regulations on hiring non-European staff in these roles" (Bateman, 2015).

The Head of Tech City UK, Gerard Grech has also specifically mentioned PMs as a key talent base that London has a shortage of, "In particular he highlighted the lack of talented coders, web developers, product managers and data scientists or as he put it: "the entrepreneurial thinkers who will be the engine of the UK's economy"". (Royds, 2014).

The overall London Eco-system compared to Boston and the Bay Area

Compass recently attempted to rank the top start-up eco-systems in the world Unsurprisingly, Silicon Valley was ranked first (Figure 4: Silicon Valley ranking), Boston was ranked fourth (Figure 5: Boston ranking); and London was ranked sixth (Figure 6: London ranking).

Intriguingly, whilst both Boston and Silicon Valley perform better than London in most metrics, London beats Boston in the talent category. London's advantage over Boston seems to come largely due to its more diverse talent (in terms of nationality) and that it is quicker to higher an engineer in London.

What is Product Management?

Given that this thesis aims to focus on Product management, we should define what this term means. Alas, product management is a relatively new profession and the role tends to vary within and between companies.

The history of Product Management

Martin Eriksson of mindtheproduct.com gives a very useful overview of the history and evolution of the product management role. He writes that the role has no definitive history, but is able to paint an intriguing story of its evolution.

Perhaps surprisingly, a job which has become so associated with the technology industry didn't begin there. According to Eriksson, "Modern product management started in 1931 with a memo written by Neil H. McElroy at Procter & Gamble. It started as a justification to hire more people....but became a cornerstone in modern thinking about brand management and ultimately product management" (Eriksson, 2015).

According to Eriksson, McElroy influenced the founders of Hewlett-Packard who, "interpreted the Brand Man ethos as putting decision making as close as possible to the customer, and making the product manager the voice of the customer internally" (Eriksson, 2015). Other important developments including just in time manufacturing, focusing on innovation and data driven decisions were made by Toyota in post-war Japan.

Per Eriksson, "when just in time manufacturing came to the west, Hewlett-Packard was one of the first to recognize its value and embrace it. Thus Hewlett-Packard alumni brought this new way of thinking – customer centric, brand vertical, and lean manufacturing – to their future jobs, quickly permeating the growing Silicon Valley with the same ethos. From there it has spread into every hardware and software company to the global movement we know and love today" (Eriksson, 2015).

At this point it's worth noting that Eriksson's history is not necessarily accepted by all stakeholders, William Hsu for example who has written that "Microsoft created the "modern" role of product manager 25 years ago" (Hsu, 2015).

Eriksson notes that over time differences in the PM role have developed in the FMCG and Tech industries, "Product Management in FMCG increasingly became a marketing communications role, concerned with getting the right mix of packaging, pricing, promotions, brand marketing, etc, leaving the development of the product to others. As the role moved into the tech world however, this separation from the development and production of the product was untenable. Most of the newfangled companies in the tech world were inventing whole new industries and they couldn't just rely on packaging and pricing of a commodity to succeed. This brought Product Development back to the centre of the Product Management role, as it was imperative not just to understand the customer and their needs, but to align the product's development with them" (Eriksson, 2015).

Eriksson then moves on to describe what was in his view the next significant development in Product Management – the creation in 2011 of the Agile manifesto and its integration with SCRUM and other methodologies. According to Eriksson, this was a key development, "not just because it freed up software engineers from being conveyor belt coders churning out exactly what was specified (no matter how dumb the specs were) but because it also freed up Product Management from focusing on deliverables like specs to focusing on customer collaboration" (Eriksson, 2015).

From the Agile manifesto and related working methodologies sprang the idea of "Lean" methodologies, which have received much publicity in recent times, not least from Eric Reis's book, "The Lean Startup". Commenting on the current state of the role Eriksson noted that, "Until very recently Product Management was still a part of the Marketing or Engineering functions, reporting up through those hierarchies, naturally aligned more with one or the other and inevitably embroiled in conflicts of prioritization and focus because of it. These days Product Management is increasingly a standalone function with a seat at the management table and reporting directly to the CEO. This is critical because it aligns the product team directly with the business vision and goals, makes them internal as well as external evangelists of that vision, and gives them the independence necessary to make tough prioritisation calls" (Eriksson, 2015). Eriksson's 'history' is nicely summarized by Figure 7: History of Product Management in Technology,

What does a Product Manager do at a high level (the literature)?

According to Jock Busuttil, "Product Managers are there to marshall the chaos, to calmly remind everyone caught up in the technological gold rush that all this headlong product innovation can't exist just for its own sake; it has to have a purpose: to enrich the lives of the people who use the technology……The role has never been more necessary or in demand for both technology startups and more established companies, and this is an exciting time to be a product manager" (Busuttil, 2015).

Steven Haines defines Product Management as "the holistic management of products and portfolios, from the time they are conceived to the time they are discontinued and withdrawn from the market. In essence, Product Management is the business management of Products. Product Management is also the term that refers to the organization that serves to lead and integrate the work of people from other functions. A product manager is a person appointed to be a proactive product or product line "mini-CEO" or general manager. The intent in the definition is that the role of the product manager most closely resembles that of a CEO or general manager because these people are best equipped to guide organizations and lead cross-functional product teams" (Haines, 2013).

In their first lecture of the Introduction to Product Management Course at Sloan, Professor Nitin Joglekar and Dr Joshua Forman communicated the main elements of product management. Firstly, the PM "Represents the voice of the customer throughout the product development lifecycle" (Joglekar & Forman, 2016), throughout the course, the Professors emphasized the role of the PM as customer advocate, be this putting themselves in customers' shoes, getting customer views directly from focus groups or running experiments of A/B tests to determine the optimal configuration of a product. Their next point was that a PM "Shepherds the product through the development process" (Joglekar & Forman, 2016). PMs often control or coordinate the product roadmap for their product. Furthermore, they latterly note that PMs will be liaising with the development, marketing and finance teams to ensure that the product is being developed on budget and to the best possible quality/market fit. Often it will be the PM's role to prioritize different features if there isn't time to build them all for a release, or even whether the product is in a fit state to be released. According to Joglekar and Forman, as a basic level the PM is responsible for success or failure of the product. In addition, they note that PMs will sometimes have overall Profit and Loss (P&L) responsibility for their product –they are essentially responsible for its financial performance. The course noted that PMs could be thought of as "CEO of the product" but from another point of view could also be considered to have "responsibility without authority" – being evaluated on the success of the product but being outside the formal chain of command in the development/marketing and support teams etc. which means PMs may be hugely reliant on their influencing and consensus building skills. Joglekar and Forman also commented that as a PM, "Your (Really Big) Area of Authority" are requirements and specifications for your product which link into the product roadmap.

The product lifecycle

A useful description of what the role requires appears in the Practitioners Guide to Product Management, "One of the best descriptions of what a product manager does was crafted by Martin Eriksson…. Eriksson describes the product manager's role as it changes through the life cycle of a product. First, the job is not only to define the vision for the product, but to understand the product's market and target customers and then to work with the product team to add a dose of creativity to make the product more alluring. It's then about evangelizing the product vision and inspiring those making the product with that passion. Switching from the creative to the analytical part of the brain, a product manager proceeds to plan how to actually execute that vision through product iterations, design and roadmaps. Then, zooming in from the broad plan to the fine detail, there's the day-to-day problem- solving, working with the development, design and other teams to remove the obstacles in the path of the product while keeping the overall plan on track, and working with the marketing and sales teams to remove the obstacles in the path of the product while keeping the overall plan on track, and working with the marketing and sales teams to plan and execute the launch. After launch, the job becomes gathering and poring over information about how people are eating, sleeping and breathing the product in order to assess its success. Then you do it all over again" (Busuttil, 2015).

Joglekar and Forman build on this idea of PMs having varying roles depending on the product lifecycle, using Figure 8: The Product Life Cycle, below in their lecture slides.

Indeed, they go further, posing the question of whether there should be a hierarchy of PMs. The professors went on to outline different PM roles and what their perceived status in the organization might be. They are described in descending order of status below.

Group 1 – High profile development PMs: They are working on brining products or features to market which are expected to be a significant part of the business or its future. They will be crafting a brand new product or feature and overseeing it being brought to market for the first time.

Group 2- Hi margin PMs. These are managing existing products which are important and profitable. They might be focused on tweaking the product to improve its financial performance or to gain/keep market share. Since their product might drive firm revenue or profit, they will be considered relatively important.

Group 3- Support PMs. These people essentially lead the customer support effort for mature products. Customer service would be their focus but they would not perform many other functions.

Group 4- End of life PMs. They are managing the removal of products from the market e.g. helping customers transition or deciding how long to support a product which is no longer profitable or selling at scale.

The author suspects that when most people (e.g. Sloan students) consider a career in product management, the roles that spring to their mind are typically those in groups 1 and 2. Roles in group 1 are likely to be found proportionately more in start-ups or scale-ups – fashionable places to work for young millennials. Role 2 may exist in scale-ups but also in large technology or FMCG companies. A strong case could be made for these different PM roles requiring different skills for success.

Product management – at the nexus of 3 groups

As has been discussed above, the role of PM requires interacting with many different teams working on a product. In general, PMs are considered to be at the nexus of three different disciplines – it is the PM's role to coordinate them.

The disciplines are user experience, business and technology. Figure 9: The intersection where a product manager sits, from Eriksson nicely illustrates where PMs sit in these fields.

Per Eriksson, business is the primary function of a PM – their key role is to maximize the "business value" of their product. Technology means being able to understand how to build a product and how to make the correct technology decisions for its benefit. Eriksson also notes that PMs are likely to spend more time with the development team (presumably only if they're not a support or end of life product manager) than with any other business function, so it's important that managers have an "understanding [of] the technology stack and most importantly [an] understanding the level of effort involved [which is] is crucial to making the right decisions" (Eriksson, 2011). Finally, we have UX (user experience), according to Eriksson "the Product Manager is the voice of the user inside the business and must be passionate about the user experience" (Eriksson, 2011). Eriksson also notes that the UX function is especially important in a startup.

What makes a successful product manager? the literature

There have been a lot of words written by PMs, entrepreneurs, VCs, engineers and other stakeholders about what makes a successful PM.

Brusuttil explains that the role of a PM is therefore a "balancing act" with the practitioner constantly needing to change focus between short and long-term goals. Furthermore, "that's a large part of what makes the work so stimulating and why a successful product manager requires a diverse set of social, commercial, and technical skills, and above all else the ability to empathize and communicate with many different groups of people on their own terms" (Busuttil, 2015).

High profile VC Ben Horowitz wrote a document on what he believes makes a good PM (in the internet technology field). Whilst his document is too long to discuss in detail, he includes a summary of points which effectively conveys his main arguments of what it takes to be a successful PM.

"• CEO of the product [discussed above]

• Balance all important factors

• Clear, written communication with product development

• Clear goals and advantages

• Focus on the sales force and customers

• Other key skills

• Really good product manager" (Horowitz & Weiden, 1996).

In his book, Steven Haines asks readers to rate themselves against a set of criteria to see which skills they need to improve to become a successful PM. He groups skills/experiences into attribute clusters, by summarizing the clusters, we get a detailed picture of his requirements to be a good PM.

1) Environmental, this focuses on a PMs' knowledge and experiences, from technical knowledge and domain experience, to working in an international context and thought leadership
2) Mindset, this involves critical reasoning, problem-solving and strategic thinking skills
3) Action Orientation, meaning is the person a self-starter, can they manage risk and take decisive action?
4) Communication, this focuses on written and oral communication skills as well as listening and observational skills
5) Interpersonal skills, focuses on a large number of skills such as relationship building, political judgement and coaching skills
6) Work efficiency, as expected from the title, this focuses on efficiency, flexibility and prioritization of tasks
7) Performance and results, can the PM intelligently analyze the performance of a product or feature and do they have the required financial skills to create and interpret reports.
8) Individuality, for example professionalism, courage and integrity (Haines, 2013).

Are big tech product managers better than other product managers (literature)?

One of the assumptions of this thesis is that often PMs recruited by startups have been trained by big technology companies. There is an implicit assumption that these PMs are in high demand because of their skillset and experience from working in Amazon, Google etc.

There doesn't seem to be a consensus on this point. William Hsu, Managing Director of venture fund Mucker Capital argues that PMs from large technology companies are more rounded than PMs trained at smaller companies.

This is because "Large Silicon Valley companies, such as Google, Facebook, eBay, and Yahoo, have standardized the function of a product manager, but many mid-sized and younger tech companies continue to churn out one-dimensional product managers that primarily exist to fill gaps within the company. Without the proper experience and training, many of these brilliant "PMs" become one-trick ponies. They are either a design/UX maestro or an expert project planner or a user acquisition guru, or maybe even someone whose main job is keeping engineers motivated with Redbull and pizza" (Hsu, 2015). He argues that "When a product manager limits their focus to one task, the whole company loses" and that (as noted by others above) the highest quality PMs are the mini CEOs of the product, utilizing a variety of soft and hard skillsets. Hsu goes on to talk about having a product mindset being potentially more important to the quality of PMs than their experience but then returns to the idea of teaching people to be good PMs "You can go to school to learn to become a doctor, lawyer, accountant, and even a software engineer, but there is no school that teaches how to become a successful product manager. You might be able to do this by cobbling together Stanford classes from the engineering, management, design, and CS departments, but that is not enough. This gap is what led Google to establish its associate product management track, which "properly" creates and trains a steady supply of PM talent"

(Hsu, 2015). Whilst talking at MIT Sloan in April 2014, Srinivas Krishnamurti, Co-founder and CEO of Zugata and formerly a senior director responsible for the Horizon mobile product at VMware spoke briefly about whether people new to product management should seek training at a startup or established tech firm. His view was that being a good PM is difficult and trainees need to learn in an environment where people know what they're doing. His advice was not to join an early stage startup unless the CEO has strong product experience, as trainees wouldn't have an embedded structure to learn from and could pick up bad habits. He strongly praised Google's PM program.

