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TRACKING THE PERFORMANCE OF HIGH GROWTH ENTREPRENEURS

Hunter Centre for Entrepreneurship
University of Strathclyde
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Executive Summary

The Scottish entrepreneurial support ecosystem contains an enviable depth and breadth of free or low-cost support for entrepreneurs. Yet, despite this generous provision, the performance of Scottish HGFs lags other areas of the UK in competitiveness. Our report seeks to explore this issue by generating a deeper understanding of ecosystem dynamics and HGF behaviour. To develop this insight, we spoke to a broad range of HGFs, angel investors and policymakers to identify the issues that should be addressed by key stakeholders in the ecosystem.

We examine three key themes in our analysis: growth mindset, ecosystem engagement and HGF activities. Firstly, in terms of growth mindset, we identified three categories of HGF in our study. These were high-growth aspiration firms, plateaued-growth aspiration firms and lifestyle-constrained aspiration growth firms. Prior research by the Enterprise Research Centre suggests that only those with high-growth aspiration coupled with an international outlook and innovation capabilities are likely to attain significant high growth. Only a small number of our research cohort possessed these qualities (for the time being), raising some questions around the allocation of support resources to those with lower growth aspirations. On a more positive note, we identified specific examples of how companies can move from low aspiration to high-aspiration given the right conditions and support.

In terms of ecosystem engagement, we identified a range of both positive and negative experiences. Our research counted over 170 different organisations who are providing support to HGFs. Understandably, this volume of support led to navigational issues and information overload that often, unexpectedly, resulted in disengagement with the ecosystem. The system was also not felt to be reactive enough to entrepreneurs whose needs were often out of sync with the ecosystem support on offer. We identified three broad approaches towards ecosystem engagement, with firms falling into either: non-strategic engagement, strategic engagement, or strategic non-engagement categories.

Our report suggests that the primary issue in Scotland is not the volume or quality of support on offer, but rather it concerns more closely linking the supply and demand of support. We argue that this demand can be more readily matched by developing a longitudinal, real-time tracking system that provides rich, predictive insight into what is a very dynamic business environment. We propose using an innovative methodology called Ecological Momentary Assessment, to address many of the cognitive biases identified in extant research. This form of sampling, captures temporal dynamics in such a manner that would allow stakeholders to configure ecosystem activities in response to behavioural patterns, hence closing the supply and demand gap.

A potentially unique method of positively influencing growth aspiration, would be to implement an Ecological Momentary Intervention system that provides in-the-moment support for entrepreneurs and reinforces existing interventions. This would address the criticism that the ecosystem is not sufficiently responsive for HGFs.

Acknowledgements

We are very grateful to the companies who agreed to participate in the research for this report and would like to especially acknowledge the support of Scottish EDGE who kindly shared their database with us to approach companies to participate. Thanks also must go to Scottish Enterprise who funded the project and also provided us with companies to speak with. We are grateful for the time that current and past policymakers, angel investors and other academics gave to provide insights into the current ecosystem of Scottish enterprise support organisations. All errors remain the authors'.

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1. Introduction: tracking the performance of high growth firms – towards a better understanding of entrepreneurial growth

Research evidence strongly indicates that high-growth companies contribute notable benefits to the wider economy, particularly with respect to job creation.¹ To date, assessments of high growth firm (HGF) performance have relied heavily on retrospective and cross sectional analyses of historical datasets.² In response to the numerous drawbacks associated with such approaches, leading research programmes have now recognised the value of tracking growth performance longitudinally.³ There are a number of reasons why this approach is more desirable:

- Firms do not grow in a steady and linear fashion. Instead, periods of high growth are often followed by periods of consolidation or stagnation. The widely utilised OECD definition of high growth firms⁴ has proved to be particularly problematic in this respect as it largely isolates year-on-year growth performance and applies metrics which do not capture early stage growth, particularly in small firms of less than 10 employees, and has attracted criticism.⁵ This measure therefore tends to exclude large portions of firms that experience growth in a more erratic fashion or over a longer period of examination. Longitudinal tracking of growth trajectories as they happen addresses this limitation by capturing the typically episodic nature of firm growth in companies of all sizes.⁶
- In ignoring micro firms (those with fewer than 10 employees), the OECD definition effectively precludes firms with growth ambition, if not performance, and those firms who may have high levels of growth but few employees (for example bringing in contracted workers in the tech sector). Tracking growth and non-growth from an earlier stage, and over longer periods, will uncover potentially important insights into links between entrepreneurial behavior, support mechanisms, growth intentions, and subsequent firm performance.
- Retrospective analyses select and examine successful HGFs on the basis of hindsight. However, the ongoing tracking of growth trajectories captures both growth and non-growth in firms, thus gathering a far more detailed picture of

¹ Hart & Anyadike-Danes (2014a).

² See Anyadike-Danes, M., Bonner, K., Hart, M., & Mason, C. (2009). *Mapping firm growth in the UK: Identification of high growth firms and their economic impact*. London: NESTA; Hart, M. and M. Anyadike-Danes (2014c). "ERC Insights: Moving on from the 'Vital 6%'". UK Enterprise Research Centre.; Lee, N. (2014). What holds back high-growth firms? Evidence from UK SMEs. *Small Business Economics*, 43(1), 183-195; and NESTA. (2009). *The vital 6%*. London: NESTA for recent examples of this.

³ Hart, M. and M. Anyadike-Danes (2014b). "ERC Insights: UK's Hidden Growth Champions". UK Enterprise Research Centre.

⁴ High-growth enterprises are defined as those with an average annualised growth in employees (or in turnover) greater than 20% a year, over a three-year period, and with ten or more employees at the beginning of the observation period.

⁵ Hart, M. and M. Anyadike-Danes (2014c). "ERC Insights: Moving on from the 'Vital 6%'". UK Enterprise Research Centre.

⁶ Audretsch, D. B. (2012). Determinants of high-growth entrepreneurship. *OECD/DBA report*. https://search.oecd.org/cfe/leed/Audretsch_determinants%20of%20high-growth%20firms.pdf

the interplay between growth, decline, survival and failure, and the attributable effects of different support measures engaged by companies experiencing growth.

- Memory decay, misremembering and other cognitive biases limit the ability of entrepreneurs to effectively recall important occurrences, developments and processes in reporting growth milestones, activities and events. Tracking entrepreneurial growth as it happens addresses this problem and offers the potential for reactive support measures within the eco-system to be deployed quickly and more effectively. Many of the issues that companies face when growing (taking on new investment, realizing and acting upon an opportunity, internationalizing, hiring new staff) are often time-bound and high stress situations. In tracking these as they happen there is the opportunity to understand how these impact companies seeking to grow (and growing) as well as being able to help them more effectively.

Scottish Enterprise has commissioned a number of works on Scottish company growth in recent years, including reports on High Growth Firms; Technology Based Firms in Scotland; the risk capital market in Scotland 2009-2011; and on The Role of Acquisitions in Company Growth⁷; as well as a number of other reports on Scottish spin-outs, high growth baseline comparators and internationalisation activities of Scottish firms. This body of work has been consulted where available to build a picture of what growth looks like in Scottish companies, as well as what and how the engage the environment and ecosystem surrounding them.

2. Context

Support of and for high growth firm activity in Scotland is now firmly positioned as a key policy theme and identified as a critical component of Scottish economic ambitions through the CanDo and Scale initiatives. As part of these initiatives and the surrounding understanding of high growth potential firms and early stage growth entrepreneurship, Scottish Enterprise commissioned research to understand issues around the tracking and monitoring of activities and performance of entrepreneurs and early stage ventures within Scotland. To develop its international competitiveness, Scotland and the UK needs to improve in developing greater numbers and quality of high growth firms.⁸ Understanding the growth journey that firms go on is a critical part of achieving this. Business growth is fundamental to improving economic performance and living standards. Evidence from the UK shows that high growth firms are found in a wide range of sectors and across all regions. However, they tend to be heavily concentrated in the UK's most competitive regions (London and South East)⁹ as measured in the UK Competitiveness Index.¹⁰ This is also the case for entrepreneurial activities, as can be seen in Figure 1 below, created from GEM data:

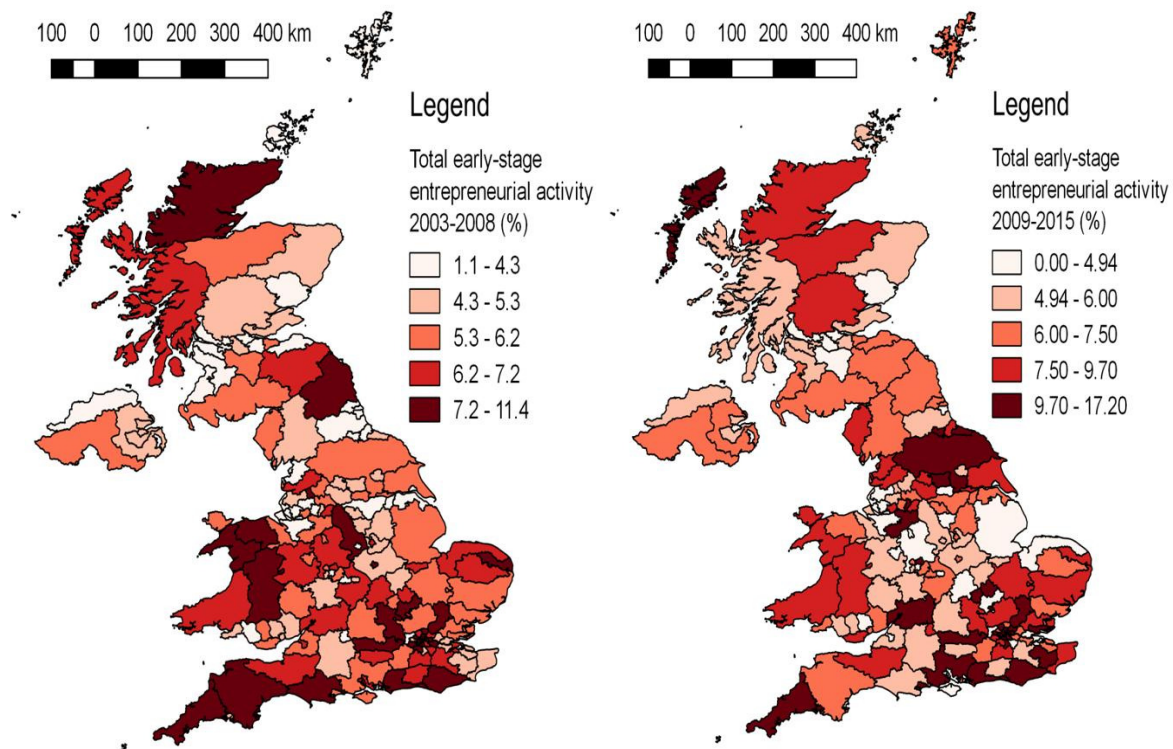
⁷ Mason & Brown (2010); Mason & Brown (2012); Harris & Mason (2012); Hopkins (2014).

⁸ Mason & Brown, (2013).

⁹ BERR, (2008).

¹⁰ Huggins and Thompson, 2010.

Figure 1: Total Early Stage Entrepreneurial Activity by UK NUTS 3 level



The figure above shows the Total early-stage Entrepreneurial Activity ranked and split in equal quintiles by number of NUTS3 regions. It is comprised as a percentage of working age population in NUTS3 regions who are nascent or new business owner-managers, with an average of annual GEM estimates from 2003 to 2008 and from 2009 to 2015.

To date, most research studies have sought to assess the quantitative impacts and performance of growth activity, typically through analyses of measures such as jobs created, turnover, sales, and other aspects contributing to Gross Value Added. For example, NESTA's *The Vital 6* report highlighted the importance of the small number of high growth businesses that between 2002 and 2008 generated approximately 50% of all new private sector job creation.¹¹ These businesses can be found across all sectors, ages and sizes of firms. More recently, work by the UK Enterprise Research Centre using an up to date dataset found that it is well-established firms that provide the bulk of new jobs in the economy.¹² These findings also highlight that the best predictor for high growth in any firm is the ability to innovate, with innovative businesses growing twice as fast as non-innovative ones. Part of this ability to innovate is a company's absorptive capacity, or the ability of firms 'to identify, assimilate, and exploit knowledge from the environment'.¹³ As previous research has shown, such 'absorptive capacity' is important not only in exploiting internally generated innovation but in facilitating the firm to make connections to external knowledge and sources.¹⁴ This report considers such connections and how the companies interviewed seek to utilise and develop knowledge for growth.

¹¹ NESTA, (2009).

¹² Hart and Anyadike-Danes (2014b).

¹³ Cohen and Levinthal, (1989).

¹⁴ Zahra and George, (2007).

Given this central contribution of business growth to economic competitiveness and prosperity, the study of growth firms as and when growth happens has the potential to offer significant insights for policymakers and academics alike. However, the foregoing studies have largely been focused on the *outputs* from growth firms, rather than the process or what and how it is to grow. Consistent within the latter approach is the requirement to understand both the growth journey and the ways and means in which companies seeking to grow can be better supported within the entrepreneurial support ecosystem. Scotland's support system is broad and deep with a number of well-established actors present, as well as a continual renewal of initiatives and new entrants into the system. This can be traced back to the focus on enterprise that the creation of Scottish Enterprise and Highlands and Islands Enterprise in 1991. The attention to 'bottom-up' growth meant entrepreneurship became an increasingly important part of the policy-mix in Scotland and identified as a key economic development tool.

3. Methodology and Data

We deployed a qualitative research methodology comprising of semi-structured interviews with growing business owners based in and operating from Scotland. The interviews were a result of contacting just under 300 companies gleaned from both Scottish Enterprise and Scottish Edge databases. From this we were able to agree 18 company interviews which took place over July-August 2016. The interviews with the companies were semi-structured, recorded and transcribed resulting in 143,000 words of text. The interviews were conducted face to face, over the phone or by Skype. All participants agreed to the interviews on the conditions that their comments would be non-attributable. Interview data was supplemented by research into the companies' web presence, owner backgrounds, Companies House data, FAME database, and news stories on the companies. This allowed us to build a picture of the growth stories and ambitions of the companies interviewed. From this we categorised the data and analysis into three principal themes, outlined below, as per our interview guide:

In total we spoke with 18 companies, 5 policymakers (current and past), 5 business angels and a number of academics regarding growth, support provisions and issues facing entrepreneurs at different stages in Scotland. The discussions with the policymakers, business angels and academics were off the record and not recorded; only the content from the interviews is quoted in this report and is non-attributed as per agreement with the companies. The primary data of around 143,000 words of transcribed interviews were coded and analysed utilising the Gioia¹⁵ methodology revealing the key themes presented in the analysis sections. These themes then informed the discussion of the recommendations at the end of the report.

¹⁵ Gioia et al, (2013).

Figure 2: Interview Protocol



The three principal issues we identified at the outset of the study and sought to understand in interviewing the companies we spoke to were Mindset, Engagement and Activities. 'Mindset' was to understand what growth meant to the companies interviewed and to understand the level of their ambition. 'Activities' was to understand what they were doing day-to-day, month-to-month to achieve growth – what they spent their time and resources on in the pursuit of their growth ambitions. Finally, 'engagement' was to understand how they utilised the resources and support available to them within the ecosystem more generally within Scotland (and beyond in some cases) and their thoughts on it. In asking questions around these three subjects we sought to build a clearer picture of the types of growth companies we were observing, what they do and how they can be supported going forward. Consistent within this is the recognition that companies of different size, development stage and ambition will require different types of support and possess different expectations of growth and help needed. The questions were designed to reveal as much of this as possible in order to provide recommendations for support services in Scotland. A copy of the questionnaire used for the interviews is contained in Appendix 1.

Mindset:

These were questions utilising established research protocols on entrepreneur and firm growth orientations conducted as part of the UK Enterprise Research Centre programme¹⁶, and covered the following components:

- Growth ambitions
- Growth plans
- Appetite for risk
- International intentions

Engagement:

These questions were aimed at assessing the prevalence and nature of engagement with the companies' local and wider entrepreneurial ecosystems. We sought to focus on the influence of engagement beyond purely financial interventions or transactions, with an ultimate aim of better understanding how, when and why firms utilise transformational interventions such as

¹⁶ We used key findings from existing research in the Hunter Centre to supplement our analysis.

advice, mentorship, and peer support. Question sets were guided by internationally recognised work on entrepreneurial ecosystems conducted by Professor Jonathan Levie of the Hunter Centre. Key actors examined in the engagement dimension of the protocol included:

- Public sector support services and competitions
- Private sector support and investment services
- Peer firms
- Strategic partners

Furthermore, we asked the entrepreneurs their opinion on the support services available to entrepreneurs in Scotland and what their preferences were.

Activities:

Questions focusing on growth events and the ‘triggers’ surrounding those events, for example securing new investment or a new contract were asked. Emphasis was placed on the actions taken before, during, and after such events. In particular, we focused on identifiable aspects of business model modification, for example, changes to:

- Product or service offering
- Target market (location or demographic/segment)
- Methods underpinning production processes, service delivery methods, supply chain/operational systems where relevant
- Revenue streams for the business (products, sales, licensing, etc)
- Key resources required to run the business e.g. major expansion of employee numbers, major capital expenditure, etc
- International presence
- Investment gained/desired

To supplement the primary data collected above we also accessed data from the Global Entrepreneurship Monitor regarding entrepreneurial activity within Scotland, Companies House data for the companies interviewed, press reports regarding the companies and support available in Scotland, reports on entrepreneurial support and activities (REAP, GEM, Archangels impact evaluation, etc), the FAME database, and the academic literature on entrepreneurial growth and support. The findings and insights gleaned from these different sources informed both our questionnaire and our analysis of the data gathered from the companies interviewed.

A further point was addressed with each of the companies interviewed regarding the use of a mobile app to collect information/data on their entrepreneurial activities. Feedback from the companies was overwhelmingly positive on this issue, with only one company expressing doubts about whether or not they would use it out of the 18 interviewed. Enthusiasm for reducing survey fatigue, the proposed ‘two-way street’ of receiving information and analysis of their activities, and the potential for quick and responsive interactions regarding important events (such as the Brexit referendum result) that the app offers was expressed by the companies interviewed. Of particular interest was the opportunity to report their thoughts, activities and major milestones

as they happened rather than trying to remember what they did which led to growth, in turn, offering opportunities for deeper and enhanced learning. The app-based tracking represents an opportunity to engage with entrepreneurs on a deeper and more regular basis, following findings from recent work by Mole et al (2011) that observed a deepening of support for companies already receiving assistance rather than a broadening out across more sectors is a more beneficial use of publicly backed support.¹⁷

4. Mindset



As part of seeking to understand how growth is executed in entrepreneurial companies, we identified mindset as a key component of growth¹⁸. This mindset captures the growth orientation of the firm, the international outlook and the strategic ability of the firm. Recent work by the Enterprise Research Centre has linked a positive growth aspiration with increased openness to export¹⁹. Given Scotland's limited domestic market, nearly all companies who aspire to genuine high growth must look to international markets to realise potential. However, as Hart and colleagues note "only a relatively small proportion of firms combine a high-growth mindset with innovation and a capability to export."²⁰ Hence, support must be targeted at these firms rather than provided in an unfocussed 'scattergun' manner.

In our analysis of growth ambition and aspiration in Scotland, we find that it broadly reflects the UK, which is performing poorly in comparison to competing economies. We inductively identified three categories of growth aspiration across our cohort of firms, in doing so, capturing some of the challenges facing those hoping to support high-growth firms.

These categories are:

- High-growth aspiration,
- Plateaued-growth aspiration
- Lifestyle-constrained aspiration

¹⁷ Mole, et al. (2011).

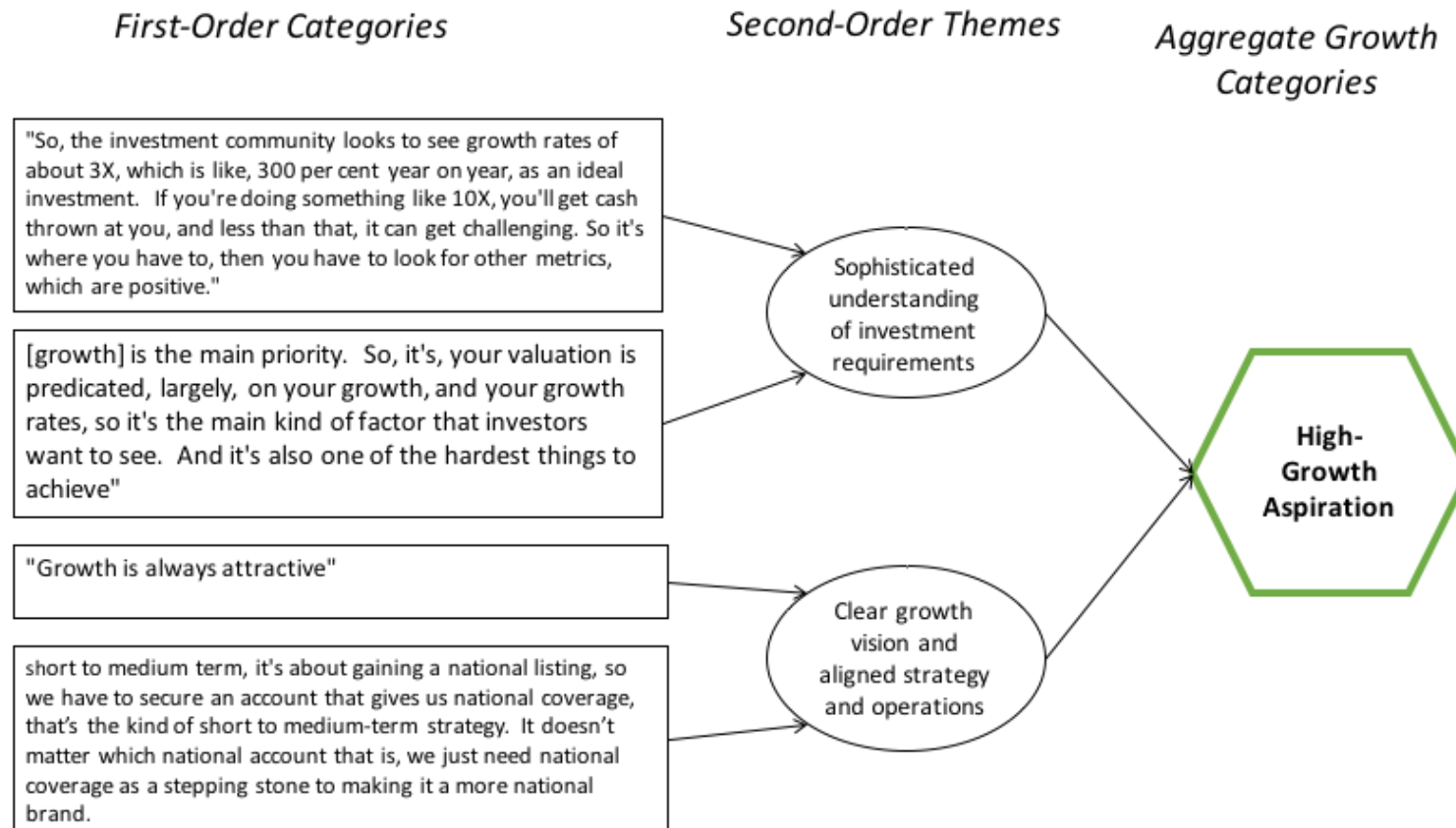
¹⁸ Levie and Autio, (2013).

¹⁹ ERC, (2015).

²⁰ ERC, (2015).

4.1 Growth Aspiration Categories

Figure 3: High-Growth Aspiration



High Growth Aspiration

High-growth aspiration companies represent the elite of Scottish business. They are distinguished from other 'growth' firms as they have clear strategic vision coupled with the resources and funding to achieve the end-point. Typically, these firms have a sophisticated understanding of the investment landscape and there is a clear strategic alignment between funding of the business and attaining growth milestones. Firm CEOs focus less on the implications of organisational 'growing pains' and what this may mean for their own personal satisfaction in their role, and place more focus on achieving growth KPI's (which are often tied to attracting further external financing or a higher valuation):

Growth is the main priority. So, it's, your valuation is predicated, largely, on your growth, and your growth rates, so it's the main kind of factor that investors want to see. And it's also one of the hardest things to achieve. Ultimately, the number one thing is revenue growth. So even though we are a business that would be classed as a start-up, or, I guess, more accurately, as a scale-up, it's that top line revenue, at the stage we're at, which is the biggest factor. (Company A)

Growth is just key to everything. I mean, growth is always attractive, but it's just ensuring that you are building the brand, and the foundation, behind that growth, as well. So there has to be a mix of, you know, developing your brand, your customer base, and your innovation, to drive the growth. So the growth is almost the output, obviously. (Company B)

Growth is towards a targeted value of the business. Generally speaking, businesses like ours are valued in terms of over market share but also in terms of the sustainability of the market share plus the profitability that that market share brings. Companies like ours are very much looked upon as the cash value is based upon a multiple of 10x, therefore it has to be the goal of the business to increase that value. The easiest way for us to do that is to look for the delivery of more valuable products. (Company C)

The above companies are all considered high growth aspiration through their central focus on achieving high growth. Each has a clear idea of what growth will bring, what it will take to achieve, and what the pitfalls are on the way. They are strategic, considered, and clear on what is required. High-Growth Aspiration companies tend to target high-value customers who can place sizeable orders resulting in big wins. These companies demonstrate an increased international-orientation in terms of selling and business development activities.

Company A

Company A is a marketing firm that works closely with a number of multinational and FMCG companies to deliver online shopping platforms. Company A has leveraged a number of the different ecosystem support organisations available to it to make and take strategic decisions around growth, in particular on the appointment of experienced members to its board, utilising grant and competition monies to do further product and service development testing and appointment of key staff (including sales and development staff). It demonstrates a high engagement with

support organisations and is very strategic about who and why it engages with certain types of help during its growth journey.

Turnover	2013: £79,000 2014: £230,000; 2015: £303,000
Location	Glasgow
No. of employees	10 FTE
Year founded	2013
Industry	Other information services (online marketing)
International markets	Europe, USA, Asia
Investment gained	£440,000 (2015) + £750,000 (2016)
Ecosystem engagement	Scottish Enterprise (High Growth Programme, Account Management, Regional Selective Assistance) Scottish EDGE SDI Infomatic Ventures Business Gateway Creative Scotland Scottish Investment Bank University of Strathclyde
Sales Focus	B2B

Company B

Company B is a firm that works in the health industry, producing beauty treatments. It spent a number of years in gestation working with E-Spark to finesse its business model and pitch in order to target a large client, which it successfully did. Company B has utilised the support available very strategically, identifying key elements of its growth strategy (in particular internationalisation) and sought out specific help on that basis. Its sales focus is B2B and it has utilised financing available from banks and the West of Scotland Loan Fund to aid its growth.