However, according to Vik Singh, CEO of Infer, very few PM candidates he interviews, even from big-tech firms including Yahoo and Google "do the job well" (Singh, 2015). When startups hire PMs he argues that "It's important to recognize the difference between small company and big company product management. Ideally, you want to find someone who's done both. PMs from small, early stage companies tend to be very agile and thrive in chaotic and unstructured environments, whereas large, established company PMs are great at implementing and executing structure and processes that are critical for achieving scale and navigating big company political waters" (Singh, 2015).

In his blog, Ken Norton, a partner at Google Ventures and former PM at Google and Yahoo goes further. Recalling his time at Yahoo, he notes that when it comes to PMs' large companies often require specialists whilst smaller companies require generalists and people who can adapt to unforeseen circumstances (presumably pivots or delays in funding rounds). He summarizes his views as follows "Lots of people were hired at Yahoo! that probably wouldn't have been appropriate at a startup. I recall a lot of post-interview conversations that went something like this - "well, I'm not sure they're the perfect candidate, but they do seem suited for this very specific role, so let's hire them." That may work fine at a big company, but it's deadly thinking at a startup" (Norton, n.d.).

Do product managers at big firms have different strengths?

In February 2013, in response to a question on Quora Lewis Lin, the writer of a book called 'Decode and Conquer: Answers to Product Management Interviews' gave a list of the 7 best tech companies to have on a PM's resume (Lin, 2013).

The list is summarized below:

7) Pinterest (HQ: San Francisco) – communicate passive-aggressively

6) Cisco (HQ: San Francisco) – "they are strong at analyzing the numbers and coordinating across company silos. Cisco PMs are sought after for PM roles at networking companies, but have a hard time getting considered for PM roles at enterprise or Internet software companies".

5) Microsoft (Redmond Washington) /Yahoo (Silicon Valley) – Strengths are 'managing up' and communication skills.

4) Yelp (San Francisco) – strength in design (consumer).

Uber (San Francisco)/ Linkedin (Silicon Valley) – 'well rounded'.

3) Amazon (Seattle) – "More so than PMs at other companies, Amazon PMs are known to be absolute grinders. Amazon PMs (along with Amazon employees in general) are the only ones known to consistently work 60 hour work weeks".

Facebook (Silicon Valley) – 'Well rounded', additionally, "being a Facebook employee is like being at Harvard. That is, joining Facebook will offer a network of movers and shakers that you'll find valuable throughout your career, trailing Google's by just a tad".

1) Google (Silicon Valley) – "Google PMs are more likely to have game-changing, moonshot product vision and be the most technical of the bunch.

They're also known for their incredible team leadership. They'll step up to take a firm leadership role, buy doughnuts and coffee, and even code if they must".

Note – the somewhat inconsistent numbering in the list has not been changed from the original source.

Given the findings yet to be discussed in this thesis (and some comments from the literature above), it's very interesting to note that Google PMs are regarded as the best of the big tech firms.

Historic thoughts on general roles at HQs compared to branch offices

One of the historic concerns of organized labor has had against multi-national firms is that a multi-national could "keep highly skilled tasks in its home country and farm out only low-skilled tasks to foreign plants" (Kumar, 2010), making it easier for the company to switch production between countries and lowering union bargaining power.

In a paper published as part of a book on global mobility, Odiil Bozkurt noted that many of his interviewees "who had worked in branch offices that the organizational depth is not comparable with the range of possibilities the headquarters offers. "You can only go up that far" in the branch offices and "there are not that many things to do"" (Bozkurtt, 2006).

However, there have been opposite views – According to the Economist, there have been fears in America "that well-paying jobs in services will follow manufacturing jobs to the developing world. Norman Augustine, a former boss of Lockheed Martin, says that "virtually no one's job seems safe." Craig Barrett, the chairman of Intel, admits that "I worry for my grandchildren"" ("Nightmare scenarios," 2006).

Methodology used to investigate hypotheses

As this is a Masters' thesis with significant time and resource limitations, a number of different techniques were used to investigate the key hypotheses that have been identified above. H1: To try to quantify how important big tech is in training PMs in our chosen eco-systems, some analysis was performed using LinkedIn. For The San Francisco Bay Area, Boston and London, former employees of Google, Apple, Facebook, Amazon and Microsoft were looked up using the site. The search was set to filter for people whose profiles included the function: product management and who currently or in the past had the job title of product manager. These numbers were then compared to the total number of people with product manager in their profile as well as product management in their function currently working in organizations which contain 500 people or less in these locations (as per LinkedIn). As well as showing the relative sizes of the product manager talent pools for startups, this allowed for a comparison of the number of PM alumni from iconic firms and the total number of PMs working in SMEs in each location.

H2: The primary way of investigating whether the skills of PMs differ between the Bay Area and other locations was through interviews. The original intention of this thesis was to perform large scale surveys of PMs working for the largest technology companies in the San

Francisco Bay Area (HQ) and branch offices in London and Boston. The aim was to understand whether there were any patterns in skills and experience obtained by employees in these different locations.

To facilitate this, a number of PMs were interviewed to try to inform the author on the best questions for the questionnaire, to see if there was anything that people in the industry could recommend to further the thesis objectives and to understand their views on the thesis topic. Ten people with PM experience (mostly from technology firms) were interviewed, including people who had worked or interned at Google (2), Apple and Amazon.

The interviews were performed using a semi-structured methodology with the interviewer having a number of questions/prompts but with the conversation often developing organically. Typical questions asked included:

- What you feel are the most important responsibilities of a product manager?
- What makes a good product manager?
- Do you think it's possible for me to understand the qualities of product managers through sending them surveys or looking at LinkedIn profiles?
- Do you think that the training/experience of product managers differs between company head offices and branch offices or between different geographic locations?

There were a number of learnings from these interviews (which are discussed in detail below). One of the key learnings was that large scale surveys would not be feasible for the following reasons:

- Getting useful data from surveys would be extremely difficult given that variety of PM roles in large technology firms
- Many answers will be relative or may be complex – these would be hard to incorporate into surveys
- There were concerns about likely low response rates as well as whether respondents would trust their anonymity (and therefore give answers they believe their employers would want).

In addition to interviewing people with PM experience, two HR professionals were interviewed. One was a senior employee with Google, with responsibilities for global PM matters. Another was a recruitment professional for Amazon. Questions asked to these interviewees focused on what their companies looked for in PMs and whether they thought their PMs had different experiences in their HQs compared to branch offices.

The interviews led to one piece of additional research – LinkedIn was used to quantify the number of Product Directors currently working for selected iconic tech firms in their HQ, San-Francisco office (if it isn't the HQ), Boston and London. The filters used were: Current company, Function (Product Management), Title (Director of Product). The rationale for this was to understand how much access PMs would have to senior product colleagues in different locations – this could be used as a proxy for closeness to key decisions and decision makers, opportunities for networking with senior staff, availability of coaching from experienced leaders and potentially even the importance of a location in terms of product management.

H3: To investigate the proportion of big tech firm alumni that founded startups, Thomson Venture Xpert was used to create lists of companies in our three locations that had raised series A

VC funding rounds from 2012-2014. The geographical filters selected were: Moneytree region – Silicon Valley (note this filter seems to pick up companies in the Bay Area as well as just those geographically in Silicon Valley), Metropolitan location: Boston (for Boston/Cambridge and surrounding areas) and World sub-location: United Kingdom, with the report then filtered to London or close by locations (E.g. Reading).

For all three reports, seed and early stage growth filters were ticked. For Silicon Valley, the series A box was also ticked, it wasn't ticked for the other locations because if it was it then returned very small numbers of results for those locations.

Before selecting the samples in each location any companies listed as bio-technology were filtered out of the downloaded excel report. Other industries weren't filtered out because, having looked at some of the categorizations it became clear that they were misleading for the purpose of this research e.g. Lyst, a prominent London fashion e-commerce site is listed as being consumer products, Transferwise, a London Fintech startup has codes relating to financial services.

The next step of the process was to have excel assign the remaining companies random numbers, the lists were then re-sorted by order of their number and companies were selected for samples in this order as seen in Table 7: Sample sizes for Product Manager co-founder research. Unfortunately, when the details of companies' funding were examined on Venture Xpert, most of those within the London and Boston samples (and many within the Silicon Valley sample) had funding which was not specifically marked as Series A (even though the rounds were relatively large). The decision was taken to exclude these companies from the sample. Similarly, some companies within the sample were excluded as either their location or industry was deemed to be too far from general tech for them to potentially benefit from former big tech PM co-founders.

Note – whether someone was a PM was discovered using LinkedIn. Co-founders were considered PMs if they specifically listed that role or the roles of VP or product or product director etc in previous big tech companies. In most cases, the founders of a company were found by viewing the company's entry on Crunchbase. The definition of big tech for this exercise was a company that most business people would recognize (which is of course subjective), not simply the iconic technology firms discussed above.

H4: To understand whether startups with PM co-founders were able to raise more funding following their Series A, the average amount of follow-on funding raised by companies with a PM co-founder from big tech (including those that raised no further funding) was compared to the fund raising performance of all companies in the sample that raised series A. In addition, the proportion of companies with big tech PM alumni co-founders that raised any money in a round beyond Series A was compared to the results for the sample as a whole. This was to understand if there may be some type of link between a PM co-founder and the ability to raise further funding regardless of amount (amounts may vary due to several factors e.g. size of market the company operated in or amount of capital required).

The role of big tech in product manager training

The figures in Table 1: Former employees who are/were product managers and Table 2: Former employees who have product management in their profile, by location %, speak for themselves, in terms of PM alumni from the largest/most prominent technology firms San Francisco has by far the largest population, being over ten times larger than the other sectors being studied. What is interesting is that London has a slightly larger number of PM alumni than Boston. This result was unexpected and is largely due to Google and Microsoft large presence in

London (as well as Reading for Microsoft). As the note under Table 1 points out, Microsoft and Amazon are based in Seattle and the data shows that most of their PM alumni are there, but it is still interesting to note that other than their HQs, the Bay Area has by far the largest number of PM alumni compared to the other locations.

Certainly in terms of numbers, it seems like the San Francisco startup eco-system where many of these companies are based has a clear edge in terms of a pipeline of PMs with experience at the top tech firms. It is likely to be a safe assumption that that most of the PMs noted above were employees of these firms at those locations, though it would be fascinating to see if there is much movement post-employment and why e.g. Are there large number of former Google PMs who were trained in London and Boston who made their way to the Bay Area and if so why?

Building on this LinkedIn analysis, an exercise was then undertaken to try to quantify the number of PMs in each location likely to be working for start-ups or scale-ups. Before the data is analyzed below, it should be noted that these will be extremely rough figures, included in them will be PMs (or former ones) simply working for mature SMEs. The analysis will also pick-up PMs working in FMCG and Finance, as restricting the search to pure software PMs may exclude for example PMs working for travel websites etc.

Table 3: The number of people with product manager in their profile as well as product management in their function and where they work, shows that once again, in terms of numbers San Francisco is in a league of its own, with more than double the number of PMs working in companies of up to 500 people. One could in fact go further and note that whilst San Francisco is known for its technology/software companies, Boston has a disproportionately large Bio/med-tech sector and London has large specialized financial services and fashion clusters where nature companies may be employing numerous PMs. Therefore, if we consider the likely numbers working in non-pharmaceutical technology based startups the San Francisco Bay Area is likely to have a bigger numerical advantage than the data suggests.

If we compare Table 1: Former employees who are/were product managers to Table 3: The number of people with product manager in their profile as well as product management in their function and where they work (as analyzed in Table 4: The number of alumni of selected firms in each territory as a proportion of all PMs working for companies with 500 people or less), we notice another striking difference between San Francisco and the other two geographies - the relative sizes of the PM populations working in organizations of 500 people or less compared to PM alumni of our selected organizations.

This difference between San Francisco and the other locations in the table above is striking. Whilst this cannot be interpreted as 45% of PMs in San Francisco are alumni of the selected firms (alumni might be working for larger firms or in unrelated roles or industries), it gives us an indication of the high proportion of PM alumni of our chosen firms relative to the PM in SME population in San Francisco, but how these alumni are a much smaller proportion of the Boston and London eco-systems. It may also mean that the data is slightly skewed – Boston's and London's figures could include PMs working in bio-tech, financial services (not including fin tech) or FMCG industries given these eco-systems have specializations in these areas. This would have the effect of increasing the total PM population size but not the number alumni of big tech.

Another interesting learning from the data is that although there are variations between firm sizes, in general, the numbers of people in Boston and London with PM in their LinkedIn profile is very similar. Including Reading (which has a large Microsoft presence) actually significantly affects London's results, without Reading London's figures are even closer to Boston's.

Table 5: Number of product managers as % of San Francisco Bay Area's, shows Boston's and London's PM numbers as a percentage of the Bay Area's. This data shows very different trends between Boston and London. Apart from the very smallest company (01-10 people, 28%), Boston's number of PMs as a percentage of San Francisco's remains remarkably steady at between 40% and 42%. It could be speculated that the lower figure for companies with 01-10 people may be due to the nature of Boston startups. Arguably they are more likely to be 'deep tech' university spin-outs (from MIT, Harvard, Boston College, North Eastern etc) than those in San Francisco and therefore more likely to start with bigger teams.