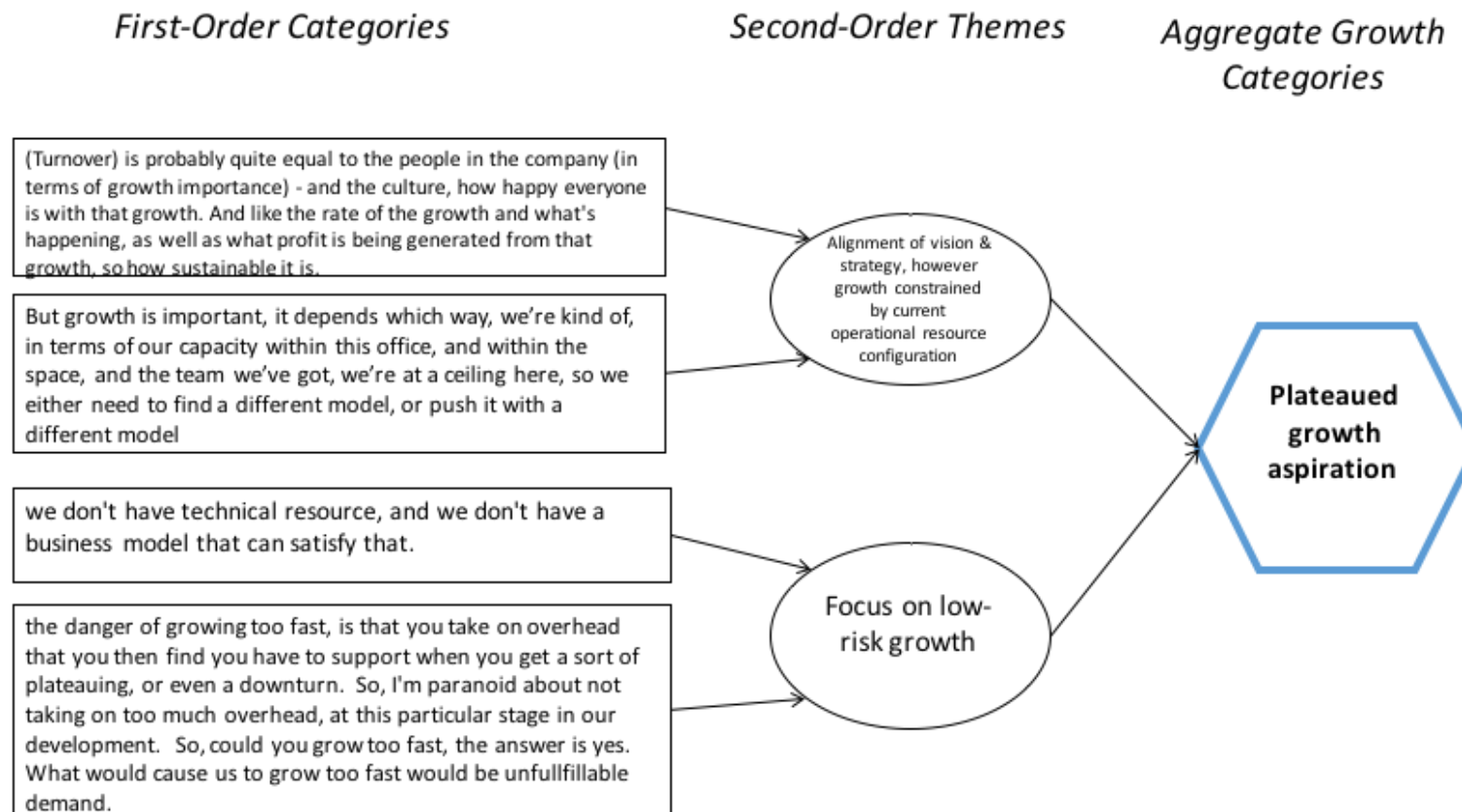
Turnover	2014-2015: £190,000; 2015-2016: £600,000
Location	Glasgow
No. of employees	4 FTE
Year founded	2014
Industry	Other manufacturing
International markets	Europe
Investment gained	None
Ecosystem engagement	Scottish Enterprise Business Gateway E-Spark Startup Loan West of Scotland Loan Fund University of Strathclyde
Sales Focus	B2B

Company C

Company C is an education provider working principally in the construction industry. It shows very little engagement in the ecosystem of support organisations, preferring to instead focus on business development opportunities. The company has undergone rapid growth over the last year, trebling its turnover. It prefers not to engage with support services unless it can derive a direct, tangible benefit from it in the immediate term. It is sales-driven growth with no international market presence, or investment gained. It focuses principally on B2B, but also has a B2C approach too.

Turnover	2015-2016: £15m 2014-2015: £5m
Location	Glasgow
No. of employees	75 FTE
Year founded	2007
Industry	Education
International markets	None
Investment gained	None
Ecosystem engagement	Chambers of Commerce University of Strathclyde Glasgow Caledonian University
Sales Focus	B2B, B2C

Figure 4: Plateaued-Growth Aspiration



Plateaued Growth Aspiration

A variety of companies in our study revised down early growth aspirations after engaging with the market. These ventures typically started with ambitions to conquer national and international markets, but reconsidered the meaning of 'growth' when faced with some of the personal and organisational consequences of growth:

It can maybe make it greedy and twist your priorities a little bit if you get a bit obsessed with it. I think... yeah, you've maybe got to know where is your sweet spot. And then everybody's priorities are... If you had asked me this two years ago I would've been telling you oh yeah, it's going for world domination. But it's not what I want anymore. (Company D)

These businesses are still motivated to grow however they are likely to follow a slower 'sustainable' pathway. This sustainability would appear to mean pursuing a form of growth that utilises existing resources and capabilities as opposed to growth through the acquisition of new means:

I've had some near misses or big opportunities along the way. So I really hoped it would've been bigger by now and I certainly would've hoped to have had a team behind me by now. Equally it's quite important for myself that I'm not in debt or that I don't take on investment too early. I think a lot of so-called support companies really encourage you to do things far sooner than it's wise for the company, such as becoming VAT registered. So I've always done it at a pace that's felt right for the company. I'm not in a big rush to be an overnight success and most big companies do actually take a considerable amount of time to get there. Equally it's quite frustrating, because we're still hoping that each year's going to be the breakthrough year. I don't know if I want it to continue to be a lifestyle business. (Company E)

Company D

Company D is a retail company located in the Scottish Borders. It originally started out with high growth aspiration, but the realities of growth meant one of the owners changed their mind, resulting in the business hitting plateaued growth. Growth was understood by the entrepreneur we spoke to in terms of providing jobs to the local community and in steady and sustainable terms. The engagements detailed by the entrepreneur were largely focused around the local ecosystem to the Borders, although there were mentions of attempts to expand into Asia which required help from central agencies in Scotland which did not work, resulting in a missed opportunity.

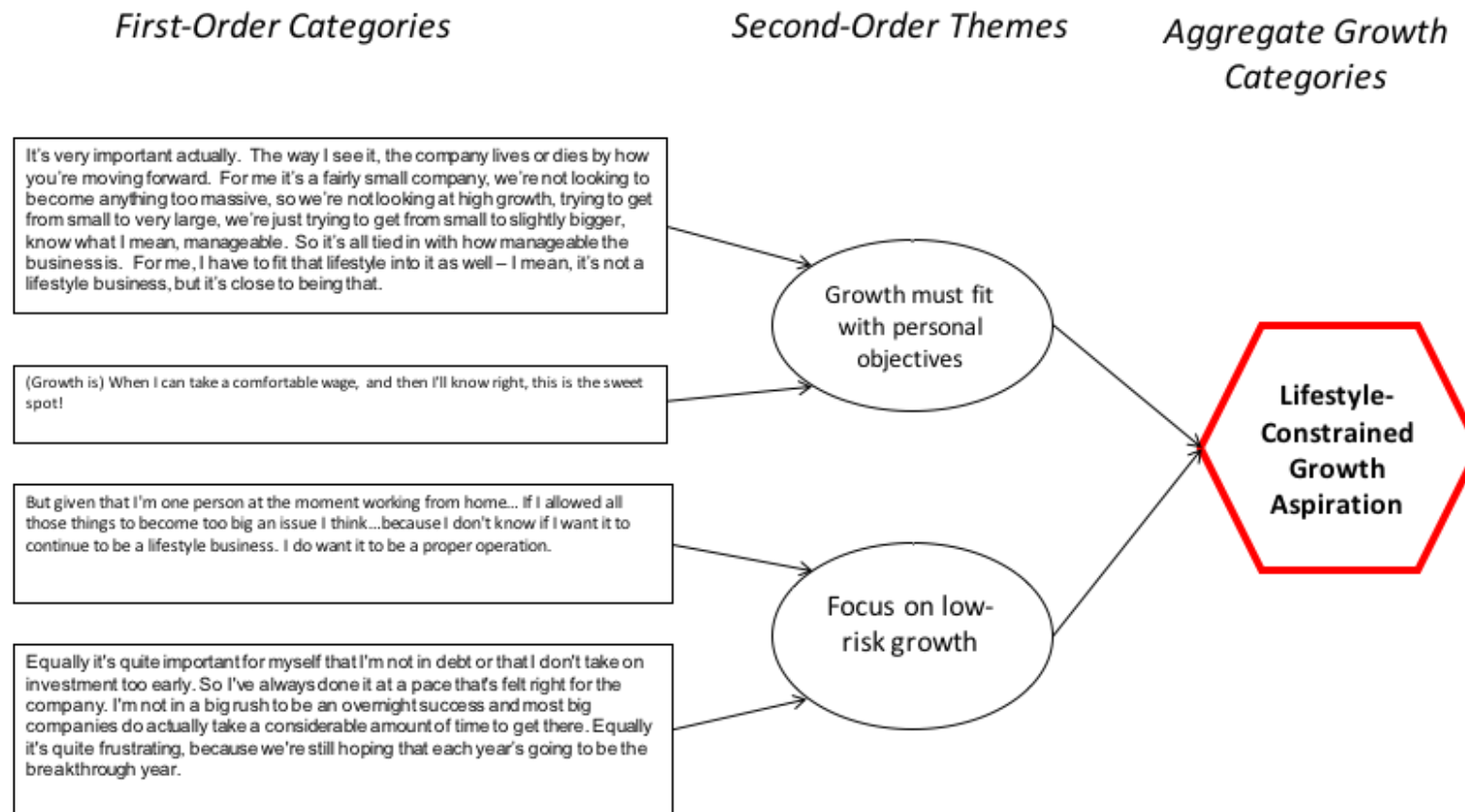
Turnover	2013-2014: £19,400; 2014-2015: £57,000; 2015-2016: £83,000
Location	Borders
No. of employees	4 FTE
Year founded	2011
Industry	Retail
International markets	Europe, North America, Asia
Investment gained	None
Ecosystem engagement	Scottish Enterprise SDI Business Gateway Borders Exporters UKTI Scottish Edge
Sales Focus	B2C

Company E

Company E is based in Edinburgh and works in the beauty industry, with small scale manufacturing. It develops and sells skincare products and services and has been going for 6 years. It has one full time employee (the owner) and has gained no investment. The entrepreneur would like to see it become more than a lifestyle business, but lacks the confidence and know how to achieve this. The business has seen growth and has no debt, but the strategy for growth is unclear and the entrepreneur lacks resources and sales to facilitate growth. It has hit a plateau in its growth ambitions but is also constrained by the entrepreneur's desire not to take on risk or debt. To this end it has plateaued in its growth ambitions as a result of the lifestyle choice

Turnover	2014-2016: £54,000; 2015-2016: £85,000
Location	Edinburgh
No. of employees	1 FTE
Year founded	2010
Industry	Manufacturing
International markets	Europe, North America, Australia
Investment gained	None
Ecosystem engagement	Scottish Enterprise E-Spark Scotland Food and Drink Business Gateway
Sales Focus	B2C

Figure 5: Lifestyle-constrained Aspiration



Lifestyle-Constrained Aspiration

Nearly every entrepreneur interviewed identified the trade-off between growth and risk. A particular group of companies would not sacrifice either personal or financial risk in order to grow the business further (despite achieving relative levels of success). Although most either explicitly or implicitly rejected the term 'lifestyle entrepreneur' to describe their business, it would appear to be an apt term, particularly given that the enjoyment of the business or personal financial security should not be sacrificed for increased turnover and profit. Entrepreneurs in this category were often ambitious, but there was a misalignment between risk-capacity and aspiration. Unlike the plateaued-growth firms, these entrepreneurs did not found the business with high-growth aspirations, rather their existing levels of growth were often unanticipated.

In many instances, entrepreneurs within this category were commercialising a creative skill they possessed (such as design or manufacturing), and despite operating potentially scalable business, there was often an inherent tension between preserving the creative aspect of the business and achieving greater commercial success:

I think it's... yeah, I mean, profit, yes, yes, absolutely. But for me, I am a businessman because I run a business, but I am a creative and I'm a designer. So the goal for me is to produce more product, increase the range, and move the brand forward, so brand awareness and just getting more out there really. (Company F)

Company F

Turnover	2014-2015: £100,000; 2015-2016: £200,000
Location	Glasgow
No. of employees	1.5 FTE
Year founded	2011
Industry	Manufacturing
International markets	Europe, North America
Investment gained	None
Ecosystem engagement	Scottish Enterprise Business Gateway Cultural Enterprise Office Scottish EDGE
Sales Focus	B2C

The Evolution of Growth Aspiration

Growth aspirations are not fixed, but rather evolve over time. This holds some significant implications for the Scottish entrepreneurial ecosystem, raising the questions a) what factors influence growth aspiration and b) at what points can the supporting infrastructure influence this positively and c) how does the ecosystem negatively impact growth aspiration. Although these variables require a longitudinal study to fully understand and develop, from our cross-sectional analysis, we noted some important transitions:

Illustrative Example: *Lifestyle-constrained Growth Aspiration > High-growth Aspiration*

What makes a company go from lifestyle business to a potential world-beater? Our findings would suggest that both market engagement and concept validation plays an important role. Company A in our sample initially started out as 'fun', however, when it became clear there was a valuable product-market fit, the growth aspiration rapidly evolved:

Erm, at first, we were kind of running the business just as a kind of for fun, to see what we could do, that was before we kind of worked full time. We were just putting products out to market, and seeing what stuck. So, we got a little bit of business from Sainsbury's, that we managed to turn into some recurring revenue. And that put the growth up quite considerably, that was going from, kind of, minimal to, so I think we did, like, £80k in a year. Then the year after that we did about £220k, which we were happy with. Growth, since then, has been challenging, it's sort of like, this crossing the chasm, aspect of business. (Company A)

Other companies were driven by the success of direct competitors or those in a similar industry. They sought help from these companies, who they often met through networking events, to make a positive growth transition:

I went on the recent Power of Youth weekend which was open to previous Edge winners and there's a Glasgow based () company there called (). I think, that's the name. So they're a husband and wife team, and they've just exploded. So they've gone third party manufacturer. So over the weekend I was trying to say to her, listen, can you help me just get to the next stage. So I'm hoping to maybe be able to meet up with herself. But it's getting a big sales contract in place that would allow me to do that. (Company E)

This would suggest that the policy pursued by REAP around “improving network linkages” to increase entrepreneurial and innovative capabilities is a worthwhile strategy, particularly as a means of developing endogenous transitions from low-growth to high growth aspiration. The role of the ecosystem is then to promote the innovation and export capabilities that Hart and colleagues²¹ identify as critical to successful high growth.

Summary

To echo Levie and Autio²², what is notable from our findings is that many of the growth firms we spoke to do not appear to possess the mindset, particularly around growth aspiration, that would appear to be a prerequisite for truly high growth. This raises two opposing questions. Firstly, should so much ecosystem resource be expended on firms who do not possess the appropriate mindset to achieve growth (those in the plateaued or lifestyle-constrained categories)? And, second, if one takes a dynamic perspective, believing that growth mindset can evolve (and can therefore be influenced), how can

²¹ ERC, (2015).

²² Levie and Autio (2013).

resources be targeted specifically to firms at the right stage, at the right time, and how can aspirations be positively influenced?

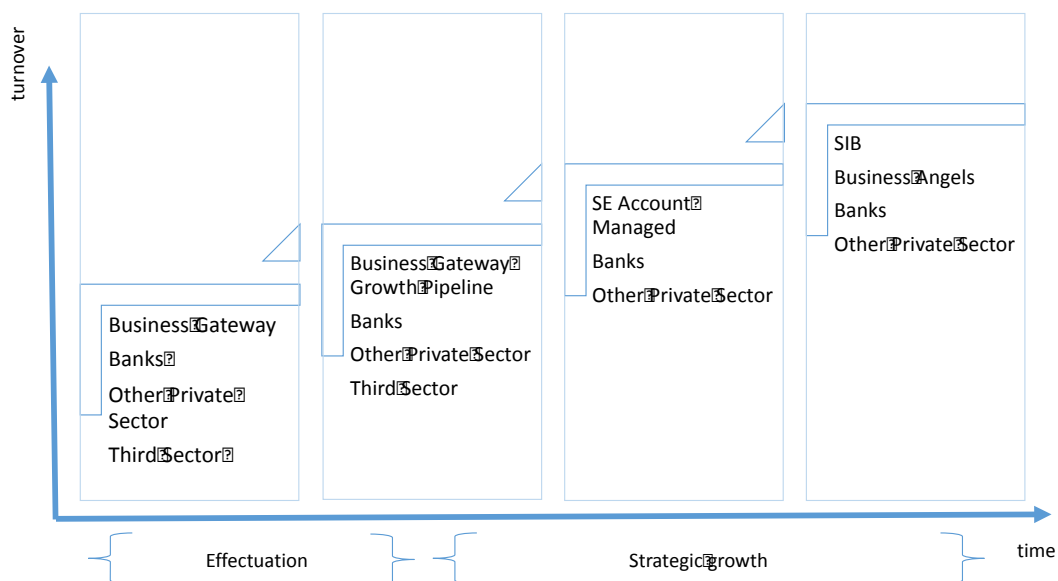
5. Activities and Engagement

Ecosystem Support Services

Scotland has a broad and deep range of enterprise support services available to its companies. Mason and Brown have recently argued that Scotland offers the most comprehensive range of support services within the UK to aid the promotion of high growth companies. These include programmes aimed at developing early stage high potential enterprises, a range of co-investment funds to promote the uptake of entrepreneurial finance, and a number of innovation support programmes (Mason and Brown 2014). Consistent within this provision is the recognition that entrepreneurial growth support is a critical part of the economic development policy mix in Scotland. This then requires an understanding of what is a dynamic and ever-changing landscape – Scotland has become a more fertile entrepreneurial ground in recent years with the growth and development of two ‘unicorns’ in Skyscanner and Fanduel in Edinburgh, and a number of studies have looked into how these companies and how future companies like them can be supported.²³

In considering the identified support provision in Scotland, we adapted the CanDO growth journey support services to show what a simplified successful growth journey might look like for an ecosystem engaged company in the Scottish system, shown below:

Figure 6: Company growth journey and support services



Source: Authors' elaboration, adapted from CanDO

²³ Mason and Brown, (2014); Spigel, (2015).

This figure above shows a simplified growth journey whereby a company seeks support from Business Gateway, moves on to Business Gateway Growth Pipeline, then Scottish Enterprise account management once it reaches a certain point in growth before then moving on to specialist and very high growth investment through gaining external investment. We have included banks in the journey as they play a very important role in providing financial and non-financial support to companies at all stages of growth, ranging from advice through to loans, credit facilities, invoice financing options and overdrafts. In the first two phases, companies are in an effectuation phase whereby they are largely reactive in their decision-making. In the following two stages they move into a more strategic behaviour where they are thinking about the longer term, typically after better understanding their needs through experience.²⁴ We took the CanDo framework as our starting point and then sought to understand what our interviewed companies' experience looked like. As part of the analysis of the growth journey of these companies we tried to identify the number and types of organisation involved in enterprise support in Scotland. In total, although by no means exhaustive, we found 170 organisations involved in supporting enterprise establishment and growth, through financial and/or non-financial support means. Further, we found that there are a number of different types of organisations involved, including:

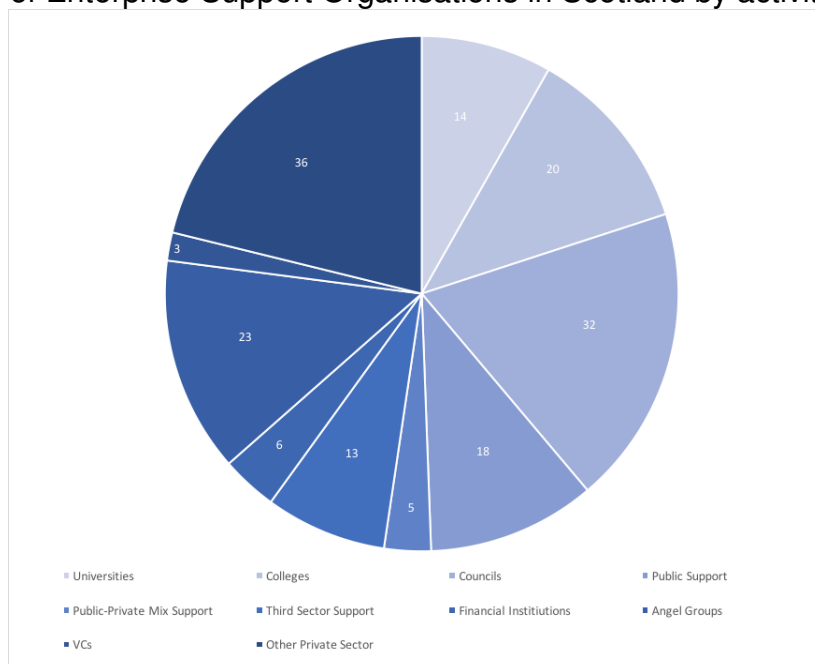
- Universities
- Colleges
- Councils
- Public Support organisations
- Public-Private Mix Support
- Third Sector Support
- Financial Institutions
- Angel Groups
- Venture Capitalists
- Other Private Sector

The breadth and depth of support organisations for enterprise in Scotland was surprising to most people that we spoke to, with most expecting around 30 or so to be the number rather than the 170 (and counting) that we found.²⁵ We then categorised the organisations by 'type' listed above and broke the number down by 'activity'. Below is a visual representation of the organisations counted by type:

²⁴ Sarasvathy, (2001).

²⁵ A full list of the organisations identified is contained within appendix 2. It is worth noting here that the list is not complete – there are for example many more private sector support providers who have not been included such as accountancy, law and business advisory/consultancy firms. We included only the large scale providers such as banks in this count.

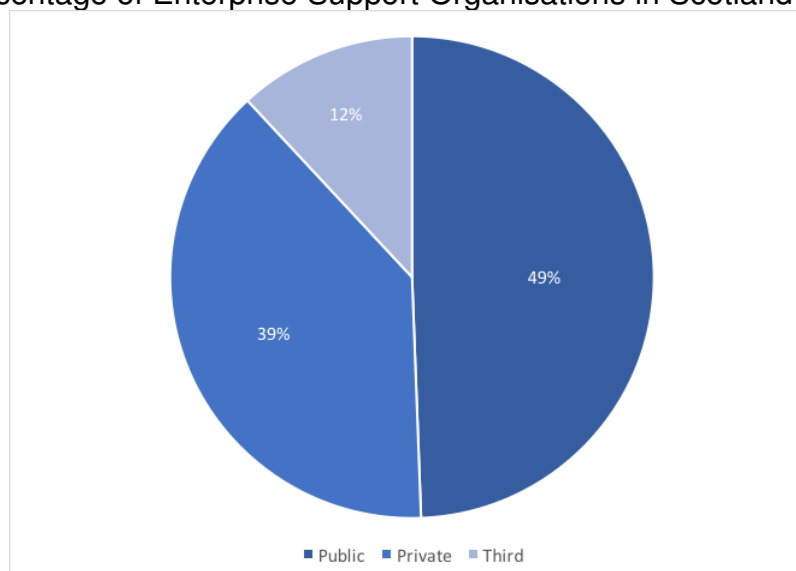
Figure 7: No. of Enterprise Support Organisations in Scotland by activity, 2016



Source: Authors' elaborations.

We then broke these down into organisation support by type in terms of public, private and third sector support:

Figure 8: Percentage of Enterprise Support Organisations in Scotland by type, 2016



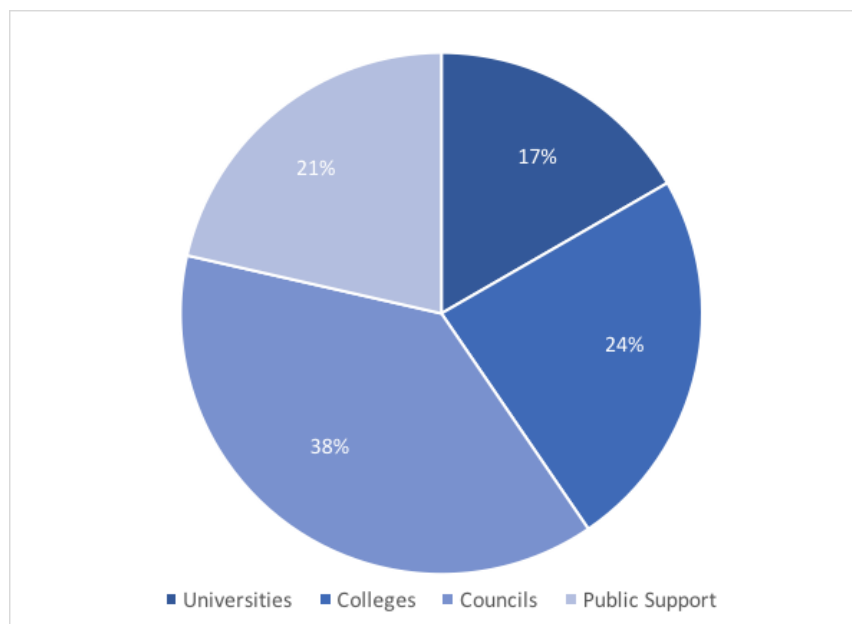
Source: Authors' elaborations.

It is clear from the above charts that the public sector plays a critical role in support provision in Scotland. However, what is noteworthy here is that, although we have categorised the organisations by type (public, private, third), the public sector touches on all of these by virtue of providing both direct and indirect financial support to these organisations in the form of grants, soft loans and tax breaks. When we looked into the funding provisions for each organisation we found that 75% of

enterprise support organisations receive some form of public monies for their activities in Scotland.

A further striking aspect of the above is the number of further education, higher education institutions and local councils²⁶ engaged in enterprise support provision. These organisations' principal focus is not enterprise support, but they comprise over a third of the providers identified. Given the clear role that the public sector is playing in this space, we then broke down the public sector support organisations by type, showing that education providers in Scotland comprise almost half of the number of enterprise support provision:

Figure 9: Percentage of Public Sector enterprise support in Scotland, 2016



Source: Authors' elaborations.

From the above we assumed that, given their prominence in the composition of provision support, education providers and councils would play an important role in the growth aspirations and activities of Scottish companies. However, this was not found to be the case.

Understanding entrepreneurial engagement

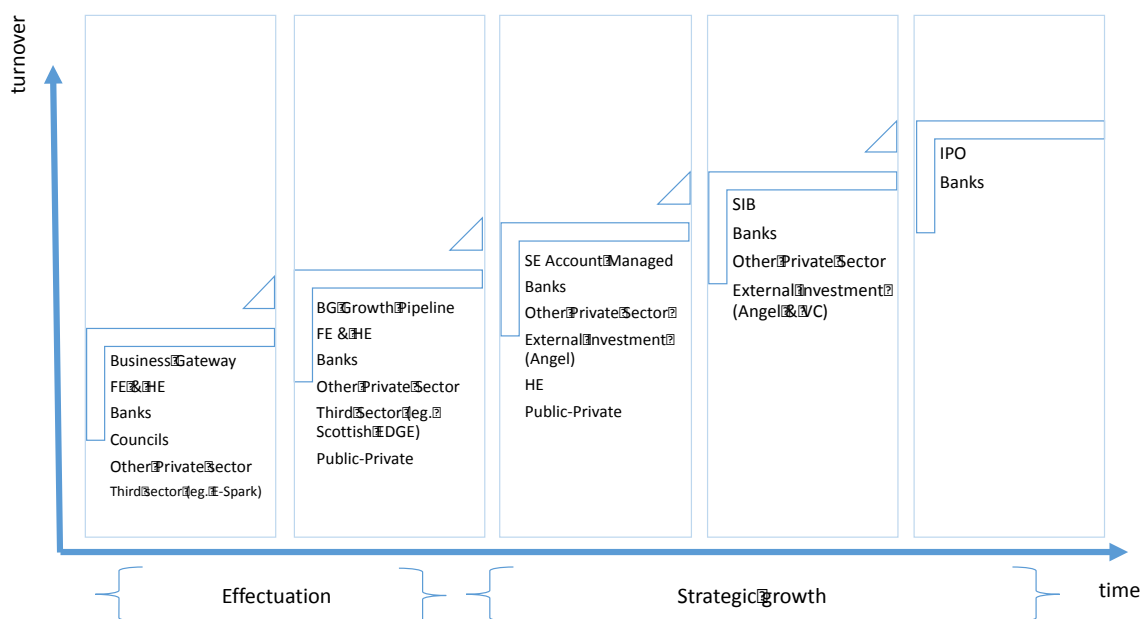
As part of seeking to understand growth more effectively, we addressed a number of points around engagement with the surrounding support system with the companies interviewed. In doing this we sought to understand the prevalence and nature of engagement with both local and national support provision, with a particular focus on the nature of engagement beyond financial support into non-financial support (advice, mentoring, legal and strategic support, opening of new markets, etc). The purpose of this was to help better understand what, how and why entrepreneurs engage in the support provisions available to them in Scotland. To this end, we asked questions around who they engaged with (organisations, initiatives, peers,

²⁶ Councils were counted individually as they all have enterprise support services beyond Business Gateway.

mentors, for example) and what those engagements looked like. This is dependent on a number of factors, but it is worth noting here that companies are generally happy with the types of support they are able to access, and the amount of it. What emerged from the interviews was a clear sense that growth was multi-layered, non-linear and patchy – it was often dependent on a combination of hard work, chance, effective support, and social capital. For example, one company was able to get in front of a buyer for a multinational chain through a mutual friend where they then pitched their idea to the buyer. The buyer liked the product and that company is now responsible for 95% of the Scottish company’s sales, which have grown 300% in two years. The company is now utilising a combination of SDI and its customer to internationalise rapidly and grow further.