In contrast, London's PMs as a percentage of the San Francisco Bay Area's varies by 17%. The table shows that London is relatively well represented by PMs working in very small companies, with London having over half the PMs of San Francisco in organizations of 1-50 people. However, London only has 45% of San Francisco's number of PMs in organizations which have between 51 and 200 people. This falls to 38% in organizations of 201-500 people. It is difficult to speculate on the reasons for London's PM population to be disproportionately employed in very small companies, however this could be either a symptom or a cause of London's difficulty in scaling up promising startups.

Findings from interviews

Product manager interview findings

Unsurprisingly, when interviewees were asked about the main features of the role, the skills required and what makes a good PM there was a lot of overlap between interviewee answers and the literature discussed above.

The role

Some interviewees noted that the position of PM is very broad and that in practice the role can vary greatly. For example, PMs working on different points of the product life cycle will have very different day to day roles.

One interviewee with 10 years' PM experience described the role at a basic level as bridging customers and engineering, deciding what the product should do and then making sensible investment decisions. He continued by noting that another way of looking at the PM role is that it overlays all functions and ensures that the products the company is going to market with are the right things to be doing. Intriguingly, the interviewee stated that "product managers sit in central point of engineering, sales, support", which has differences to our Venn diagram from Figure 9: The intersection where a product manager sits. This further demonstrates the variability in the priorities and position of PMs in different companies.

Another interviewee focused very much on PMs as communicators and bridge builders – they need to understand what a product needs to accomplish by talking to customers and then translate/explain that to the engineering team.

An experienced PM based in San Francisco distilled the role into two points:

1) Towards the product - making sure the product comes out on time and is good quality
2) Towards team - making sure they're happy and that you're addressing their issues and that they're working together in unison.

What makes a good product manager/what skills do they require

The answers to these questions were interesting and tended to be quite diverse in terms of focus and emphasis, likely because of differences in personal experiences and roles.

Several interviewees noted that excellent soft skills are required to be good at the role, in particular the following skills were mentioned; influencing, communicating and presenting, dealing with difficult/different people, consensus and trust building.

Two interviewees specifically mentioned empathy as a key skill for PMs, with one emphasizing in particular the need to empathize with the development team and understand what they're going through, especially if the PM doesn't have a technical background.

Many interviewees focused implicitly on the need to be comfortable wearing "different hats" and the wide range of skills required to succeed in the role. Another skill-set mentioned a lot was being a team player, or being able to work in teams. This appears to be a result of PMs' position as the interface between different functions and the need to work closely with all of them.

One of the most specific answers to this question was from a senior PM at Amazon based in California. He felt the over-arching skill for PMs at his company was data analysis skills and being comfortable with statistics. This was echoed by another PM working for a large company in California.

The interviewees perceptions on product managers working in Silicon Valley compared to other locations

An interviewee who interned with Google in a large US branch office felt that there might well be differences between the PMs inside and outside of their Mountain view HQ:

- His experience of Google was that projects at the HQ seemed to be more interesting than the projects at his branch
- He felt that key executives often want to be close to key production personnel, therefore key projects are likely to be at the HQ
- He wondered whether PMs based in the Bay Area were more likely to have previously been in startups and whether this might make them better fits for startups if they leave Google.

Another interviewee who interned with Google (also in a large US branch office) went further:

- His experience was that all core products were managed out of Mountain view. Whilst significant elements might be run from other offices, it was harder for PMs in these offices
- He appeared to corroborate the idea that most of the key product people were in Mountain view and that key decision makers needed to be close to the HQ.
- The interviewee noted that whilst he was going through the recruitment process he was told several times by Google staff that it was better for peoples' careers to work in the Bay Area, reasons given included that teams grew quicker there and that there were more opportunities to switch products as well as more visibility to senior staff.

The interviewee from Amazon felt that PMs didn't have different experiences outside of the valley, but it would be hard for him to tell if they did. He noted that Amazon puts a lot of effort on keeping an eye on their global culture.

Other relevant points from the interviews

One interviewee noted that the PMs who left his firm to join startups were often relatively good ones, and from his experience tend to join startups as co-founders.

Another interviewee felt that the PM roles at large and small companies are the same at the basic level. The differences being experience. People in large firms have access to a lot of resources, support and structures and may have relatively deep specializations whereas PMs have a lot less support. She noted that it was rare for startups to train PMs from scratch – they usually have some experience from large companies or other startups.

Whilst it wasn't possible to interview him, the author was able to correspond with a former senior PM at Google who is now a partner at a well-known VC firm that invests in the US and Europe. His general feeling was that the experience of Google PMs between Silicon Valley and large branches like Boston or New York would be "pretty similar".

In terms of the strength of PM talent pools, he felt that "The talent pools are unquestionably smaller in cities outside of SF/Silicon Valley, no question about that. Sometimes that's offset by a less competitive environment - some strong companies in our portfolios report that there are fewer candidates, but that they close 100% of their offers versus the Bay Area where your candidate might have competing offers from Google, Facebook, Uber, Slack, etc………..That said, I definitely hear from companies outside of the Bay Area that it's hard to find good PM candidates". Another point he made was that when he was at Google he didn't think that there was a difference in the quality of projects between the HQ and branches, but there may be a difference in the quantity of these projects due to the relative sizes of the HQ compared to the branches. He was also keen to stress that the definition of PM may well vary in different locations.

Interview with the Global Staffing manager for product management at Google

The author was fortunate to be able to interview a senior person within Google's HR team. The interview proved to be highly illuminating.

What Google looks for when recruiting product managers

Google looking for technical PMs likely to have an engineering degree with entrepreneurial service. In google, the closest they have to General Managers are product manages. Google philosophy for PM is they don't recruit PMs for a specific role, they believe that if they hire people they will be able to do anything. Note whilst what Google looks for in PMs is uncontroversial, the idea that they don't recruit for specific roles does contradict Ken Norton's experience – potentially the policy has changed.

Rating product managers in different geographies

PMs are evaluated by region e.g. EMEA, and the company is now working on slicing employees by product areas and geography. People in different locations aren't directly compared to each other, however, there is an EMEA steering committee for PMs. Historically employees were given a numerical rating for their performance. Now Google has moved to a more qualitative system, but when there was a quantitative system in place there wasn't a difference in grade distributions between regions.

Are there differences in product manager quality or roles in different locations?

The interviewee had mixed thoughts on this. He argued that the divide wasn't between Mountain View and every other office, but between large and small offices. Smaller branch offices such as Cambridge often look after specific features or support of a product, PMs here might not have true ownership or visibility of the product. However, larger branches like London often do have significant co-ownership of products, with VPs of product based there. These bigger offices have more exposure to whole products and to leadership. For example, mobile products have a big presence in London and that office is responsible for building broad feature sets, the experience of PMs on these projects would be very similar to those in the Bay Area. London works on 4 or 5 different products though localization (which the author suspects would provide an inferior experience) would be part of this work.

The quantity and availability of product managers in different regions

His experience is that often PMs will begin their careers in roles at startups before moving to Google. The hardest location for Google to recruit product mangers in is the Bay Area (except for the very smallest offices). In this location every PM they make an offer to will also get multiple other offers and a lot of people go back and form between startups and big-tech (acquihire plays a part in this). They can guarantee to fill roles in London and New York, in a way they can't in the Bay Area – arguably there is less competition for talent in these places, although London may be moving away from this.

In general, offices with critical mass are able to recruit the best people. In the past it has taken a year to recruit into remote locations because they won't lower the bar for new joiners.

Are there differences in people or priorities between offices?

Typically, the average new graduate is interested in working in the Bay Area, but Google are good at selling their other large offices to potential applicants. Generally, it's those with more career focus who are interested in the Bay Area e.g. when PMs move from there to southern California their career progression is secondary to other factors.

However, Google are very pro-active in ensuring that promotion rates are similar from site to side and in different product areas. Any differences in promotion rates between offices aren't due to being in a satellite office, but people might have moved for lifestyle or other reasons.

Where do product managers go when they leave Google?

According to the interviewee, if there is a strong startup community in the area, e.g. the Bay Area of New York, the strongest performers will tend to leave to gain experience in startups. Google rarely loses top PMs to other big technology companies. Interestingly, PMs who move to startup very frequently come back to Google eventually. The very best PM alumni will either make their way into VC in the Bay Area or be placed by VCs into a Bay Area startup.

London would rank in the top 5-7 locations of Google losing people to startups, however he cautioned that there has been title inflation and that it should not be taken for granted that people with the title of PM were actually fulfilling the role.

The strength of product manager networks

The interviewee argued that PMs outside of the Bay Area might actually have stronger networks than those working at the HQ. He felt that with the volume of PMs in Mountain view there might also come anonymity. He also noted that the product management community in the Bay Area is now too big to manage as one cohesive organization e.g. to run a ski trip like they used to do, but EMEA still does region wide events.

Potential differences in product manager skill sets

The interviewee thought that underlying skill sets varied little between regions – overall the google PM role expectations stay constant. However, how getting things done may vary e.g. networking, influencing and different experiences might come into play when managing smaller resources.

Interview with Amazon recruiter

As part of this thesis, the author interviewed an experienced Amazon recruiter. Whilst they didn't specialize in PM recruitment, they were comfortable talking about PM recruitment and experiences at Amazon.

General comments on the role of location and experience

The recruiter was supportive of the hypothesis that PMs will have different experiences in different parts of the company, however she didn't think it was necessarily based on location. She felt experience might be more correlated to the nature of the team/product PMs are assigned to – those in a stable team or working on a stable product will have a very different experience to those working in fast growing teams or on rapidly evolving products.

What does Amazon look for in PMs?

They look for people who have a track ownership and delivering results. Amazon have 13 leadership principles. For PMs the big ones are the ownership component - being able to speak to engineers and work with them, create a launch plan and articulate their thoughts to management. Essentially they need people to own a process from start to finish.

On the role of location

The HQ in Seattle has a distinct advantage in terms of flexibility – there are a lot more projects and there more choice. People at Amazon are supposed to take advantage of this – they are encouraged to move between projects. Another advantage of Seattle is the new joiners will have a cohort of similar aged people who have recently moved to Seattle to network with. She also made the comment that at a high level everything rolls up into Seattle – meaning that this is where the key decisions are made.

She wasn't aware of new or potential employees worrying about their career prospects if they're based outside of Seattle, but thinks this may have happened in the past. She noted that moving to Seattle can be a tough sell for some people and there is a lot of enthusiasm for people to go to San Francisco – they often have to try to convince people to go to Seattle instead. In terms of hiring, she believes that there isn't a difference in who they accept in different geographies even if supply and demand varies greatly by location.

Follow up research from interviews

Number of product Directors by location (big-tech)

As can be seen in Table 6: Current number of Product Directors at big tech firms, it would seem that there is something to be said for the theory that there's a lack of senior product personnel outside of headquarters. The LinkedIn data (note this should be considered as an approximate number –e.g. the data hasn't been combed to root out incorrect entries or omissions) shows that the iconic technology firms do significantly concentrate Product Directors in the headquarters. For example, the search found 75 entries for Google in San Francisco, but only 1 in Boston and zero in London. Whilst the relative positions of Boston and London change depending on the company one thing remains constant for all the companies that were headquartered in San Francisco – the Bay Area had orders of magnitude more PMs than other locations. If we then look at Microsoft and Amazon – Seattle based companies, we see that

Seattle has by far the largest number of Product Directors. Intriguingly for both companies the Bay Area is easily the location with the next highest number of Product Directors.

Quantifying the effect of big-tech product manager alumni in founding new ventures

We have demonstrated that the quantity of the PMs in the big technology firms varies significantly between our chosen eco-systems (The San Francisco Bay Area, Boston and London) and that the number of PMs working in companies with 500 or fewer employees in these locations also varies greatly.

An attempt was also made to understand the prevalence of "big tech" PM alumni who found startups and to see if this makes the startups more likely to be successful.

The hypothesis here was that companies with co-founder "big tech" PMs would raise more funding on average than companies without them. Furthermore, given the findings above, we'd expect to see more "big tech" co-founders as a proportion of the sample in the Bay Area than in Boston or London.

Results of testing

The results of testing are summarized in Table 8: The results of the Venture Xpert testing

Analysis of results

The first striking outcome is how much the lack of categorization of Series A rounds has reduced the usable sample size. Allowing for this though, the results are intriguing. Silicon Valley has more than double the proportion of PM co-founders from big technology companies (23%) in its sample than London or Boston. London has double the proportion on Boston (10% to 5%). Overall these results are consistent with the research from LinkedIn and interviews above – given that the Bay Area has both greater numbers of big tech PM alumni and they are greater in number relative to the SME PM community than the other locations. Whilst on the face of it, London having double to proportion of big tech PM co-founders than Boston seems surprising, this may have been the result of small sample sizes.

Where did the big tech product manager co-founders come from?

One notable takeaway from Table 9: Where PM big tech alumni came from, is the lack of Facebook, Amazon, Apple and Microsoft (except for Skype) alumni on this table. It would appear that of our select group, Google PMs are the more entrepreneurial!

However, it was surprising that more PM co-founders weren't discovered, especially in Silicon Valley. The author can think of four potential reasons for the surprising lack of PM co-founders from big technology companies:

(1) Companies with PM co-founders from big tech tend to fail before raising series A funding

(2) Whilst PMs from big tech leave to work in startups, they tend to be employees much more than founders

(3) Some founders couldn't be found on LinkedIn or had private profiles, potentially this skewed results

(4) Co-founder PMs from big tech might found companies relating to specific domain experience e.g. if Facebook alumni might all be concentrated disproportionately in ad-tech startups.