Based on the identification of the range and depth of support organisations in Scotland and the interviews conducted, we further developed the CanDo support service representation into a more nuanced graphic representation of how a growing company in Scottish might engage the support available at different points in its growth, shown below:

Figure 10: Phases of Growth Journey Enterprise Support in Scotland



Source: Authors’ elaborations

The differences in the above figure (figure 10), from the one adapted from CanDo, is that the stages are different and the end point of IPO/exit is now included. The CanDo representation was simplified but we have tried to present a slightly more detailed articulation of the types of support available in Scotland when companies are at different stages of growth. The justification and description of each phase is shown below:

- Start-Up Phase:
 - In the start-up phase companies are likely to engage Business Gateway, other council support, banks, Other Private sector support (solicitors,

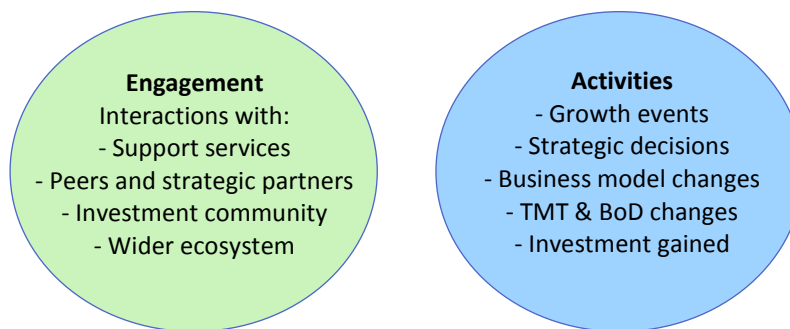
accountants, etc), Third sector support, and further/higher education providers. Not included here are the three Fs of friends, fools and family who all can play a critical role in offering both financial and non-financial support in the very early stages.

- Establishment Phase
 - In the establishment phase companies are looking to establish themselves in the market with particular product(s) or service(s) and are likely to engage the same services as before, but will have likely moved on to public-private organisations such as Scottish EDGE to gain recognition in the market and finance. They may also be looking to get on to Business Gateway's Growth Pipeline with a view to moving on to Scottish Enterprise account management.
- Competing for Growth Phase
 - As turnover increases and companies gain a foothold in their industries, they start to engage more specialist services to help them compete more effectively in the market. To this end they may look to Scottish Enterprise and its support services (account management, SDI, SMAS, etc) and continue to utilise the other support services available. Companies in this stage may also look to universities for sources of knowledge, staff and testing/commercialisation opportunities arising from technological advantage. At this stage they may also look to gain external investment from business angels, if they haven't already done so, to help them achieve their growth ambitions.
- Scaling for Growth
 - In the scaling for growth stage companies typically require more finance to support employment and operations growth. At this stage they may seek follow on financing from existing investors or go to a venture capitalist firm. This funding can be supported by Scottish Enterprise's various different financial instruments. In terms of ecosystem engagement, companies will likely continue to utilise the other private sector support organisations required for the day to day running of the business, but may also start to access specialist business and technological advice. If they have taken venture capital finance then they will be pushed and pushing to a market offering within a few years typically.
- Public Offer & Exit
 - At this stage the company has an initial public offering, providing a return to investors who may exit with a sale of all their shares, or retain a small shareholding. At this point the company is publicly traded and growth will likely be steady and incremental rather than fast.

It is worth noting here that the phases outlined above are not fixed and companies can skip some stages when experiencing rapid growth, or take a different path altogether. There are two companies in the cohort interviewed who the

representation above does not apply to – one gained significant external investment pre-revenue, and the other barely engaged with the ecosystem at all and took no investment *en route* to a turnover of £15m, up from £5m the previous year. These two companies are exceptional cases however. The phases are then a representation of a more typical growth journey and engagement with the support services available.

5.1 Engagement and Activities Interview Data



As part of the interview process we explored the subjects of engagement and activities to understand the way the companies had grown and what they did to achieve the growth they had to date. Feedback from the companies was largely positive on the engagement side – they were happy with the amount of support available and felt that Scotland was well-served. In terms of the activities companies often found it difficult to recall the particular growth events or decisions that they'd taken to achieve growth and needed prompting. We started off the questions by asking them what their opinion was of the Scottish support ecosystem which the following illustrative quotes show:

Overall Perception of the Scottish Support Ecosystem

Early on, I got quite a lot of help from Scottish Enterprise. We were account managed much earlier in the chain than normal, so we were lucky to get... right at the beginning, really right at the beginning. So that was very useful in the first... in 2012... from 2012 to 2013/14, we had a lot of support from Scottish Enterprise, in terms of marketing, branding support, help with staff, help with setting up our production and actually even some capital grant to help us set up our production facility... In Scotland, especially the food and drink sector, we get so much help. We're the envy of the rest of the UK. (Company J)

It's a real stamp of approval and I think what the Edge team are doing is amazing because nobody else is doing that in the UK. And it is a life changer for a small company. (Company E)

Yeah, and I think the network in Scotland is strong and I have two elements of my business that are food related, and Scotland Food and Drink is amazing. If you were looking for a template to try and bring in, they do incredibly well. They have a real understanding of food and what it takes to... I'm not exporting just now but that's a big drive for them. (Company E)

Certainly, with Scottish Enterprise, they've developed an active PR campaign for us, they've given us support for accountancy services, helping to get us investor ready, cash flow projections, all that kind of thing, so that's through Scottish Enterprise which has been really good. (Company I)

Things like Scot EDGE, although there was a big application to do that for that and that was time consuming, once we went through the process and were awarded the money, they're so slick with everything. They're so organised, they're so genuine and wanting to help. You don't have a feeling that they're in this cushy job and maybe they could just say anything to you and hopefully pass you onto another person. They're not like that at all. They're really genuinely invested in helping people. (Company D)

I've spoken to a few people and largely within Scotland I think the support is very good compared to other countries in other parts of the UK. It's very responsive, there's a lot of kind of specific areas of expertise as well which we've benefited from... Anything that's kind of linked to Scottish Enterprise is pretty well all tied together, so they do work together, and that's largely just because of the kind of system they've got set up. So, even if you speak to SDI, it's all linked back to Business Gateway and stuff, so it then becomes a bit more fractious when you go out to something like the Food and Health Innovation Service, or speak to some of the universities or some of the other support out there which isn't kind of orchestrated by SE. It becomes a bit more fractious but I would say the main ones are pretty well linked and talk to each other. (Company N)

Well, if they were more integrated, because a lot of the time, they're doubling up. So, RBS may be running, you know, a workshop on cash flow, KPMG are doing the same, and so are Scottish Enterprise. (Company B)

The overall view of the ecosystem of support in Scotland was positive, but this comes with some caveats. A number of respondents felt that they weren't able to access specific support when they needed it at certain points in their growth journey. They didn't think it wasn't available however, just that they didn't know how to get it at the point of need. All companies indicated both perceived and actual difficulties in navigating the support that is available, citing the opportunity cost of spending too much time looking for a particular form of support, filling in forms ("I could be out making sales!"), and hearing after the fact about particular events that would have been useful. On this basis, our findings suggest that there are three main categories of how engagement is considered by the companies. These are:

- Navigating the system
- Need for timely support
- Need for specific support

Based on the above, we present representative quotes from the companies of how they view the system according to the three categories.

Navigating the support ecosystem

...it can be a little bit confusing when you start looking into what's available, it can be very disparate, the whole thing, and everyone's looking for a different kind of thing. (Company F)

I think at one time I was very aware that I was spending too much of my time trying to figure out all the different support I could get and not enough time actually doing. And there was a very strong case... at some point, we realised that you've got to just figure out how you can do this. And you spend quite a lot of time chasing grant support, which in some cases, actually ends up just holding you back. If I was going to navigate all the different levels of grant support, I would probably spend a significant amount of my time, trying to do that. So I think there's probably a lot of support that I could have got, that I haven't got, just because I've had time. (Company J)

The time you spend on doing forms, I could've been bloody doing sales, creating more designs! So I'm just finding them incredibly frustrating at the minute. (Company D)

And we did a thing after that, where there was like £30,000 of funding you could apply for. Went through all these hoops, had to, like, save the code of our software onto a CD Rom, and submit it as part of the application - a CD Rom! So, an early prototype of what we did is, like, sitting in a desk drawer, gathering dust somewhere. And then, we found out at the end that we weren't eligible, because they'd changed the rules so that it did not apply to digital businesses; why didn't you let us know about it, and we probably just wouldn't apply in the first place! (Company A)

Sometimes it's just a case of actually remembering that there is resource to be used. You get so bogged down that you actually have to take a step back. Okay, help me to answer this question or where can I get support from? And sometimes, you just forget to do it. (Company J)

It's difficult to know who we would actually speak to. Basically, when we talked to the banks, in the early days of getting up and running, it was a blank face look - what business are you in, oh, no... Well, I don't think that Business Gateway talks to Highlands and Islands Enterprise, I don't think that - or, they may talk on a personal basis, but I don't think they talk formally. (Company O)

I sometimes get a bit confused where Business Gateway starts and stops and where Scottish Enterprise start. I'm not too sure what the dividing line is. (Company E)

There should maybe be a bit of a clearer structure that, if you're starting a business in Scotland, you can go to one single place, there's a website that has a tree on it that helps you say, right, who do I go and speak to, to get this information, as opposed to, okay, there's 30 support services out there, go and speak to them and see who can help you out... So you would almost go to the tree and say, right, what size of business are you, what's your sector? Okay, here's your road map. The same would be for tech or something else. But, yes,

just somewhere that you can go that's got everything in the one place that says, go there first, this is what they do. (Company N)

Although navigation is an issue, companies did identify their public sector advisors as being critical to helping them find their way through the system to leverage its benefits:

I think the point of contact and the individual relationships are completely fundamental. (Company P)

...if you know where to go as a starting point, which is normally somewhere like Business Gateway, they'll then help you in the right direction. You probably end up having issues if you then go and, yourself, try to speak to ten different people. (Company N)

We worked with Scottish Enterprise, well, we started out working with Business Gateway, and got onto the High Growth programme that they have. Then, we appointed a chairman, and got on the radar – actually, then we started working with Scottish Enterprise, based on good growth we'd done. And got on to, I think, one of their High Growth programmes. Then, we appointed a chairman, which was an action that came out of an SE, or SDI workshop. And then, he got us an account manager, by Scottish Enterprise... and that's been quite useful. We've worked with, we won the Scottish Edge award last year, and that was quite good. (Company A)

I went to the Scottish Institute for Enterprise. They had business advisers who, again, will come out and see you get one to one time and they kind of go out of their way to help you. And so I had a really good one there that I would go to for all the kind of advice. And I think it was quite good because I know they are government funded but they seemed slightly more impartial than kind of anywhere else. (Company L)

There is a downside to this however that there can be a sense that the advisors can also act as a barrier to potential growth if there is a disconnect in the expectations of the company and the advisor's ability/willingness to deliver the type of support sought:

Now I'm certain [the account manager] could open up doors in those organisations for me but he doesn't because that could be seen as being offering favouritism to me over his other accounts. And so it's just limited the impact that that person can bring in opening doors. Yeah and the ability to open doors is limited because, you know, there is lots and lots of people who are account managed by my account manager. (Company K)

if you get into a relationship that you don't feel is so constructive, it's quite hard for you to challenge that, 'cause you don't want to lose the support, and so I think it would be helpful if there was some, given what I've said about relationships, I think it would be helpful if there was some way that if a key advisor wasn't really working for you, that you could say that neutrally. Because actually some of these things may be about the relationship and the dynamic,

but actually it seems really difficult to say, well actually this isn't really working for me. (Company P)

No, just when he says he's going to put me forward, I'm like fantastic. And then it's oh, it's a change approach, so I'm not sure you'll get through. And I'm like well, can we not just put an application in and see? I don't think the application's ever been put forward. And I've stopped asking now to be honest... just because you can only ask so many times and be told that something will happen and nothing happens. (Company E)

...the last few months have just been really trying. I tried to get onto the Growth Programme and they said oh, you need to have projections of £400,000 in the next three years. That was in my projections anyway, that was on my cash flow. Then they rejected it and said oh, your projections were too low. We really needed to see £500,000. It's just like oh Jesus, you can't move goalposts like that. (Company D)

...when we were first setting up, it seemed almost impossible to get any support, and then once we got support, we got good support. But it almost feels like once people see that you're not a risk, then you get huge support, but at the initial stage, it was actually quite difficult to get that support. So, it doesn't really feel to me, that the support systems, they're taking quite a risk averse approach, and if you talk to new start-ups, that's what people feel I think. (Company P)

I can tell that the people in those organisations are stretched to a point where they just can't possibly be in a position to give enough to offer constructive support. It's very difficult for those organisations to support the business fully on providing advice because they just don't know the business well enough. (Company K)

By and large the feedback from the companies interviewed was positive on the role that the advisors played in helping companies gain the most benefit from the wide range of support services offered in Scotland (outlined further below). As part of seeking to understand how companies engaged the system, we asked a series of questions around the types of engagement and what they thought the services available. This gave us a clear steer from the companies on their perception of support, resulting in the following findings.