Were startups founded by product manager alumni from big tech more successful in fundraising?

Potentially the most interesting finding from Table 8: The results of the Venture Xpert testing was that the average amount raised by companies with a co-founder who had worked in product for big tech was on average less than the sample in general. The author had expected to find the opposite. However, it should be noted that a number of companies without PM co-founder from big tech but huge follow-on rounds have significantly skewed the results of this test. London has three outlier companies which raised outsized follow-on funding; Funding circle ($289m), Lyst ($103) and Roofoods ($207m). These companies account for 71% of all further funding in the sample and without them the total follow on funding average would be $9.5m, significantly lower than the companies with PM co-founders from big tech. Similarly, for Silicon Valley, Instacart was responsible for $254m of follow-on funding (34% of all follow-on funding). If Instacart is removed from the analysis, the average follow-on funding for all companies is $14.3m (which is still above the equivalent figure for companies with big tech PM alumni co-founders). Similarly, Boston's results are skewed by Draft kings (no big tech PM co-founder) which raised $416m of follow-on funding (59% of total follow-on funding). Removing Draft Kings from the analysis, the average follow on funding for all companies is $14.4m. However, comparing this figure to the one fundraising by the one company in the sample co-founded by a big tech PM alumnus is unlikely to allow us to draw a sensible conclusion.

When considering these results it should be noted that many companies in the samples raised funds but they were undisclosed (and therefore counted as zero). One company in the London sample was acquired before further funding was raised, this company was counted as not having raised $0 further rounds.

However, if we look at the data another way an interesting trend occurs. If we take the proportion of companies with PM co-founders that were able to raise further funding and compare that the overall proportion of companies able to raise follow-on funding, we see that in all 3 locations companies with PM co-founders seem more likely to raise further funding.

Conclusions

The role of PM in technology companies will vary significantly within and between firms. Attempting to quantify the quality of different PMs in different locations as an academic exercise has proved extremely difficult. This thesis has confirmed that large technology companies train a significant proportion of the Bay Area's, Boston's and London's pool of potential PMs for start-ups and scale-ups with the Bay Area's pool being particularly deep.

H1 (A large number of the potential PM recruits for startups in various locations are trained by the largest multinational technology companies) is accepted. It was noted that as well as the overall quantity of former PMs from iconic tech firms being much higher in the Bay Area than in Boston or London and the relative size of this alumni group compared to PMs currently working for companies with 500 employees or fewer seems to be significantly higher in the Bay Area y than Boston or London. Even for Microsoft and Amazon, both of which are headquartered outside of the Bay Area, the number of product manager alumni is much higher in Boston or London. This could demonstrate that as well as having a large talent pool due to the presence of big-tech HQs, the Bay Area may also benefit from being seen as a center of excellence for technology products resulting in it having abnormally large branch offices (either grown organically or through the acquisition of startups based there). Another potential reason for the large number of PM alumni from Microsoft and Amazon could be the strength of the Bay Area's innovation eco-system which would encourage them to found or work in startups in the area.

H2 (The skills that PMs learn/experience they gain outside of the Bay Area HQs of these big tech companies (and potentially the caliber of the PMs themselves) are at a lower level than those based in the San Francisco Bay Area) is neither fully accepted nor rejected.

It seems likely that very small offices outside of San Francisco provide a very different experience to PMs to San Francisco HQs. However, there is conflicting evidence about whether PMs at larger hub offices that have gained critical mass have a similar experience to those in HQs. There does seem to be a perception from lower level PMs inside these larger hubs that their career progression and the quality of projects they work on are disadvantaged by being outside of the Bay Area HQ. This view isn't shared by (Google's) HR or by staff with more experience from the Bay Area. One potential area of agreement is that the choice of projects is greater in the Bay Area or in other HQ locations – this might affect how well a PM can match his or her skill set to the role or expand the breadth of their knowledge. Another issue raised was that of self-selection – there seems a real possibility that the most driven and ambitious PMs make their way to the Bay Area, leaving the less motivated in other locations.

In addition, companies examined that had HQs in the Bay Area had at most 1 product director in Boston or London, compared to a minimum of 27 in the Bay Area. This may signal that part of the perceptions of more junior staff may be justified – whilst having teams working across countries or continents is now common place due to improvements in communications technology, the author finds it hard to argue that being in direct face to face contact with senior staff would not provide an advantage to employees. This could take many forms – the ability to influence a product, being in a senior person's mind when they are putting together a team, the opportunity for coaching and informal networking that contact with senior staff provides and at the most basic level a window into how the company works and what behaviors/skills are necessary to progress quickly or be highly thought of. Whilst the author hasn't been a PM or worked for a tech firm, in his own experience in professional services regular face to face access (and direct reporting to) senior staff is crucial to employee career prospects, due to the ability to have a senior backer/mentor as well as gaining an increased understanding of how performance management and promotion processes work. On top of this, the author has also seen how relationships with senior staff can affect opportunities to work on different projects.

One interesting item to note is that even the when the Bay Area is a branch office, as in the cases of Amazon and Microsoft, it appears to have a greater number of product directors than other branches and the location is still an extremely sought after by new recruits (Amazon). This re-enforces the conclusion from H1 that potentially even when the Bay Area itself isn't the HQ location, it still has some HQ characteristics/benefits.

H3 (The proportion of startups founded by PM alumni of big technology companies will be greater in the Bay Area than in other locations) is provisionally accepted. We have shown that start-ups in Silicon Valley which have raised a series A round are more likely to have big tech PM founders than those based in the other two locations. There are, however some significant caveats to these results. The first is that due to the poor quality of data in Venture Xpert, the effective sample sizes were reduced considerably. Given the sizes of the effective samples, we should be extremely hesitant to view the results as conclusive. Rather, they should be seen as an indication that more thorough research e.g. as a PhD thesis could be a worthwhile pursuit. Secondly, the results have a significant risk of human bias/error. Co-founders left off of Crunch Base (which can happen) would not be included in the data. Arguably more importantly, deciding if someone was previously a product manager relied on the author analyzing their LinkedIn profiles. Some profiles were private; others couldn't be found. Many had product management as endorsed skills but no formal role as a PM (or product director/head of product) that the author could identify, therefore they were excluded. In addition, as was noted by at least one interviewee, the role of product manager is not uniform people with the title might not be 'real' product managers, people without the title might be e.g. according to one interviewee, program managers at Microsoft perform at least elements of product management. Therefore, whilst the results of the sample testing indicate a higher propensity for Silicon Valley startups to contain former product manager co-founders from big tech, it should not be taken as definitive proof that the hypothesis is correct.

H4 (Startups with PM co-founders will be able to raise more funding following their Series A round than startups without PM co-founders) has not been proved or disproved – the data shows that having a PM co-founder doesn't increase the amount a company raises in the future, in fact in all 3 locations companies with PM co-founders from big tech raised less than the sample average. However, having a PM alumni co-founder might increase the chances of a startup raising series B funding (of any amount) with all 3 locations showing a marked increase in the proportion of companies gaining funding after series A if they had an alumnus co-founder (especially London which saw companies raising follow-on funding increase from 62% (all companies) to 100% (former big tech co-founders). This may indicate that former big-tech PM co-founders may be able to help their start-ups scale more effectively than startups without them, or as an alternative, they may be better at pitching and speaking to VCs (who could be former PMs).

Overall however, due to the small effective sample sizes (noted above), this data cannot be relied on to generate concrete conclusions. For example, the amount of follow on funding raised by location was heavily influenced by a few companies raising extremely large amounts. Similarly, several companies gained further funding, but the amounts were undisclosed.

Recommendations for further research

There may be scope for more research for comparing the skills/experiences/performance of PMs in different locations in big tech companies by others if they can commit to a long term project and particularly if they can gain access to staff and performance review data from large technology firms. It would be most intriguing if researchers could work with the HR departments of the large technology firms to identify employees who have worked in product management in different locations and interview them in large numbers. Researchers would also need to understand the structure and working habits of product teams e.g. to understand the effect of having fewer product directors in branch locations.

Furthermore, additional research on funding rounds and company co-founders may over time yield significant results which this thesis has not been able to do. This research would need to spend significant time cleaning data sources and creating a methodology for defining a series A round independently of the deal databases.

Larger samples could also prove or disprove the finding in this thesis that having a bit tech alumni co-founder seems to have an impact on whether a startup successfully raises funds post series A or not. In addition, with more time and resources a study could be made to analyze not just whether having a PM co-founder from big tech affects a company's chances of success, but also whether hiring PMs from the iconic companies helps startups to scale quicker.

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Appendices

Figures

Figure 1: Global venture capital investment

Source: (Florida & King, 2016)

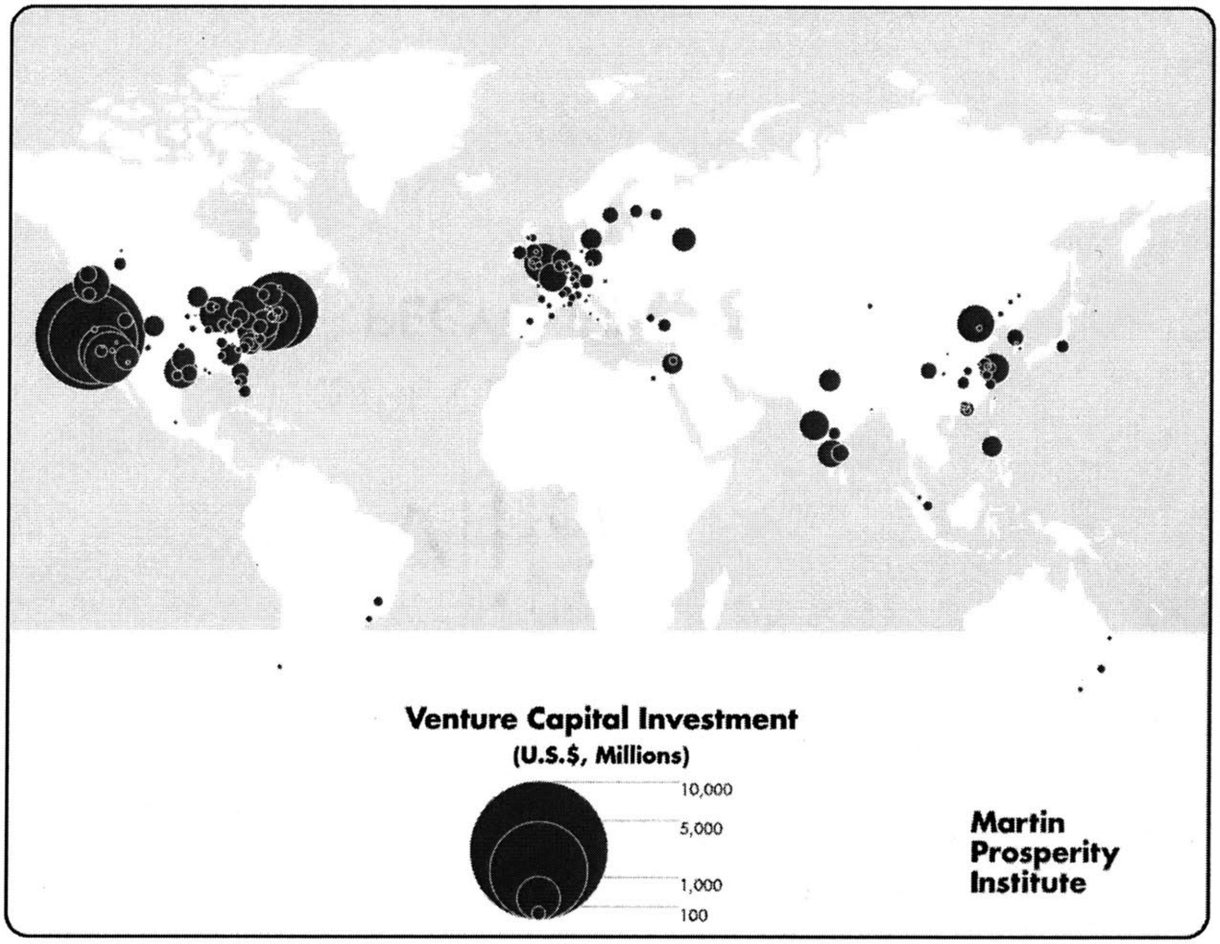


Figure 2: London Tech Investment per year 2010-2014 ($ millions)

Source: ("UK Tech Investment Hits Record High in 2015 - Tech City UK," 2015)

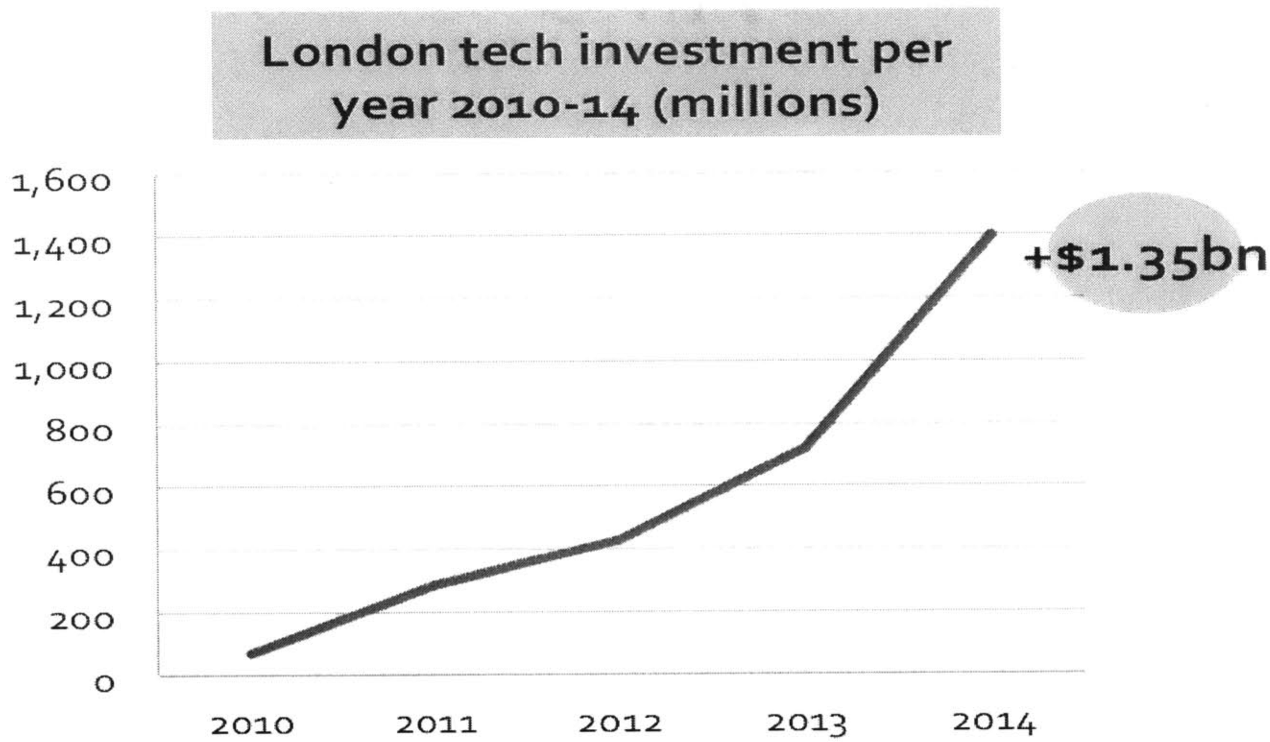


Figure 3 London Tech Advocates Survey Results

Source: (Tech UK et al., 2016).

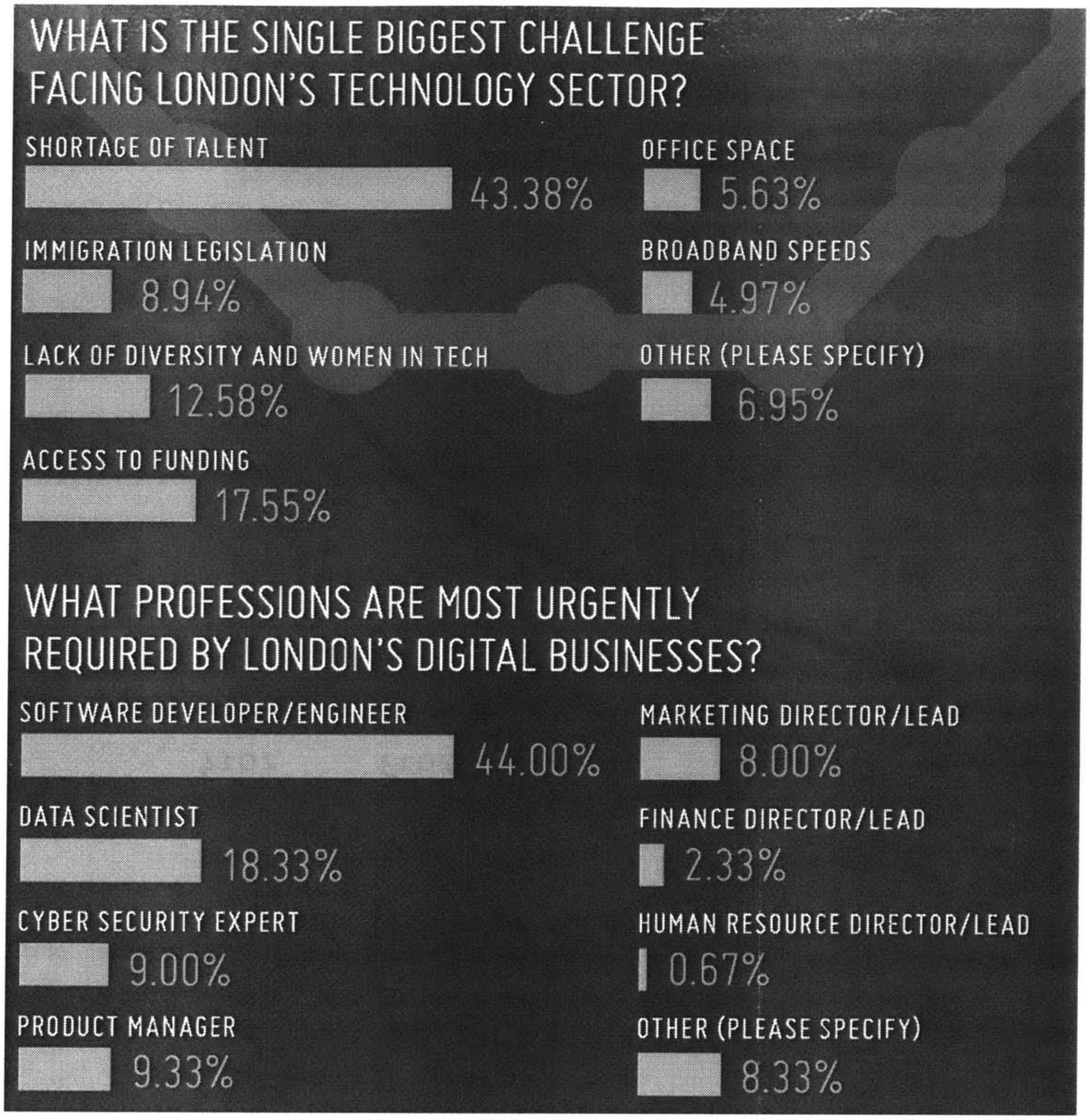


Figure 4: Silicon Valley ranking

Source: (Hermann, Gauthier, Holtschke, Bermann, & Marmer, 2015)

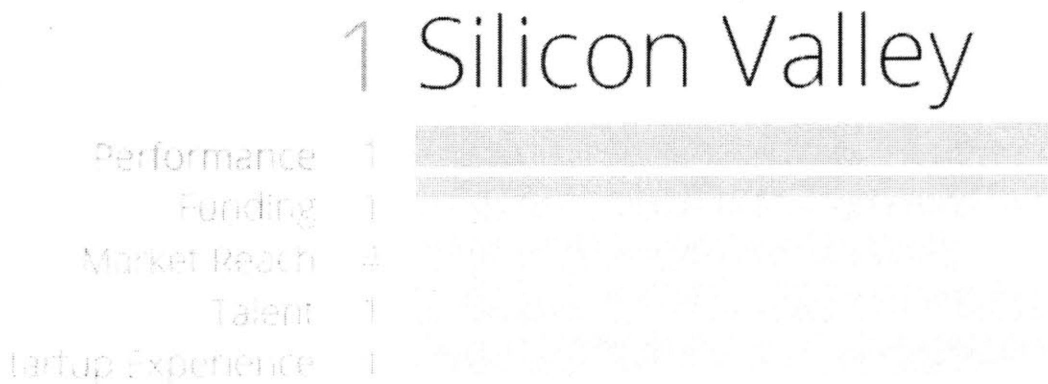


Figure 5: Boston ranking

Source: (Hermann et al., 2015).

Figure 6: London ranking

Source: (Hermann et al., 2015)

Figure 7: History of Product Management in Technology

Source: (Eriksson, 2015)

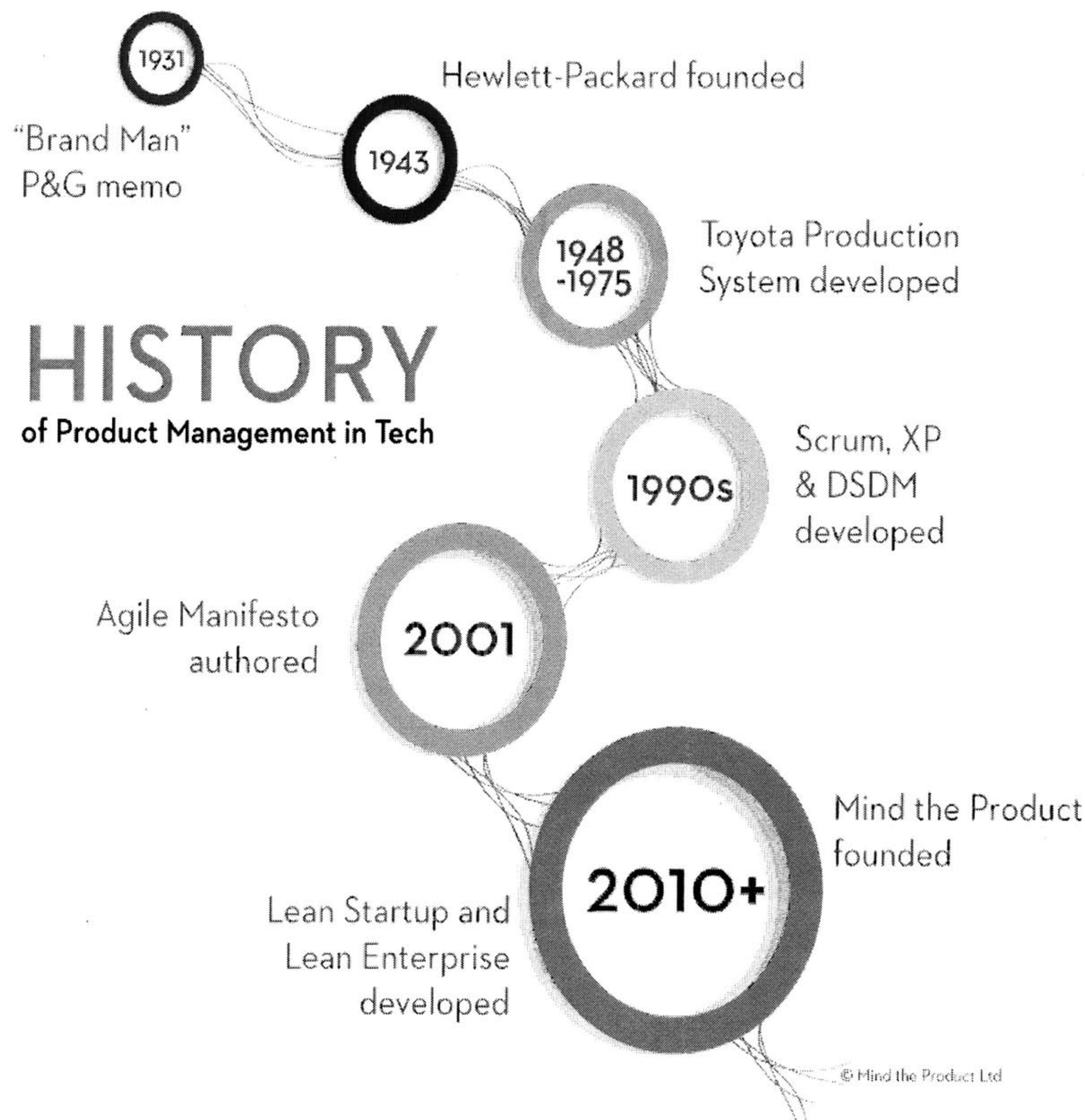


Figure 8: The Product Life Cycle

Source: (Joglekar & Forman, n.d.)