Challenge-Specific Support, Results driven

The companies interviewed spoke at length about what they would 'get out' of their interactions with the different forms of support suggesting that they viewed the interactions in transactional rather, than transformational terms. Often this was linked to the stage of growth they were at, and how much they needed the support on offer. Thus, the perceived effectiveness of support is heavily dependent on how well tied in to firms' 'core purposes' support is, with a strong emphasis on results emerging from the engagement. Companies appeared to be more inclined to disparage engagements if they did not see a tangible outcome from them, but were full of praise if the support resulted in a clearly articulated benefit or change in their

operations – typically sales, a grant or new contacts that could lead to business development. The quotes below are a clear illustration of this:

With an export development programme which I was encouraged to go on, which was heavily subsidised by Scottish Enterprise and was a complete waste of time and effort and money, and that was counterproductive... because I didn't get any orders out of it. (Company J)

...the most helpful support we got was from Step in Stirling, the local enterprise company, and they were very positive and helpful. And actually, at a point that we had really got to the point where we thought, we're going to give this up, they persuaded us to keep going. So they were quite instrumental. And it was through them, then, we eventually got onto the growth pipeline. (Company P)

...we have accessed things like the Financial Readiness Scheme run by the Scottish Enterprise which they have paid for consultants to come in and help us with specific issues such as writing the business plan and the growth strategy and so on. So in terms of what we would prefer, yes, it's probably lighter touch. It's less associated with the handholding and more associated with the hard cash. (Company G)

Business Gateway is just like, was in my opinion not a very good use of time. HIE has been really good because I mean it's brought things like MIT, I've met some consultants through it that have been quite useful, but when you actually look into the time and effort and the money that, the government public money, that they use for that it's not very efficient because there is not a lot of, as I say, like out of ten meetings you might get one that's really useful... (Company M)

...my Business Gateway advisor is fantastic, she's just has really went... But I know she is going above and beyond her normal role for some of the things that she is doing for us, and people that she's connecting us with. Like she called her sister to ask her sister's boss to get a chat with me, he's the owner of Lyle & Scott knitwear, and little things like that I know she doesn't have to do. (Company D)

There was a sense from the companies that the support services offered, although broad, were not as specific as they would like at times, or difficult to find if they were. For example:

So I really want to speak to a commercialisation expert, and I go, how can we just quickly fast through all these ideas, and work out which are the ones that can generate us the most revenue, in the simplest and quickest way possible. And it's really hard to tap into that. (Company A)

Overall I think it's certainly got better, I think there is a good support system, if you know what you're looking for, and I think both bases are covered. I think it can be difficult when you're doing something very different or if you have a different outlook, a lot of the time it is just ticking boxes and you could just be doing something that... and everyone's in the same bracket, and it depends what stage you are as well. (Company N)

We haven't had as much support in the last year or so because we're a little bit at a different stage, and our support has come more from SDI and it's really has been... it hasn't really been financial support really, it was just that the key one for us was the Meet the Buyer event and then going out. (Company J)

Growth challenges are highly varied according to industry, markets, wider circumstances, and stage of development.²⁷ As firms grow beyond the initial stages, their growth challenges become more specific so they require/expect more specific support to be available. This is a difficult issue to resolve for policymakers as there are finite resources and a number of competing calls on them, as well as an obligation towards doing as much as possible for all. That being said, not all companies want or need specific support, with some looking for simplified support, or none at all:

...we don't necessarily go to Scottish Enterprise events and things like that. Not because we don't value them because I can't comment on something that I don't necessarily know about but it's just sometimes you have to allocate your time in terms of what is the most important thing at the time. (Company C)

The value of sector specific support:

And they just are very supportive. It doesn't almost matter of the size of company, they see it as an asset, that you're there working in Scotland to put together things, and they're part of the chocolate network. So there's over 80 different chocolate companies in Scotland. So Scotland's well-known for whiskey; craft beer's on the rise, but they're really behind making the larger known, so wider networks than just people that live here... (Company E)

They [Scotland Food and Drink] do support. I got a really good contact into one of the other supermarkets and then they do kind of... they were involved with the Meet the Buyer thing and they run the Food and Drink Awards, and they do quite a lot of marketing promotion stuff. Their signposting for anything non... their marketing hasn't been quite as useful, to be honest. But they've gone and been on a journey for the last three or four years now, a lot better, more efficient and more focused than they were. So it's a good organisation. (Company J)

Responsive, Timely Support

All of the companies indicated the importance of responsive and timely support – both in terms of the length of time it takes to get a response from advisors, and putting together documentation that is often required for public sector support (grants, loans, qualifying for support, etc). A clear example of such difficulties from both a policy and company perspective is the case of one company that was immediately affected by the Brexit referendum decision. The outcome of the referendum resulted in an almost immediate cessation of discussions and negotiations with customers; the company's product was on an approved list for EU grant support offsetting 50% of its cost, which made it very attractive to customers.

²⁷ Brown and Mawson, (2013).

With the referendum outcome customers became spooked about whether or not it would still qualify for the support which resulted in the company's growth prospects hitting an immediate roadblock:

And we stood up and said, yeah. Get half the money off this. And at the time we were jumping around going, this is fantastic, how big are we going to grow this year because people know they can get half the money off? They haven't made a single allocation from that fund. (Company H)

The company was unable to get clear, timely guidance on eligibility for the EU support and consequently has seen growth projections stall and finances dwindle. It is of course debatable that a policy intervention would have been enough to combat this, but the company felt that the lack of a response did not help matters. Rather, they felt that if they were able to refer to official advice then they would have been able to reassure their customers.

Timeliness of support is of course a very difficult issue to master – companies move very quickly on opportunities and expect the public sector to maintain their pace in order for them to exploit the opportunity. This is illustrated in the quotes below:

When we went through Business Gateway, we had all sorts of problems because just with the process being too slow and cumbersome, of what we needed to do. (Company J)

The negative of any public sector engagement is the time it takes. So, a lot of form filling, and stuff like that. Which I appreciate, there needs to be, so they can properly validate their requests for support and things. But just in terms of actual operational efficiency, it can be a bit of a pain, because it's, you know, it makes things move slower sometimes, because it's never at the top of your to do list, so it can take a while for you to get round to it. There's always a client with a problem that needs to be dealt with first. (Company A)

...the information they gave me in the first meeting for the help they could give for Japan turned out to be wrong information completely. And the excuses I got were people were new in post. And then when I was offering the correct information to move forward the paperwork it was too close to [the opportunity in] Japan and they couldn't move fast enough. That coincided with people moving post as well. So that was really all part of that negative experience. (Company D)

The main issue is the speed at which the grants come through, because they have all these criteria and say, oh, you can't spend money until...you can't start this project until you've got the money and we've approved the grant. And of course, if you're a start-up and you're moving really fast, you can't really wait six weeks until the wheels of the public sector grant making bodies decide that you're going to be at the top of the pile. So it just needs to be a little bit more responsive, in my opinion. But that's a minor gripe. (Company J)

Like you just knew that you were one of their half an hour slots of the day and they kind of just do what they could for you in that half an hour and then they would probably forget about you 20 minutes later. (Company L)

However, on the flip side although bureaucracy is frustrating for companies, it may be an issue of perspective and educating companies in taking a more holistic view of what that time actually results in; one company pointed out that the time spent filling in forms for support can result in substantial financial return to a company:

I have never ceased to be shocked by the number of my peers in business who do not engage with Scottish Enterprise, who think of them as a waste of time. "Why should I bother? They just want me to fill in forms." I can think of a distinct conversation I had a few months ago saying yeah, you've got to spend two hours of your time filling in a form, and yet you're getting paid £10,000 an hour to fill in that form. What are you thinking? (Company G)

As aware of the financial benefits as the above company is, unfortunately the quote is the exception in the companies which we interviewed – one company that held a substantial R&D grant for a research project into its principal product line and supply chain viewed it as a 'distraction', despite finding out that one of their initial strategies was not going to result in growth or be cost effective:

And then the other thing, we got in 2013, 2014, was a massive UK Technology Strategy Board R&D innovation grant... Which was interesting and great, and it was something that we needed to investigate through our supply chain, because we were interested in whether it was more cost effective to produce... So it was an 18 month project, of which we were the project leader of, and in hindsight it was a distraction... It was an enormous amount of paperwork, audits and report making, which we really were not at the size to be able to undertake... And in the meantime, a lot of internal resource at key point in our growth was distracted, to supporting that project. So that's sort of an example of where our...and I mean, in our business, we've got a lot of incredibly intelligent people, so R&D is always interesting. So you have to be aware that it can be distracting you from your core purposes. So I guess we got the answer, it just wasn't the answer that we wanted. (Company J)

This is illustrative of how companies view support and engagements with the ecosystem – if the engagement confirms their views, provides them with an exploitable opportunity or results in a financial benefit, then it is viewed positively; if not, then it is disregarded as being a waste of their time.

Typology of engagement

Based on our findings above and the interviews conducted, we sought to create a typology of how companies engage (or not) with the ecosystem. We created three main types of engagement based on this:

- Non-strategic engagement
- Strategic engagement
- Strategic non-engagement

The strategic engagement type is the most common of the companies we spoke to. There were also two other types: non-strategic engagement to describe companies

who whilst considering themselves growth companies, did not seem to have a strategic orientation in mind when engaging support; and strategic non-engagement to describe companies who have very little engagement in support services as a deliberate choice to remain focused on their growth objectives without distraction. Three company examples are outlined in Table 1 below showing this:

Table 1: Case-Studies/Typology of Company Engagement Strategies

Non-strategic Company H	Strategic engagement Company A	Strategic non-engagement Company C
Firm at effectuation stage but not focusing on strategic growth – responding to opportunities.	Use of Business Gateway to access growth support, then Scottish Enterprise account management to develop capabilities of the firm including appointment of chairman, board and non-executive directors.	Reduced transaction and opportunity costs by not engaging.
Chopping and changing core business - Still looking for their USP and market niche.	Use of grant applications to further development in the business (Creative Scotland, EDGE, etc).	Focused on sales and exploiting opportunities rather than seeking support.
Very exposed to external market conditions and shocks. Business model over-dependent.	Engagement with Higher Education Institutions for internships to explore growth opportunities.	Lack of understanding of what the business is on the part of public sector and private sector support organisations; assumption it is construction, but it is education.
Growth trajectory unclear.	Engagement with investment syndicates in Scotland but unhappy with the terms offered/approach – felt that accessing more money and higher ambition of investors in London was a better option for the company.	Poor experience with banks – no help forthcoming when financial help needed, now banks are keen to work with them they are doing well.
Lack of understanding of support available.	Use of peers for networking and social capital leverage – introductions to new customers and investors.	Some engagement with Chambers of Commerce and University of Strathclyde – both are targeted engagements focused on business development only.
Inexperienced entrepreneur.	Use of Business Gateway to access growth support, then Scottish Enterprise account management to develop capabilities of the firm including appointment of chairman, board and non-executive directors.	Reduced transaction and opportunity costs by not engaging.

Source: Company interviews, 2016.

Activities and Engagement Summary

Firstly, it should be noted again that the majority of growth firms we spoke to are satisfied with the support available in Scotland. They noted the breadth of depth of help available and, in many cases, the quality of what it was possible to access. However, this satisfaction comes with a qualifier. The abundance of support – something that is powerfully demonstrated in Appendix 2 – has created unintended consequences for both entrepreneurs and those supporting them. On average each company we spoke to engaged around five different support organisations. However, the quality and quantity of that engagement was dependent on a number of factors including the public sector advisors/managers assigned to the company, the company's ability to engage (knowing what they are looking for) and the willingness of the company to understand what is available.

6. Recommendations

Based on our analyses of the HGF system, we will now turn to a series of recommendations for calibrating Scotland's entrepreneurial ecosystem. Previous reflections on the Scottish ecosystem by REAP and Scotland CanDo²⁸ make some compelling arguments that the 'right ingredients' are in place to support a successful and dynamic environment for emerging high growth firms, however this has not been reflected in economic data that reports lower than UK average success and survival of growth firms²⁹. The central recommendations of our report are as follows:

- SE and partners should track the behaviour of entrepreneurs at increased levels of granularity in order to maximise the impact of the ecosystem. Generating real-time data would facilitate more effective planning, scheduling and delivery of support, and as a consequence this assistance would be more attuned to demand.
- A single landing page should be prominent on Scottish Enterprise's webpage which allows companies to navigate public support available to them dependent on their characteristics and intentions, utilising drop down menus to curate the support required automatically.
- There is a need to understand more about how ecosystem dynamics vary over time. Existing data is largely cross-sectional and does not capture ongoing variations in support provision, economic change and the usage of support.
- It is vital to understand how growth company interactions with ecosystem actors (e.g. enterprise agencies, business competitions, networks) positively or negatively affect growth aspirations and activities over time.
- App-based technology should be used for in-the-moment interventions that provide rapid feedback and tailored support to growth entrepreneurs. This technology can be used to positively influence growth mindset and can support the optimisation of ecosystem provisions.

²⁸ Scottish Government CanDo framework.

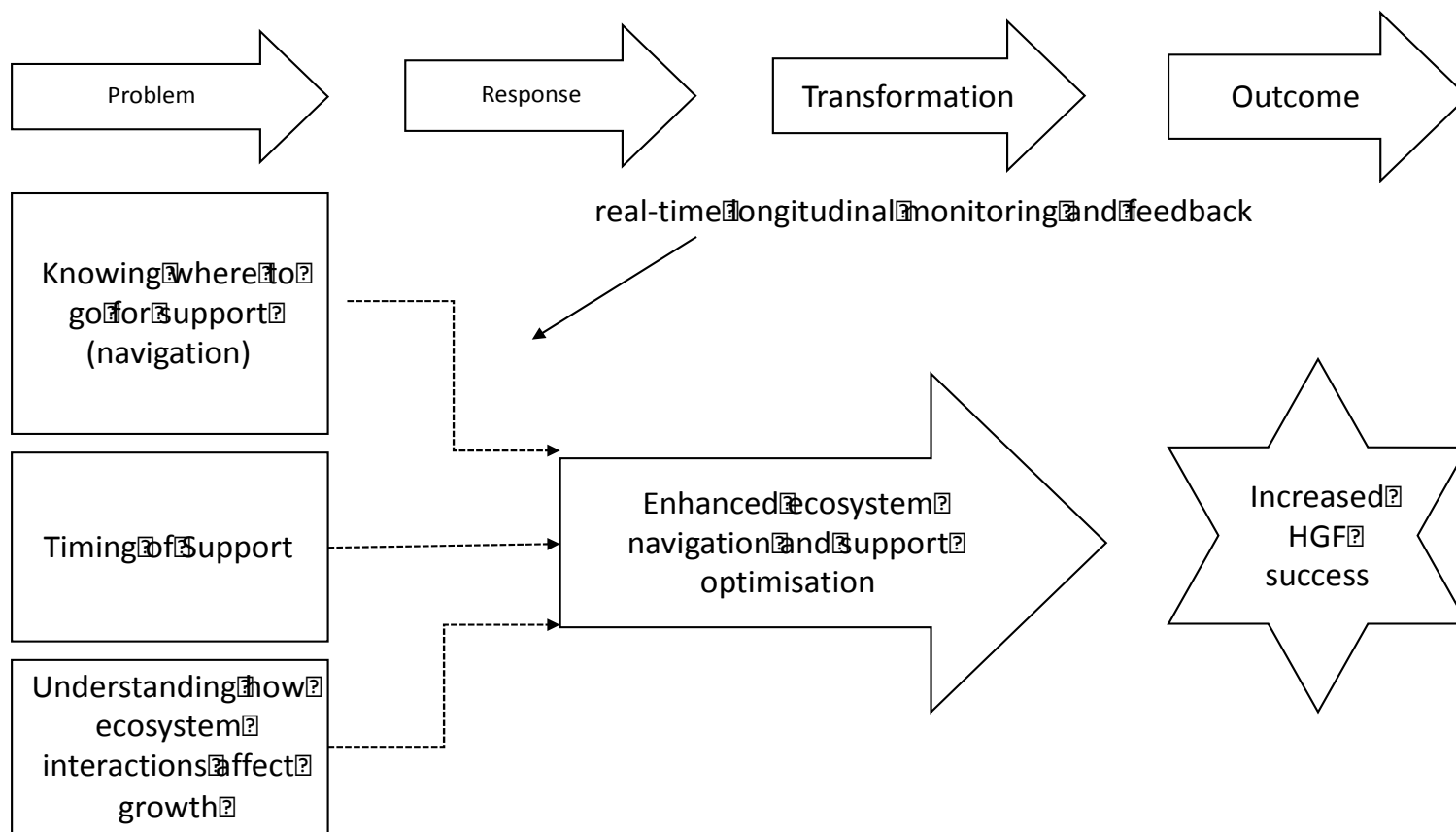
²⁹ ERC and Growth Service (2015).