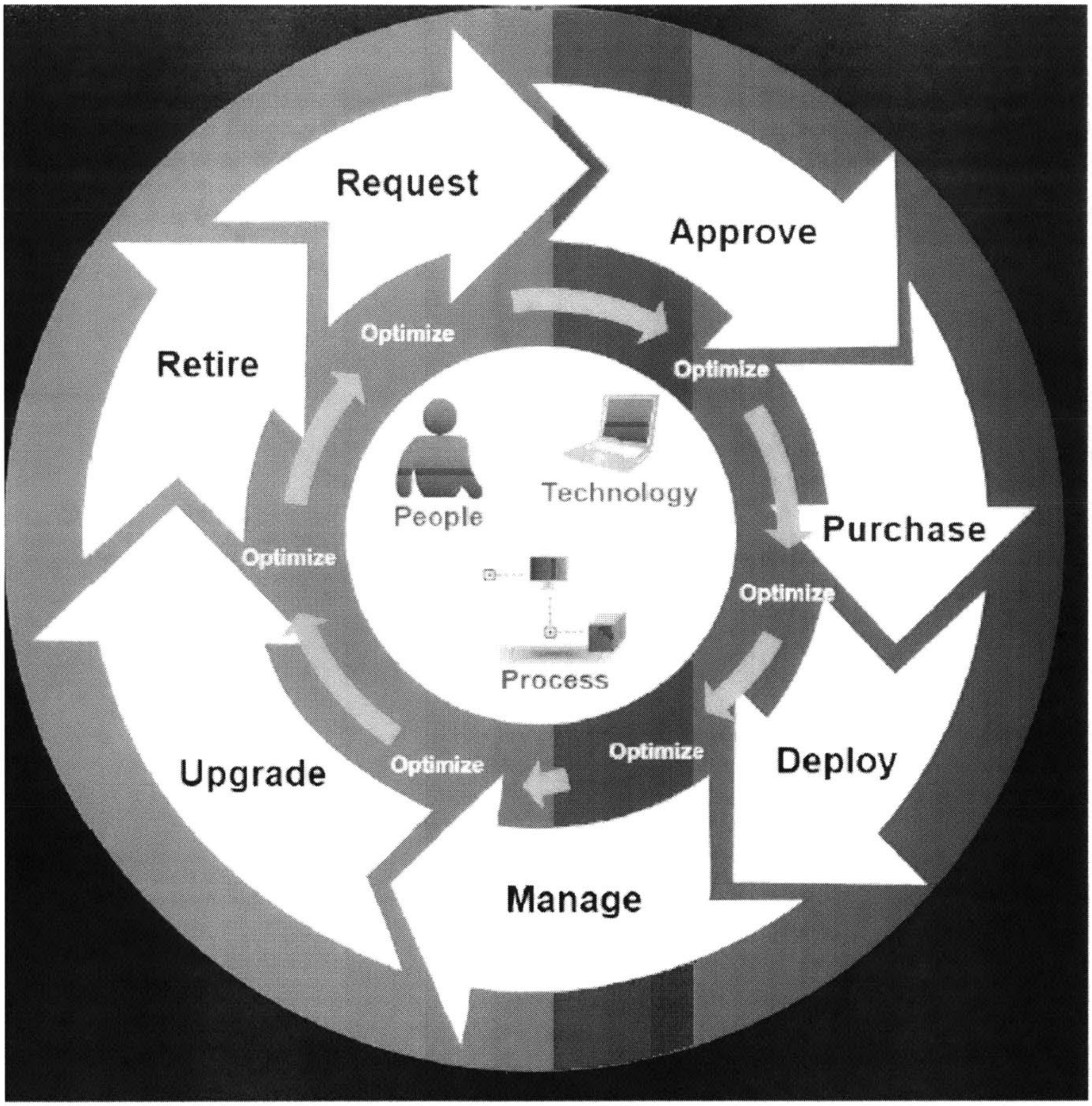
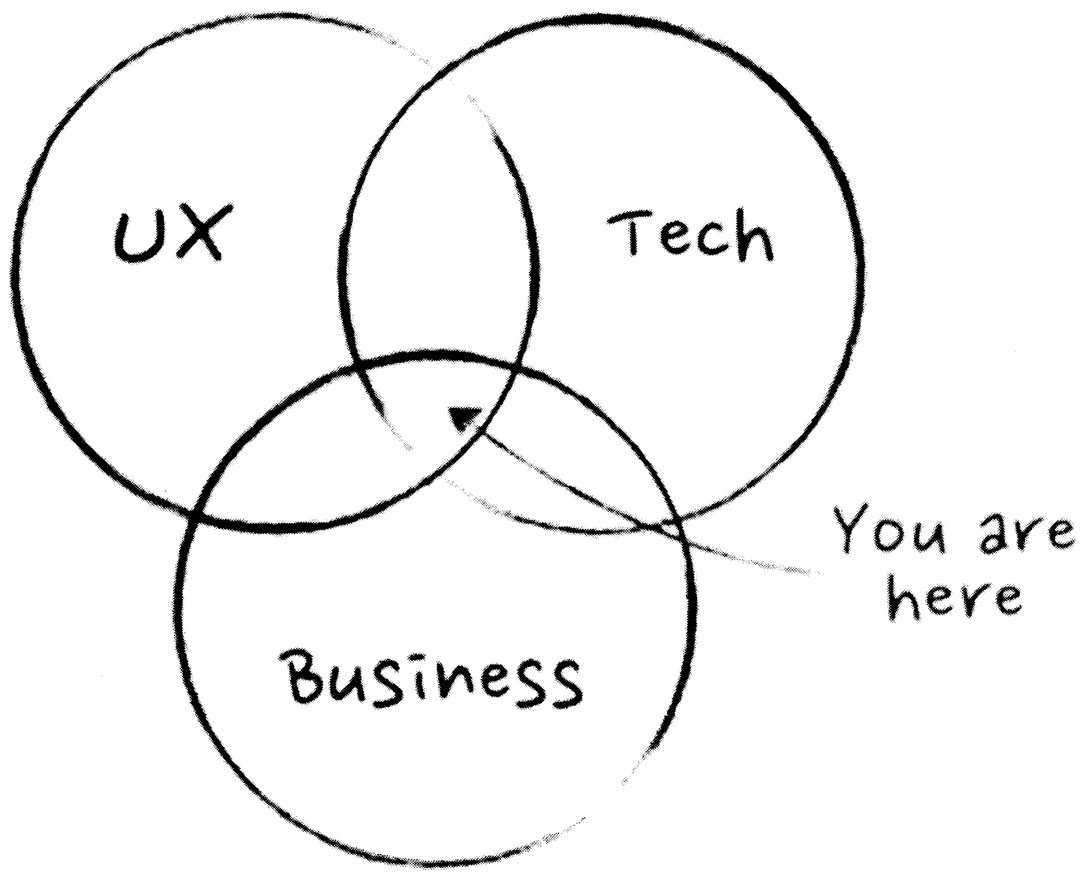


Figure 9: The intersection where a product manager sits

Source: (Eriksson, 2011)



Tables

Table 1: Former employees who are/were product managers

Source: data from LinkedIn

Company	San Francisco*	Boston	London	Total
Google	663	25	57	**745**
Apple	510	36	26	**572**
Facebook	161	2	9	**172**
Amazon	357	31	27	**415**
Microsoft	1,119	85	118	**1,322**
Total	**2,810**	**179**	**237**	**3,226**

Note – Amazon and Microsoft are based in Seattle. Microsoft because this was where Bill Gates and Steve Allen grew up, Amazon because this was a good location near the publishing industry. The data for Seattle is 953 for Amazon, 1,910 for Microsoft.

Notes on table 1 – Potential inaccuracies in LinkedIn former product manager analysis

The numbers from this analysis won't perfectly correlate to the number of PMs trained by these firms that are now dispersed into their eco-systems for the following reasons:

- Whilst it specifies that one role on their profiles was a product management role, it does not specify which – it could be that they weren't in a PM position whilst at Google etc but are now
- The numbers will include people who have moved from one of these big tech firms to another
- It won't allow for geographical moves e.g. someone trained by Google in San Francisco but who now lives in Boston will be counted in the Boston figures
- The figures will be influenced by how recently the companies expanded into each location and how large/strategic their hubs are there.

Separately, it should be noted that the London figure for Microsoft also includes Reading, a town very close to London where Microsoft has a large base.

*For all tables, San Francisco denotes the wider Bay Area, not just the city.

Table 2: Former employees who have product management in their profile, by location %

Source: data from Linkedin

Company	San Francisco* %	Boston %	London %
Google	89%	3%	8%
Apple	89%	6%	5%
Facebook	94%	1%	5%
Amazon	86%	7%	7%
Microsoft	85%	6%	9%
Overall	**87%**	**6%**	**7%**

*For all tables, San Francisco denotes the wider Bay Area, not just the city.

Table 3: The number of people with product manager in their profile as well as product management in their function and where they work

Source: data from Linkedin

Firm size	**San Francisco***	**Boston**	**London (incl Reading)**	**Total**
01-10 people	652	184	337	1,173
11-50 people	1,394	552	766	2,712
51-200 people	2,377	997	1,068	4,442
201-500 people	1,843	782	700	3,325
Total	**6,266**	**2,515**	**2,871**	**11,652**

*For all tables, San Francisco denotes the wider Bay Area, not just the city.

Table 4: The number of alumni of selected firms in each territory as a proportion of all PMs working for companies with 500 people or less

Source: Data from Linkedin

	San Francisco*	**Boston**	**London**
Alumni of selected firms as a proportion of PMs in organizations with 500 people or less	45%	7%	8%

Note: This is a hypothetical number to gauge the relative sizes of the two different populations. This data does not state that 45% of all PMs in SMEs in San Francisco are from the iconic tech companies.

*For all tables, San Francisco denotes the wider Bay Area, not just the city.

Table 5: Number of product managers as % of San Francisco Bay Area's

Source: data from Linkedin

Firm size	**Boston**	**London (incl Reading)**
01-10 people	28%	52%
11-50 people	40%	55%
51-200 people	42%	45%
201-500 people	42%	38%
Total	**40%**	**46%**

Table 6: Current number of Product Directors at big tech firms

Source: LinkedIn

Number of Current Product Directors	San Francisco*	Boston	London	Seattle	Total
Google	75	1	-	NA	76
Apple	41	-	1	NA	42
Facebook	27	-	1	NA	28
Amazon	4	2	1	47	54
Microsoft	15	5	2	136	158
Total	**162**	**8**	**5**	**183**	**358**

Notes on table 6: Unlike other tables using LinkedIn data, this one was populated using just current employees of the firms in the table. The filters were: Current company, Function (Product Management), Title (Director of Product). Seattle is not applicable for the first three companies. It was only used as Amazon and Microsoft are based in Seattle.

*For all tables, San Francisco denotes the wider Bay Area, not just the city.

Table 7: Sample sizes for Product Manager co-founder research

	London	Silicon Valley*	Boston
Sample size	100	60	60

*The Silicon Valley Moneytree region appears to include San Francisco

Table 8: The results of the Venture Xpert testing

Companies	London	Silicon Valley*	Boston
Sample (no. companies)	100	60	60
Suitable company (location, product)	82	50	49
Funding categorized as Series A by VX	29	40	21
PM co-founder from big tech	3	9	1
% PM co-founder from big tech	10%	23%	5%
PM co-founder further funding $m (av)	23.3	8.09	20
Further funding of all suitable companies $m (av) – amounts raised post Series A / no. companies with Series A funding	29.16	20.30	33.56
Proportion of PM co-founder companies raising further amounts	100%	78%	100%
Proportion of all companies raising further amounts	62%	70%	76%

*The Silicon Valley Moneytree region appears to include San Francisco

Table 9: Where PM big tech alumni came from

Source: data from LinkedIn

Silicon Valley*	**Boston**	**London**
Zynga	IBM	Skye/EBay
AVG, RSA, SAP		Yahoo
Oracle (x2)		Google
AOL/Ebay		
Paypal, Yahoo		
Google (x2)		
Cisco		

*The Silicon Valley Moneytree region appears to include San Francisco

Venture Xpert and LinkedIn sample data

a) **London**

Company Name	Suitable - business and location	Raised Series A? $m	When?	Follow on? $m	When?	Co-founders (from Crunchbase)	PM co-founder from big tech?	Company
Admedo Ltd	Y	2	07/29/2014	6	02/04/2016	Nick Moutter, Laura Bowen	N	NA
AffecTV Ltd	Y	3.07	07/23/2013	N	NA	Glen Calvert	N	NA
Amalyst Ltd	N - catalysts for fuel cells, not relevant	NA	NA	NA	NA	NA	NA	NA

AppLearn	N - Amnt raised too small - Thomson doiesn't count as series A	N	NA	NA	NA	NA	NA	NA
Azimo Ltd	Y	10	03/11/20 14	20	06/16 /2015	Ricky Knox, Marek Wawro, Michael Kent (profile closed), Marta Krupinska	N	NA
BBOXX Ltd	N - solar energy	N	NA	NA	NA	NA	NA	NA
Big Data Partnership Ltd	Y	2.1	06/05/20 14	4.79	05/07 /2015	Mike Merritt-Holmes, Tim Seears, Pinal Gandhi	N	NA
Birdback Ltd	Y	N - 2.4 - not marked series A on VX	02/06/20 14	N	NA	Nicolai Watzenig, Steffen Thilsted	N	NA

Blippar.Com Ltd	Y	N - rounds but not counted by VX	01/03/2015	45	03/06/2015	Jessica Butcher, Steve Spencer, Ambarish Mitra, Omar Tayeb		
Boticcacom Ltd	Y	2.43	05/16/2011	3.9	09/05/2013	Avid Larizadeh, Kiyan Foroughi	Avid Larizadeh	Skype/Ebay
Business of Fashion Ltd	Y	N - 2.1 not counted as A by VX	02/18/2013	Undisclosed (Crunchbase)	01/05/2015	Imran Amed	N	NA
Casabu Ltd	Y	1.34	03/11/2013	N	NA	Rachel Oxburgh, John Heseltine	N	NA
Ceebr Ltd	N - round raised in time period too small (0.4m per crunchbase)	NA	NA	NA	NA	NA	NA	NA
Citymapper Ltd	Y	40	04/17/14	40	01/21/16	Azmat Yusuf	Unknown -doesn't specify role	Google

Codilink UK Ltd (Coniq)	Y	2.73	12/29/12	N	NA	Ben Chesser, David Seddon	N	NA
Cofundit Ltd (Parcelbright)	Y	N - 1 (VX and Crunchbase count as seed)	12/05/2014	NA	NA	NA	NA	NA
Coinfloor Ltd	Y	N-Seed stage raised less than 1	11/01/2013	NA	NA	NA	NA	NA
Credit Benchmark Ltd	Y	7	07/09/2014	20	07/15/15	Donal Smith, Mark Faulkner	N	NA

Crowd Vision Ltd	Y	N - don't know how much raised and no follow-on	02/27/2012	N	NA	NA	NA	NA
Cypsel Ltd	N	N - don't know how much raised and no follow-on	10/07/2013	N	NA	NA	NA	NA
Digital Theatre.Com Ltd	Y	N - 1.21 (not classed as A on VX)	01/14/2013	Acquired by Big Clever Learning	11/02/2015	Robert Delamere, Tom Shaw, Tim dumenil	N	NA
Doutissima	N - Can't find details on CB	Undisclosed	NA	NA	NA	NA	NA	NA
Driftrock Ltd	Y	N - 1 (not A in Thomson)	05/12/2014	N	NA	Maximillian Dupenois, Matt Wheeler	N	NA

Econic Technologies Ltd	N - catalysts not relevant	NA	NA	NA	NA	NA	NA	NA
Edududes Ltd	Y	N - Seed round	NA	NA	NA	NA	NA	NA
Eeve Ltd	Y	N - Seed round/undi sclosed	NA	NA	NA	NA	NA	NA
Elliptic Enterprises Ltd	Y	N - 2 (Thomson doesn't count as A)	07/16/14	N	NA	Tom Robinson, James Smith, Adam Joyce	N	NA
Formula E Holdings Ltd	N - promotes racing…	NA	NA	NA	NA	NA	NA	NA

Funding Circle Ltd	Y	4.13	04/21/2011	289.25	04/03/2012	Alex Tonelli, James Meekings, Andrew Mullinger, Samir Desai	N	NA
Gloople Ltd	Y	0.24 (why is this counted as A???)	09/24/2012	N	NA	Warren Knight	N	NA
Glopho Ltd	Y	N - per VX 0.71 in 2 rounds but neither 'A' Initial round 0.24	05/28/2012	0.46	04/17/13	Simon Walker	N	NA
Gocardless Ltd	Y	3.3	04/18/2003	7	01/28/14	Hiroki Takeuchi, Matt Robinson	N	NA

Happyinc Ltd	Y	N - Seed per VX (amnt undisclosed	NA	NA	NA	NA	NA	NA
Hassle.com	Y	6	05/08/2014	N - acquired	NA	Jules Coleman, Tom Nimmo, Alex Depledge	N (several profiles closed)	NA
Hyperbees Ltd	Y	N - 1 round, undisclosed amount, VX does not count as series A	NA	NA	NA	NA	NA	NA
Iceotope Technologies Ltd	N - Sheffield	NA	NA	NA	NA	NA	NA	NA

Indexx Markets Ltd	N - pure FS also undisclosed investment not counted as 'A' by VX	NA	NA	NA	NA	NA	NA	NA
iROKO Partners Ltd	Y - grey area; founded in London but based in Lagos?	N - 8 (not down as 'A' on VX)	03/20/12	10	07/15/12	Jason Njoku, Bastian Gotter	N	NA
Jukedeck Ltd	Y	N - Raised only 0.17 during time period, raised more later	NA	NA	NA	NA	NA	NA
Kabbee Ltd	Y	6.12	11/18/2013	N	NA	Phil Makinson	N	NA

Klappo Ltd	Y	N - 1.05, VX counts as seed	NA	NA	NA	NA	NA	NA
Kwanji Ltd	Y	N - unknown amount, likely seed	NA	NA	NA	NA	NA	NA
Last Second Ticketing Ltd	N	N - 2 fundings, total 2.31 but neither marked as 'A'	NA	NA	NA	NA	NA	NA
LawPal Inc	Y	N - 1.2, VX doesn't count as 'A'	NA	NA	NA	NA	NA	NA
LeanWorks Ltd	Y	12	06/05/2013	43.36	08/07/2014	Rytis Vitkauskas, Viktoras Jucikas	N	NA

Likely Ltd	Y	N - 1.6, not series 'A' per VX	NA	NA	NA	NA	NA	NA
Loco2 Ltd	Y	N - 0.47, not series 'A' per VX	NA	NA	NA	NA	NA	NA
Lodgeo Ltd	Y	N - 3.25, but not 'A' per VX	NA	NA	NA	NA	NA	NA
Lostmy Name Ltd	Y	N - has raised series A per VX but outside time period	NA	NA	NA	NA	NA	NA
Loyaltylion Ltd	Y	N - 0.37, not 'A'	NA	NA	NA	NA	NA	NA

Lyst Ltd	Y	5	07/12/2012	103.13	02/15/13	Sebastjan Trepca, Devin Hunt, Chris Morton	N	NA
Made Television Ltd	N - TV channels	NA	NA	NA	NA	NA	NA	NA
Makieworld Ltd	N - toy maker	NA	NA	NA	NA	NA	NA	NA
Mansard Capital LLP	N - FS	NA	NA	NA	NA	NA	NA	NA
Massi Miliano OU (Fits.me)	Y - grey area; based either in London or Estonia	15.78	02/06/2012	7.68	04/16/13	Heikki Haldre, Paul Pällin	N - Paul Pallin, but not in UK and not in tech	Sangar - small clothing co

Memrise Ltd	Y	5.14	12/06/2012	N	NA	Ed Cooke, Greg Detre	N	NA
Metric	Y	N - marked as seed, no numbers	NA	NA	NA	NA	NA	NA
Milk.ly Ltd (Milkster)	Y	Y - undisclosed (regarded as seed by CB)	10/01/2012	Y - undisclosed	08/01/2013	Sal Matteis Karim Amrani	Sal Matteis - Head of programmatic Ad products & platforms EMEA	Yahoo
Mindshapes Ltd	Y	N - 4, but not down as 'A' on VX	05/30/12	N	NA	Shukri Shammas, David Begg, Christian Dorffer, Sami Lababidi, Tareq Naqib	No	NA

MyMeds&Me Ltd	Y	N - 3.13 but not 'A'	02/06/2013	NA	NA	NA	NA	NA
NCube Ltd	Y	N - seed amnt undisclosed	NA	NA	NA	NA	NA	NA
Nutmeg Saving and Investment Ltd	Y	N - 5.33 and another round but neither 'A' per VX, first one is per CB..	NA	NA	NA	NA	NA	NA
Odimax Ltd	Y	N - 3 small rounds, none counted as 'A'	NA	NA	NA	NA	NA	NA
Ometria Ltd	Y	N - Several, none counted as 'A' by VX	NA	NA	NA	NA	NA	NA

Perfect Channel Ltd	Y	3.43	07/10/2014	1.5	12/08/2015	Phil Bird	N	NA
PlayCanvas Ltd	Y	N - 0.47 not counted as 'A'	11/19/2014	NA	NA	NA	NA	NA
Pulmocide Ltd	N - pharma	NA	NA	NA	NA	NA	NA	NA
QuBit Digital Ltd	Y (although moved to NY?)	7.5	12/04/2012	66	09/29/14	Graham Cooke (project mgr, Google), Ian McCaig (business mrkting mgr google), Emre Baran, Daniel Shellard (project mgr google)	Emre Baran - Senior PM	Google - interesting was a c-founder in another venture before google

Quill	Y	N - 10 over 2 rounds, but not 'A' per VX	NA	NA	NA	NA	NA
Red Zebra Analytics Ltd	Y	N - amnt undisclosed	NA	NA	NA	NA	NA
Reedsy Ltd	Y	N - amnt undisclosed	NA	NA	NA	NA	NA
Resource Guru Ltd	Y	N - 0.87, nor 'A' per VX	NA	NA	NA	NA	NA
Rollup Media Ltd	Y	N - 1/47, nor 'A' per VX	NA	NA	NA	NA	NA

Roofoods Ltd (Deliveroo)	Y	4.68	06/26/14	206.79	01/29 /15	William Shu, Greg Orlowski	N	NA
Salesgossip Ltd	Y	N - number undisclose d, not marked 'A'	NA	NA	NA	NA	NA	NA
SCA Investments Ltd (Gousto)	Y	8.12	09/15/14	13.54	17/07 /2015	James Carter, Timo Schmidt	N	NA
Skylable Ltd	Y	N - number undisclose d, not marked 'A'	NA	NA	NA	NA	NA	NA
SocialBro Ltd	Y - seedcamp in London but most based in Spain?	1.82	05/31/13	N	NA	Alfredo Artiles, Luis Pablo Pardo, Javier Burón	N	NA

SoPost Ltd	Y	N - number undisclosed, not marked 'A'	NA	NA	NA	NA	NA	NA
Sourceable Ltd (Swoon editions)	Y	6.83	07/24/14	7.4	04/19/15	Debbie Williamson, Brian Harrison	N	NA
Space Ape Games Uk Ltd	Y	N - Series C marked and previous round but no A or B…	NA	NA	NA	NA	NA	NA
Style-Passport Ltd	Y	N - 0.81, not marked 'A'	NA	NA	NA	NA	NA	NA
Supersolid Ltd	Y	N - number undisclosed, not marked 'A'	NA	NA	NA	NA	NA	NA
TallTree Pictures Ltd	N - Film production	NA	NA	NA	NA	NA	NA	NA

Tapdaq Ltd	Y	N 1.4, not marked as 'A', 'A' raised after time period	NA	NA	NA	NA	NA	NA
Thumbtags Ltd	Y	N - number undisclosed, not marked 'A'	NA	NA	NA	NA	NA	NA
TopiVert Pharma Ltd	N - pharma	NA	NA	NA	NA	NA	NA	NA
Transfergo Ltd	Y	N - number undisclosed, not marked 'A'	NA	NA	NA	NA	NA	NA

Uniplaces Ltd	Y	N - 0.94, 2.8, neither marked 'A', 'A' raised post-period	NA	NA	NA	NA	NA	NA
Unique Ventures Ltd (Veeve)	Y	N - 5.9, not marked 'A'	NA	NA	NA	NA	NA	NA
United Authors Publishing Ltd (Unbound)	Y	N - 0.49, 1.95, not marked 'A'	NA	NA	NA	NA	NA	NA
Vouchedfor Ltd	Y	Y - undisclosed, but marked 'A'	6/30/2014	5.3	10/05/2015	Adam Price	N	NA
Walsingham Motor Insurance Ltd	N - insurance	NA	NA	NA	NA	NA	NA	NA

Wedo Shopping Ltd	Y	N - 4.08, not marked 'A'	NA	NA	NA	NA	NA	NA
WeSwap.Com Ltd	Y	7.5	19/27/14	N	NA	Simon Sacerdoti, Jared Jesner	N	NA
WiCastr Ltd	Y	N - 0.8 seed	NA	NA	NA	NA	NA	NA
Workable Software Ltd	Y	N - 1.5, not 'A' per VX (is per CB)..then 'B'…	NA	NA	NA	NA	NA	NA
Wowcracy Ltd	Y	N 0.04, not 'A'	NA	NA	NA	NA	NA	NA
Yeslab Ltd (Festicket)	Y	2.7	09/11/20 14	N	NA	Jerome Elfassy, Jonathan Younes, Zacharie Sabban (can't find)	N	NA

Your Grind Ltd (Pact coffee)	Y	3.36	08/11/2014	N	NA	Stephen Rapoport	N	NA

b) Silicon Valley

Note - The Silicon Valley Moneytree region appears to include San Francisco

Company Name	Suitable - business and location	Raised Series A? $m	When?	Follow on? $m	When?	Co-founders	PM co-founder from big tech?	Company
1debit Inc (Chimecard)	Y	N - 8, Not marked 'A'	11/05/2014	NA	NA	Chris Britt, Ryan King	N	But Chris CPO @ greendot
955 Dreams Inc	Y	N - 7.2, Not marked 'A'	10/15/13	NA	NA	TJ Zark (can't find others)	N	NA
AdverCar Inc	N - advertising on cars…	NA	NA	NA	NA	NA	NA	NA
Appurify Inc	Y	6.25	03/12/2013	undisclosed	08/12/2013	Jay Srinivasan (PM Google post acq), Manish Lachwani, Pratyus Patnaik, Rahul 'RJ' Jain - all from Zynga	Jay Srinivasan	Zynga (revenue PM)
Backblaze Inc	Y	N 2.5, not marked as 'A' (CB has diff numbers	NA	NA	NA	NA	NA	NA

		and counts as A)						
BetterDoctor Inc	Y	9.88	06/27/14	N	NA	Tapio Tolvanen, Ari Tulla	N	NA
Blue River Technology Inc	Y	3	09/10/2012	20.36	11/08/2012	Jorge Heraud, Lee Redden	N	NA
Bluenose Analytics Inc	Y	10	12/11/2013	N	NA	Don MacLennan, Todd Graham	Don	AVG/RSA/SAP
Calcula Technologies Inc	N - Medical equipment	NA	NA	NA	NA	NA	NA	NA
Caspida Inc	Y	N - 9.53, but not 'A' (counts as A on crunchbase)	02/28/14	0.2	04/15/14	Christos Tryfonas, Sudhakar Muddu	N	NA
ClearStory Data Inc	Y	9	12/05/2012	21	03/31/14	Sharmila Shahani-Mulligan,	N	NA

						Vaibhav Nivargi		
Cloudcade Inc	Y	N - 1.55 not marked 'A'	10/09/2014	NA	NA	NA	NA	NA
Coinbase Inc	Y	6.11	12/12/2013	73	12/31/14	Fred Ehrsam, Brian Armstrong	N	NA
Cotera Inc.	N - surgical appliances	NA	NA	NA	NA	NA	NA	NA
Cumulus Networks Inc	Y	2.32	08/09/2012	undisclosed	12/20/13	JR Rivers, Nolan Leake	N	NA
Curious.com Inc	Y	7	05/11/2012	23	05/01/2013	Justin Kitch, Thai Bui	N	NA
First Opinion Inc	Y	6	12/18/14	N	NA	Jay Marcyes, McKay Thomas	N	NA
Full Circle CRM Inc	Y	3.8	11/12/2014	4.7	12/17/15	Bonnie Crater	Bonnie Crater	Oracle (grey area)