Data Collection and Policy Support Considerations

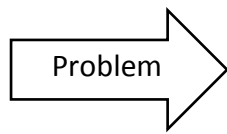
- Gathering more than 'general impressions'
- Firms being able to report specific support concerns
- Firms being able to report specific support concerns in reaction to events (time lag)
- Being able to keep a 'pulse' of support concerns as they change
- Evidence based support responses (x amount of firms care about this)
- Being able to follow an "impact chain" e.g. you were introduced to x contact in 2011 and in 2014 they were your biggest customer
- More targeted approach to policy intervention

These recommendations and steps for practical implementation are further elaborated in Figure 11, below. In our schematic, we first summarise the current problems and bottlenecks that we identified in the system. We then outline a research-based response to these issues and detail the transformation this may enable. We conclude with a summary of the potential impact of a tracking and intervention system on the population of high growth firms in Scotland.

Figure 11: Schematic of Ecosystem Weaknesses and a Proposed Remedy



Schematic Component Breakdown



1a. User Navigation

Firstly, entrepreneurs report that they often do not know how to navigate the ecosystem. Many felt that the support they received was serendipitous – being in the right place at the right time to hear about funding or training. This caused some resentment in the community as HGFs ‘heard through the grapevine’ of competitors receiving seemingly privileged information about funding opportunities through their ecosystem contact. The quality of these ecosystem navigators (ranging from Business Gateway to Scottish Enterprise account managers) was variable. Where the navigator had specialist industry knowledge that related to the HGF, the support was typically rated very highly. In other cases, entrepreneurs felt the navigator was ‘box ticking’ and hence offered no meaningful guidance. This significantly undermined the legitimacy of the supporting agencies for the HGFs and dissuaded them from accessing further support.

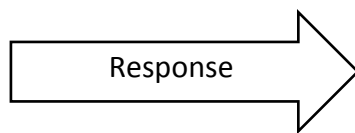
1b. Timing

Business is dynamic, and both entrepreneurial opportunities and threats emerge and dissipate with great speed. A critical component of an effective ecosystem therefore is providing the right help at the right time. HGFs report losing opportunities because they were not able to access support in a timely manner (for example, urgent export advice). This is not necessarily the fault of the ecosystem actors or policymakers, but rather it is a reflection that there are no reliable datasets or models that can predict when support is required, who needs it and what form the support might take. Support is primarily supply-led rather than demand-led at present and there is low optimisation of this supply and demand, as evidenced by our literature review and empirical findings.

1c. Understanding how Ecosystem Interactions and Individual Behavioural Characteristics Affect Growth

Our evidence further suggests that ecosystem interactions can have transformational impact upon growth firms, both positive and negative. Each of the ecosystem actors that support HGFs typically conduct their own evaluations of the support they provide, largely (based on the limited evidence we have been able to access) at the end of a course, workshop, networking event or other intervention. Unsurprisingly, the feedback received, when reported publicly, is usually positive and provides some form of external validation for the support provided by the organisation. While we acknowledge the need for ecosystem actors to collect this data, and to then use it to justify their public or private funding, we consider it a weak measure of the true efficacy of ecosystem support, which should be measured over time, in context and with a degree of critical independence. This is particularly relevant as our empirical evidence makes clear, many entrepreneurs had negative interactions with high-profile supporting organisations but did not feel comfortable complaining to the

organisation or otherwise did not feel it was worth their time and effort lodging dissatisfaction with the support. This unreported discontent is a material issue, as some of the growth-oriented entrepreneurs in our research avoided accessing further support (from other unrelated providers) because of a single bad experience. It is also notable, given that individual entrepreneurs often have engagement with a multitude of ecosystem support organisations, that success is being ‘claimed’ by multiple times by different organisations³⁰, without proper understanding of the causal link between the specific support intervention and entrepreneurial success. This is related to the problem Coad and Nightingale (2014) identify in HGF research, where there are “considerable demand side biases for positive results from politicians and lobbies, and also important supply side problems that constrain research.”³¹ We therefore suggest that a more representative, longitudinal evaluation is required to understand if the Scottish ecosystem, despite its quantifiable depth and breadth, is actually achieving a meaningful impact, and if so, how? If it is not, then a deeper understanding of the deficiencies and bottlenecks will facilitate a better, evidence-based calibration and coordination of current resources.



1d. Developing a Real-time HGF Ecosystem Dataset and Dashboard Tracking the Scottish HGF Economy.

Understanding the dynamics of firm growth is acknowledged as a practical and theoretical challenge³². Growth patterns are uniquely embedded in each potential growth firm’s geographical and industrial context and therefore eliciting the key variables that affect HGFs requires a significant level of granularity in the data used. This, primarily, entails a move away from aggregated models that mask the heterogeneity and dynamism of HGFs and often exclude potential HGFs from analysis. At present, given the density of the ecosystem support network, and the turbulence of commercial markets (owing to factors such as the Scottish independence referendum, Brexit, currency issues and the Great Recession), a deeper knowledge of the HGF economy is the starting point for developing a more strategic configuration of resources and support.

1e. EMA/EMI and App-based Technology

Our recommendation is that Scottish Enterprise implement an Ecological Momentary Assessment/Ecological Momentary Intervention methodology for tracking and supporting HGFs. To our knowledge, such an approach has not yet been attempted by any national or regional agency tasked with supporting entrepreneurs and businesspeople. However, we will now outline our argument for why we consider this a radical and highly innovative research and intervention support strategy that could

³⁰ This was noted by one of our interviewees who felt that various supporting organisations attempted to share in the kudos the firm were receiving for their growth, despite, in the view of the entrepreneur, having little to do with it.

³¹ Coad and Nightingale, (2013).

³² Coad et al. (2013).

transform the performance of HGFs in Scotland and go some way to resolving the high-resource, low-performance ecosystem paradox.

What is Ecological Momentary Assessment?

Ecological Momentary Assessment (EMA) covers a family of research methodologies emerging primarily from the medical and clinical psychology research communities. It is largely a response to the inherent weaknesses of self-reporting retrospective studies that are both costly to administer and do not provide meaningful understanding of how behaviours change over time and context. According to Shiffman, Stone, and Hufford (2008):

Ecological momentary assessment (EMA) involves repeated sampling of subjects' current behaviors and experiences in real time, in subjects' natural environments. EMA aims to minimize recall bias, maximize ecological validity, and allow study of microprocesses that influence behavior in real-world contexts. EMA studies assess particular events in subjects' lives or assess subjects at periodic intervals, often by random time sampling, using technologies ranging from written diaries and telephones to electronic diaries and physiological sensors.

EMA can therefore be used by a potentially limitless cohort of HGF entrepreneurs to capture instantaneous reactions to external factors that shape growth aspirations and growth potential. Moreover, through collecting such granular real-time data, patterns are likely to emerge that can feed into policy and support decision making. For example, it may be possible to observe practical behaviours that feed into practical support provision such as:

- Where do entrepreneurs work (home, office, at a hub, in a coffee shop)?
- What support do they access, when and why?
- When do they work (specific times, for example at the weekend or in the evening)?
- How far do they travel to do business?
- Where and how do they network? Where have they exported this week?
- What sources of information do entrepreneurs access each day (social media, newspapers, networking groups). Who do they follow on social media?
- What are the most pressing business problems and how do these change over time or to exogenous shocks (customer acquisition, research and development etc.).

Additionally, socio-cognitive dimensions of operating a venture can be assessed, gleaning potentially valuable information for those developing support provision for entrepreneurs:

- How does motivation change at different points of the week/month and what are the positive and negative triggers?
- How do growth entrepreneurs experience failure? How do they recover from business setbacks?

While these illustrative questions can all be asked as retrospective standalone questions using traditional data collection methods, EMA methodologies would allow a uniquely robust and granular understanding of these key questions that could then be quickly acted upon by support organisations, going some way to bridge the *timing of support* issue identified in Figure 11. An example of an EMA ‘app’ is included in figures 12 and 13 below, demonstrating the simple interface and low commitment required from users to participate. Previous research has indicated that responses to EMA studies are often higher than traditional surveys owing to the integration into user’s everyday activities (up to 85% timely response to prompts has been reported)³³, something that is important for addressing ‘survey fatigue’ reported by SE clients in the past.

Ecological Momentary Intervention

Ecological Momentary Intervention (EMI) is an emerging practice that has developed from EMA. Again, this approach is based primarily on work conducted in the medical, psychological and cognitive behavioural therapy fields³⁴. It is defined as:

...a framework for treatments characterized by the delivery of interventions to people as they go about their daily lives. EMI can take many forms ranging from unstructured clinical recommendations (e.g. requesting a cardiac rehabilitation patient practice relaxation technique when stressed) to more formalized and structured interventions (e.g. a person participating in a smoking cessation intervention receives a text message on her mobile phone with tips for dealing with cravings during a time when she typically smokes a cigarette). EMI can supplement existing interventions or ongoing treatments (medical or psychological), or could be implemented on their own. The key feature of all EMI is that the treatment is provided to people during their everyday lives (i.e. in real time) and settings (i.e. real world). Therefore, these interventions are ecologically valid because they occur in the natural environment, and are provided at specifically identified moments in everyday life, allowing EMI to provide real-time support in the real world.³⁵

In recent work³⁶ researchers have had notable success in treating behavioural conditions or behaviour-related conditions such as obesity, stress and compulsive disorders. By focusing on person-environment interactions, those managing the studies can provide ‘in-the-moment’ ‘treatment’ or support that provides a precise and timely response to the difficulty experienced by the user. This structure and support *in everyday life*, extends the value of existing face-to-face interventions by providing reinforcement, feedback or advice when most needed. This is a cost-effective method of providing individual tailored support, as algorithms can be developed to provide automated responses based on input criteria, or alternatively, it can also be performed manually if the situation is particularly complex or novel.

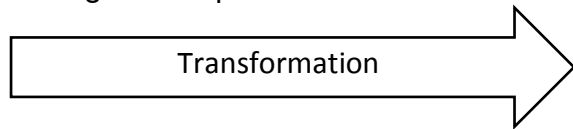
³³ Trull & Ebner-Preimer (2009)

³⁴ Boh et al. (2016).

³⁵ Heron and Smith, (2011).

³⁶ Frates EP, Moore M, Lopez C, McMahon G (2011), Rutledge T, Stucky E, Dollarhide A, Shively M, Jain S, et al. (2009)

Given the relationship between entrepreneurs and ecosystem actors mirrors the relationship between patient and health care provider (i.e. diagnosing problems, identifying help, providing advice or referrals to experts), we believe it is credible to suggest the EMA/EMI approach could be applied to an economic setting, particularly as a means of addressing the systemic weaknesses in optimising support identified through this report.



In this section we will outline specifically how an EMA/EMI tracking system could transform the Scottish entrepreneurial ecosystem.

1f. A responsive ecosystem

Firstly, we suggest that in order to address the issues identified by our cohort of companies around the responsiveness of the ecosystem, regular sampling of market sentiment and immediate reactions to critical events should commence. In our example (Figure 12 and 13 below), instant feedback from hundreds of growth entrepreneurs could be accessed to provide an indication of how macroeconomic policy developments will affect growth.

Figure 12: Illustrative EMA Survey

The screenshot shows the EVI mobile app interface. At the top, the status bar shows 'EE WiFiCall', signal strength, time '14:26', and battery '59%'. The app header is blue with 'EVI' in a white box and 'ACTIVITY' in white text. The main content area has a white background with a blue header for the survey: 'Conservative Party Conference'. Below this is a question: 'Did you hear about some of the proposals from Theresa May's recent conference speech?'. The survey question is: '1: What did you think of the plans to name companies who hire foreign workers over British workers?'. A partial answer is visible: 'I thought it was troubling as I rely on some foreign w'. Below this is another question: '2: Do you think the plans, if implemented will cause your business difficulties filling key roles for growth?'. Three radio button options are shown: 'Yes, these plans will harm my firm growth' (checked with a blue checkmark), 'I'm not sure', and 'No, it won't affect my firm growth'. At the bottom, there is a text input field for 'Additional comments'.

Figure 13: Illustrative EMA survey II

The screenshot shows the EVI mobile app interface. At the top, the status bar shows 'EE WiFiCall', signal strength, time '14:27', and battery '59%'. The app header is blue with 'EVI' in a white box and 'ACTIVITY' in white text. The main content area has a white background with a blue header for the survey: '3: Tighter immigration controls will cause problems...'. Below this are three radio button options: 'Recruiting certain technical skills I req...' (checked with a blue checkmark), 'Recruiting overseas nationals who can...' (checked with a blue checkmark), and 'By increasing my salary outgoings' (unchecked). Below these is another radio button option: 'By lowering my companies internation...' (checked with a blue checkmark). Below this is a text input field for 'Additional comments'. The next question is: '4: On the whole, how will these policies if implemented affect your firm growth?'. A slider control is shown with a sad face icon on the left and a happy face icon on the right. Below the slider is a text input field containing 'They are pretty concerning'. At the bottom, there is a large blue button labeled 'Submit'.

The information from this assessment would then provide ecosystem stakeholders with data that could feed into timely and productive interventions. Each individual entrepreneur could be informed of funding opportunities or targeted events that are based on the particular data they input to the app. For example, see figure 14 below where a series of tailored ecosystem interventions have been offered to the entrepreneur based on their responses in figures 12 and 13. This provides an illustration of how real-time tracking can facilitate a more demand-led approach to support, where the instantaneous reactions to an exogenous event can quickly be turned into targeted support by ecosystem actors.

Figure 14: Illustrative EMI Response

The screenshot shows a mobile application interface for 'EVI' (Entrepreneurial Value Index) under the 'ACTIVITY' tab. The main heading is 'Can we help you?'. Below this, a text block asks if the user needs help adjusting to new employment policies and mentions workshops offered by partners. A numbered instruction '1: Click on one of the following events to be enrolled....' is followed by four radio button options: 'Scottish Enterprise: Adapting to New ...', 'Scottish Development International: H...', 'Glasgow Caledonian University: Scotti...', and 'PWC: A positive spin on new policy co...'. There is an 'Additional comments' text input field and a blue 'Submit' button at the bottom.