Grab A Bucket Inc (zirx)	Y	6.56	08/26/14	30	04/07/2015	Sean Behr, Boris Perlov, Boris Zamoruev, Shmulik Fishman	Sean Behr	AOL/Ebay
Hampton Creek Foods Inc	N- Food tech	NA	NA	NA	NA	NA	NA	NA
Hexify Inc (lightside games)	Y	N several small rounds, non marked 'A'	NA	NA	NA	NA	NA	NA
High Fidelity Inc	Y	2.4	03/28/13	13.5	03/13/14	Philip Rosedale, Ryan Karpf, Freddy Heiberger (can't find on linkedin)	N	NA
Idibon Inc	Y	5.5	10/16/14	N	NA	Robert Munro, Tyler Schnoebelen	N	NA
IFTTT Inc	Y	7	12/20/12	30	06/26/14	Alexander Tibbets,	N	NA

						Linden Tibbets		
Instacart Inc	Y	8.5	07/10/2013	254	06/16/14	Apoorva Mehta, Brandon Leonardo, Max Mullen	N - Max Mullen – PM but not big tech	Location Labs (acquired by AVG)
Kiwi Crate Inc	Y - Border line?	5	01/08/2012	3.13	12/24/14	Sandra Oh Lin, Yu Pan (can't find on Linkedin), Yael Pasternak Valek	Sandra Oh Lin, Yael Pasternak Valek	Paypal, Yahoo
Krave Pure Foods Inc	N - Food	NA	NA	NA	NA	NA	NA	NA
Layer Inc	Y	14.5	05/07/2014	N	NA	Tomaz Stolfa, Ron Palmeri	N - Ron Palmeri, but not big tech?	Grand Central
Lever Inc	Y	10	10/02/2014	19.1	1/28/16	Nate Smith, Sarah Nahm,	Nate Smith	Google

						Randal Truong		
Local Motion Inc	Y	9.3	08/28/13	N	NA	John Stanfield, Clement Gires	N	NA
Madison Reed Inc.	N - haircare	NA	NA	NA	NA	NA	NA	NA
Numedii Inc	Y	3.5	06/26/13	N	NA	Gini Deshpande, Atul Butte	N	NA
Oculeve Inc	N - Medical equipment	NA	NA	NA	NA	NA	NA	NA
Palerra Inc	Y	8	02/19/14	13	03/20/15	Rohit Gupta, Ganesh Kirti	Rohit Gupta - VP PM	Oracle
Perceptimed Inc	Y - Borderline	N - several rounds, none 'A'	NA	NA	NA	NA	NA	NA
PLAiR	Y	2.05	06/21/13	N	NA	Saad Hussain	N	NA

RealScout Inc	Y	7	12/23/13	6	11/17/14	Michael Parikh, Andrew Flachner	N	NA
RelayRides Inc (Turo)	Y	1.46	03/07/2011	93.07	05/18/11	Shelby Thomas Clark (can't find)	N	NA
Scanadu Inc	Y - Borderline - consumer med tech equip turning smart phones to health monitoring devices	5.3	11/12/2013	34.85	05/04/2015	Misha Chellam, Walter De Brouwer, Sam De Brouwer	N	NA
Shadow Networks Inc	Y	10.2	02/27/14	2.86	04/10/2014	Michael G. Lyons, Eric Winsborrow	Eric Winsborrow	Cisco (Snr Group PM and Tech marketing)
Skycatch Inc	Y	3.23	05/08/2013	40.28	05/22/14	Christopher Bumgardner, Christian Sanz	N	NA
Soma Water Inc	N - water tech	NA	NA	NA	NA	NA	NA	NA

Soundhawk Corporation	Y	4.65	02/19/13	11.2	12/18/13	Rodney Perkins	Can't find	NA
Space Pencil Inc	Y	Funding history is convoluted exclude from sample	NA	NA	NA	NA	NA	NA
Spikes Security Inc.	Y	11	10/22/14	N	NA	Branden Spikes	N	NA
Spreecast Inc	Y	7	07/31/12	2.87	11/14/14	Jeff Fluhr, Robert Hunt, Keith Carter, Mike Slemmer (can't find)	N	NA
Storefront Inc	Y	7.86	03/28/14	N	NA	Tristan Pollock, Erik Eliason	N - Erik only in a startup	NA
Sunfunder LLC	N - finance for solar	NA	NA	NA	NA	NA	NA	NA

Swiftype Inc	Y	8.64	09/25/13	13	03/05/2015	Quin Hoxie, Matt Riley	N - Matt product in a startup	NA
Sympara Medical Inc	N - medical equipment	NA	NA	NA	NA	NA	NA	NA
Tapas Media Inc	Y	2	01/28/14	N	NA	Chang Kim	Y - Chang Kim	Google
ThousandEyes Inc	Y	5.5	06/19/13	55	05/05/2014	luis valdez (can't find), Mohit Lad, Ricardo Oliveira	N	NA
Threadflip Inc	Y	8.1	06/05/2012	13	05/02/2014	Jeff Shiau, Manik Singh	N - Manik but not big tech	NA
Treasure Data Inc	Y	7.7	07/22/13	21	12/22/14	Hironobu Yoshikawa, Kazuki Ohta	N	NA
Trifacta Inc	Y	N - several rounds, none 'A'	NA	NA	NA	NA	NA	NA
Twin Prime Inc	Y	7.5	05/12/2014	2	02/18/15	Kartik Chandrayana	N	NA
Watersmart Software Inc	Y	4.5	09/13/13	7	03/23/15	Peter Yolles, Rob Steiner	N	NA

WHILL Inc	Y - borderline, mobility devices	11	09/02/2014	N	NA	Muneaki Fukuoka, Junpei Naito, Naoto Sakakibara, Atsushi Mizushima, Satoshi Sugie	N	NA
WiFast Inc	Y	N - no round marked A	NA	NA	NA	NA	NA	NA
Wildflower Health, Inc.	Y	1.71	12/06/2013	5	06/25/15	Kathy Bellevin, Leah Sparks	N - Kathy. DNA Direct	NA

c) Boston

Company Name	Suitable - business and location	Raised Series A? $m	When?	Follow on? $m	When?	Co-founders (from Crunchbase)	PM co-founder from Big tech?	Company
480 Biomedical, Inc.	N - Biomed	NA	NA	NA	NA	NA	NA	NA
Activate Networks Inc	Y	N - Raised series A before period	NA	NA	NA	NA	NA	NA
AE Mobile Inc	Y	1	05/15/14	N	NA	Can't find data	Can't find data	Can't find data
AeroDesigns Inc	NA - medical/food dispenser	NA	NA	NA	NA	NA	NA	NA
Alcyone Lifesciences Inc	NA - medical equipment	NA	NA	NA	NA	NA	NA	NA
Ambri Inc	Y	N - No series A in period	NA	NA	NA	NA	NA	NA
Atlas Health Technologies Inc	Y	N - No series A in period	NA	NA	NA	NA	NA	NA

Belmont Technology Inc (Onshape)	Y	9	11/29/12	105	04/02/2013	Jon Hirschtick, Scott Harris, John McEleney, David Corcoran, Tommy Li	N	NA
BigTinCan Mobile Pty Ltd	Y	5	02/21/14	1.06	03/12/2015	David Keane	N	NA
Bluefin Labs, Inc.	Y	6	02/02/2011	12.21	02/02/2012	Frank Moss, Deb Roy, Michael Fleischman	N	NA
Boundless Learning Inc	Y	8	03/31/12	Undisclosed	03/31/15	Ariel Diaz, Brian Balfour, Aaron White	N - Brian but startups	NA
Cazena Inc	Y	8	10/20/14	20	07/22/15	Prat Moghe	VP of strategy, products and marketting	IBM Netezza (Netezza was bought out by IBM)
Conversion Innovations Inc	Y	N - No rounds marked A	NA	NA	NA	NA	NA	NA

DailyFeats Inc (Maxwell Health)	Y	2	08/05/2013	32.38	12/17/13	Veer Gidwaney, Vinay Gidwaney, Morley Ivers	N	NA
DocTracker Inc	Y	N - No rounds marked A	NA	NA	NA	NA	NA	NA
Draftkings Inc	Y	6.9	04/24/13	416.07	07/30/13	Matt Kalish, Paul Liberman, Jason Robins	N	NA
Drop Inc	Y	N - No rounds marked A	NA	NA	NA	NA	NA	NA
eduCanon	Y	N - No rounds marked A	N - No rounds marked A	N - No rounds marked A	N - No rounds marked A	N - No rounds marked A	N - No rounds marked A	N - No rounds marked A
EverTrue Inc	Y	5.25	03/21/13	8	07/10/2014	Brent Grinna, Eric Carlstrom	N - Eric has product background but not big tech	NA
eZuce Inc	Y	Not disclosed	04/27/12	N	NA	Jerry Stabile (Linkedin)	N	NA

FirstFuel Software Inc	Y	9.65	02/21/12	27.76	12/17/13	Nalin Kulatilaka, Robert Kaufmann (can't find), Swapnil Shah, Ken Kolkebeck	N - Swapnil Shah - variety of roles incl startup acquired by Yahoo	NA
Freight Farms Inc	Y - borderline incls some hi-tech and software	1.21	12/02/2013	3.7	12/17/14	Jonathan Friedman, Brad McNamara	N	NA
Ginger.io Inc	Y	6.2	11/14/12	20	12/13/2014	Anmol Madan, Ryan O'Toole	N (Anmol was program manager Microsoft)	NA
Gradeable	Y	N	NA	NA	NA	NA	NA	NA
Hydration Labs Inc	N - watercoolers	NA	NA	NA	NA	NA	NA	NA
Kensho Technologies Inc	Y	N - Several rounds, none marked 'A'	NA	NA	NA	NA	NA	NA
Kwhours Inc	Y	N	NA	NA	NA	NA	NA	NA
LANTOS TECHNOLOGIES INC	Y - ear scanning	N - series A	NA	NA	NA	NA	NA	NA

	hardware and software	out of period						
LTG Exam Prep Platform Inc	Y	Series A out of period	NA	NA	NA	NA	NA	NA
Luminoso Technologies Inc	Y	7.62	06/26/14	N	NA	Catherine Havasi, Rob Speer (provate profile), Jason Alonso	N	NA
Mavrck	Y	2.5	12/17/14	4.75	11/13/15	Chris Wolfel, Lyle Stevens, Sean Naegeli	N	NA
MineralTree Inc	Y	6.32	06/08/2012	11.14	02/12/2015	BC Krishna	N	NA
Ministry of Supply Inc	N - clothing	NA	NA	NA	NA	NA	NA	NA
Nanigans Inc	Y	N - Outside of period	NA	NA	NA	NA	NA	NA
Narvii Inc	N - suitable but can't find founders	1.83	07/08/2014	6.5	09/24/15	NA - Can't find names	NA	NA
NBD Nanotechnologies Inc	N - Nano coatings	NA	NA	NA	NA	NA	NA	NA
Newlans Inc	Y - Borderline - semicodnductor	N - Several rounds, none	NA	NA	NA	NA	NA	NA

		marked 'A'						
Paydiant Inc	Y	3.5	02/22/11	32.54	06/22/12	Kevin Laracey, Chris Gardner (no jobs listed)	N	NA
Peace Meals Inc	Y	N - No 'A'	NA	NA	NA	NA	NA	NA
Pear Therapeutics Inc	Y	N - Several rounds, none marked 'A'	NA	NA	NA	NA	NA	NA
Phoodeez Inc	Y - Borderline	N - No 'A'	NA	NA	NA	NA	NA	NA
Portal Instruments Inc	N - drug development	NA	NA	NA	NA	NA	NA	NA
ProBueno Inc	Y	N - No 'A'	NA	NA	NA	NA	NA	NA
Quanttus	Y	19	02/24/14	N	NA	Shahid Azim, Richard Bijjani, David He	N	NA
Respiratory Motion Inc	N - medical devices	NA	NA	NA	NA	NA	NA	NA
Scratch Wireless Inc	Y - borderline telecoms	N - Several rounds, none	NA	NA	NA	NA	NA	NA

		marked 'A'						
Sense Labs Inc	Y	N - Several rounds, none marked 'A'	NA	NA	NA	NA	NA	NA
Session M Inc	Y	N - Outside of period	NA	NA	NA	NA	NA	NA
Storiant Inc	Y	N - Several rounds, none marked 'A'	NA	NA	NA	NA	NA	NA
Tesora Inc	Y	6.73	04/08/2013	4.5	06/24/15	Ken Rugg, Amrith Kumar	N - Both have PM experiience but not huge tech	NA
Topo Athletic	N - clothes	NA	NA	NA	NA	NA	NA	NA
UberSense Inc	Y	N - No 'A'	NA	NA	NA	NA	NA	NA
UBQ	Unknown	N - No 'A'	NA	NA	NA	NA	NA	NA
Velobit, Inc.	Y	N - Outside of period	NA	NA	NA	NA	NA	NA
Vivoom Inc	Y	N - Several rounds,	NA	NA	NA	NA	NA	NA

		none marked 'A'						
Voxel8	Y - Borderline	N - Outside of period	NA	NA	NA	NA	NA	NA
Wanderu Inc	Y	0.87	09/12/2013	5.62	11/05/2014	Polina Raygorodskaya, Eddy Wong, Igor Bratnikov	N	NA
Weft Inc	Y	N - No 'A'	NA	NA	NA	NA	NA	NA
Wellframe Inc	Y	10.04	08/22/14	N	NA	Jacob Sattelmair, Archit Bhise, Trishan Panch, Vinayak Ramesh (can't find)	N	Jacob was a PM at Runkeeper
Zet Universe, Inc.	Y	N - No 'A'	NA	NA	NA	NA	NA	NA