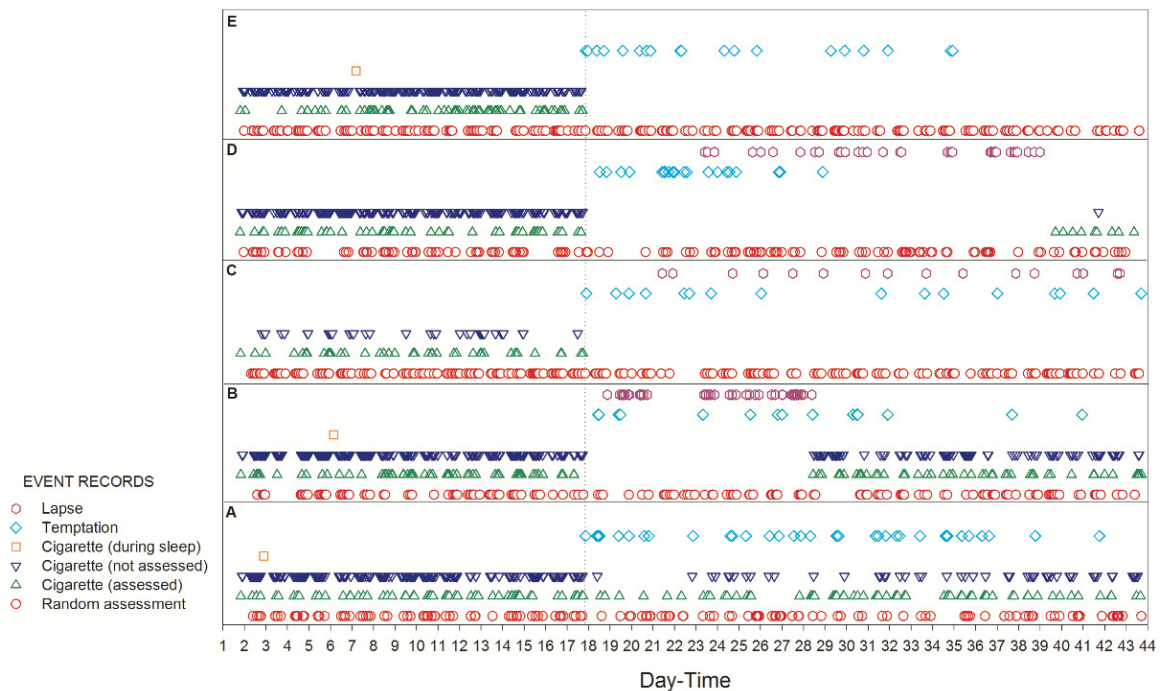
1g. A better performing ecosystem

Understanding how multiple ecosystem interactions affect growth, and in what combination, is an important aspiration. As previously identified, there is a paradox in the Scottish entrepreneurial ecosystem where there is an abundance of support available for entrepreneurs, yet those needing support are a) often not aware of support, b) it is not available at the right time or c) it is inadequate. By capturing rich data on entrepreneurial firms, it would be possible to understand when

entrepreneurs are looking for support, what difficulties or barriers they face in accessing support, and why they decide to use the specific forms of support they do.

Consider figure 15 below which provides an indication of what such real-time longitudinal data may look like:

Figure 15: An example of temporal dynamics in user behaviour³⁷



This form of sampling provides valuable insight into how users of support respond following an intervention (in this medical example, day 17 marks the end of support). Coupled with rich qualitative data, this has the potential to provide high-quality insight into how support interventions (such as workshops) are actually addressing the problems or opportunities they intend to, reducing the biases identified by Coad and Nightingale (2014) in researching high growth firms. This higher-quality granular data, can then feed into enhanced provision for entrepreneurs in the future.

1h. Enhanced evidence base for HGF policymakers

Enterprise policy and support is typically contentious³⁸ and there is emerging evidence that the policymaking process often fails to incorporate sufficient user data to support and justify policy and support measures.³⁹ Longitudinal data that captures both temporal dynamics and user (i.e. entrepreneur) experience therefore provides a valuable tool for segmenting and targeting support in response to real-time changes.

It is suggested that policymakers and other ecosystem stakeholders adopt a dashboard that draws data from the EMA app tracker, to monitor key metrics that

³⁷ Shiffman, (2014).

³⁸ Arshed, Mason, and Carter (2016).

³⁹ Arshed, Carter, and Mason, C. (2014).

can be influenced by enterprise support on an ongoing basis. This goes beyond traditional economic monitors that largely consider outcomes such as turnover or GVA to measure the performance of an ecosystem and do not provide insights into the internal behavioural dynamics of growth firms (e.g growth aspiration) or the impact of ecosystem actors.

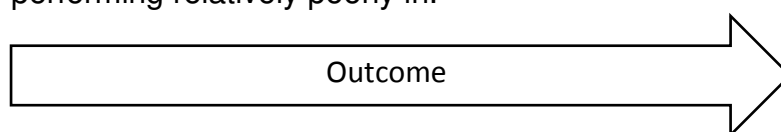
An example of such a dashboard, provided by the Scottish customer experience analytic firm Opinurate, is provided in figure 16:

Figure 16: Exemplar Dashboard from Scottish firm Opinurate



1j. – Increasing competitiveness and raising growth aspiration through EMIs

In addition to the dashboard for ecosystem stakeholders, we suggest that growth firms could have access to a personal dashboard that updates them as to where they stand relative to other Scottish firms in key areas as a means of improving growth aspirations. For example, participant firms may see that they are in the top quintile of firms who have made export sales this week, or conversely, that they only export to three markets while other firms of their size are exporting to 30. This *gamification* of data has established success at altering behaviours in various other contexts such as the education sector, and it has been established that there are isomorphic pressures for firms to emulate those successful and legitimate companies. Thus, by opening the ‘black box’ of what growth firms are doing, lower performing companies have an impetuous to increase effort in areas they are performing relatively poorly in.



1k. An optimised ecosystem with a higher volume of successful high growth firms.

The objective of closely tracking growth firms is to generate deeper insight into the dynamics that affect the success or failure of these firms, generally recognised as being of critical importance to economic prosperity. The higher the quality of data possessed by key stakeholders in the entrepreneurial ecosystem, the better those supporting organisations can assist Scottish entrepreneurs.

7. Conclusion

Our empirical evidence suggests that businesses are generally happy with the quality and content of support on offer in Scotland, but do not feel they can access the right help at the right time, or otherwise feel overwhelmed when navigating the ecosystem. We therefore argue that the challenge facing the Scottish economy is now beyond ensuring the provision of quality support, but rests on improving the efficiency and access to support for the most promising businesses that require assistance. Hence, we propose that the outcome of tracking entrepreneurs using EMA and then providing interventions that help users navigate the system, will be an increase in the volume of successful HGFs. Technology now exists which would allow for this without significant modification of the existing support structures but which would allow for a more efficacious use of them. At the very least, policymakers and supporting agencies will be equipped with the data that will facilitate a move from a potentially underperforming supply-led support approach, to a responsive, demand-led system. Such an approach would place Scotland at the forefront of comparable ecosystems that are finding it equally difficult to address weaknesses in the optimisation and allocation of supporting resources. Helping growth-oriented entrepreneurs navigate and access the litany of support available to them will undoubtedly help company growth and contribute to Scotland's vibrant and dynamic future.

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APPENDIX 1: Interview questions for SE Entrepreneurial Tracker Project

Opening questions/comments for background research

- Firm age
- Turnover

How would you describe your company's historic growth trajectory? Major milestones, year-on-year rates **[NB: This should involve some brief secondary research, and is only really practical for younger firms]**?

- Sector
- Main products/services
- Senior management structure

Activities

General activities and operations

- Describe, in your own words, the main activities of your company? What are the day-to-day, or week-to-week tasks that are central to your operations?
- What would you say are the key resources at the disposal of your company?
 - Physical assets?
 - Knowledge, expertise, human capital?
 - Intellectual property, technology/research capabilities, patents?
- What do your key partnerships/supply chain look like? Who are you reliant on to carry out operations?
- **Competitors – main, USP???**

Customer acquisition and interaction

- Could you describe your customer base (types, numbers, geographical dispersal)? Do you have clear customer segments? B2C or B2B?
- What was your first sale and what did it look like (or what do you think it will look like)? Where did you take things after that?
- How do you reach new customers? Do you pursue new business actively (e.g. specific approaches, trade fairs) or do they come to you through marketing/promotion channels?
- What sort of relationships do you have with your customers (one-offs, long-term, etc)?
- Are there any major gatekeepers to sales markets? E.g. Distributors? Retailers?
- Could you describe a typical new customer or gatekeeper interaction? Who would do this? What would it look like?

Challenges & bottlenecks

- Thinking back over the recent past, what have been the main issues/challenges that your company has faced e.g.

Customer acquisition/marketing/market access

Customer retention

External operations (service delivery/logistics/pricing)

Internal operations (manufacturing/admin/human resources/supply chain management)

Finance/cash flow/investment needs

Technological capabilities

- When did you first notice these challenges?
 - How have you attempted to overcome these challenges?
 - Are they ongoing?
 - How do you see them being addressed going forward?
- What would you expect the main challenges to be if the company was to experience significant growth in the near future?

Leadership and strategic decisions

- Would you describe your company's strategy as explicit/formal or as fluid/evolving?
- Can you describe the strategy of the company in the:
 - Short term?
 - Medium-long term?
- Where do the ideas for overall company direction come from?
 - Single founder or small TMT group e.g. co-founders?
 - Dispersal across managerial roles?
 - Dispersal across all employees?
- How are major strategic decisions made? Who is involved in this process?

Mindset

Growth orientation

- Do you see yourself as a high growth orientated company? Is company growth one of your main priorities?
- What does 'growth' mean to you? Increases in: Sales? Market share? Employment? Profit? What is the most important aspect?
- What would you consider to be an attractive rate of growth?
 - 10% year-on-year?
 - 20%?
 - More erratic spikes?
- In your opinion, is growth always attractive? What aspects of company growth would make operations undesirable? For example, through being:
 - highly challenging/unfeasible?
 - high risk/potentially damaging?

- Where do you see your company being in 5 years? Why do you see it this way? What evidence?
- What do you think growth will bring to the company?
- How do you intend to get there?
- Who have you discussed this vision with? Is this a shared vision (other stakeholders? TMT members, which ones)?

International orientation & strategic intentions

- Are you active in international markets?
 - If so, where?
 - If not, do you intend to be?
 - If not, why not?
- Are there any international markets that you see as being particularly important now or in the future?

Reporting growth intentions

- How frequently would you say your growth intentions change? In what fashion?
- What would be the best way for you to report this? App/website?

Engagement

General

- If you were looking for guidance with regards to a particular strategy/action, who would you speak to?
- Can you give a brief outline of the support services that you've engaged so far? Perhaps best to tell in chronological order

Support services

- What entrepreneurial support services have you engaged?
 - Can you describe the nature of your engagement?
 - What were the positive/negative aspects of your engagement?
- Do you have a preference for public or private support services? **List of examples:**
 - Scottish Enterprise?
 - Other specialist public sector programmes/competitions (e.g. Edge)?
 - Incubators, hatcheries, science parks, or other co-located spaces?
 - Strategic partners/competitors, supply chain partners, customers?
 - Private sector training courses?
 - Universities?
 - Investment community?
- In your experience, what works/doesn't work with regards to the following styles of support [**give consideration to issues such as specificity of support, timing of support, relevance of support, effectiveness of support, bureaucracy/access to support**]?
 - Advisors/mentors?
 - Training courses?
 - Networks, networking events, other forms of direct/indirect social 'introduction'?
 - Financial support?
- What is your view on the support system in Scotland for entrepreneurs? Is there anything missing from the support offered to entrepreneurs in Scotland? Are there any support services that you think should be expanded or removed?
- Are there any support services in particular that you would recommend/avoid?
 - If so, why?
- How integrated do you think the support provisions for growing companies are in Scotland?

Peers and strategic partners

- Do you use your peers or strategic partners for growth?
 - If so, how? If not, why?

- What do your peers and/or strategic partners think of the support services offered to entrepreneurs targeting growth in Scotland?

Investment community

- Have you received any external investment or financing to date?
- What are your views on the investment climate in Scotland?
 - Could more be done? If so, what?
- How important is external investment to your growth ambitions?
- Would you be interested in gaining investment from abroad?
 - Do you think foreign investment would be useful in Scotland?

Wider ecosystem

- Does your geographical location affect your ability to engage with other parts of the entrepreneurial ecosystem?

Appendix 2: Scottish Ecosystem Support Organisations, 2016.

	Universities	Colleges	Councils	Public Support	Public-Private Mix Support	Third Sector Support	Financial Institutions	Angel Groups	VCS	Other Private Sector
1	University of Aberdeen	Ayrshire College	Aberdeen City Council	Business Gateway	E-Spark	Economic Development Association Scotland	Royal Bank of Scotland	Alida Capital International Ltd	Scottish Equity Partners	BiBritain
2	Dundee University	Borders College	Aberdeenshire Council	Creative Scotland	Entrepreneurial Scotland	Business Improvements District Scotland	Santander	Apollo Informal Investment	West Coast Capital	Coca-Cola Education
3	Heriot Watt University	City of Glasgow College	Angus Council	Scottish Development International	Elevator	Melting Pot	HBOS	Archangels	Maven	Family Business United Scotland
4	University of Edinburgh	Dumfries and Galloway College	Argyll & Bute Council	Scottish Enterprise	Global Entrepreneurship Network	Wildhearts	PwC	Aurora Private Equity	Murray Capital	Federation of Small Business FSB
5	University of Glasgow	Dundee and Angus College	Comhairle nan Eilean Siar Council	Cooperative Development Scotland (CDS)	Orbit Enterprise Education	NACUE	KPMG	Barwell PLC		IOD Scotland
6	St Andrews University	Edinburgh College	Clackmannanshire Council	Scottish Funding Council		Nesta	Deloitte	Bradenham Partners		MAKlab
7	UHI	Fife College	Dumfries and Galloway Council	Skills Development Scotland		Prince's Trust		Braveheart		Power of Youth
8	Stirling University	Forth Valley College	Dundee Council	UKTI		PSYBT		Discovery Investment Fund		Shell Livewire
9	Glasgow Caledonian University	Glasgow Clyde College	East Ayrshire Council	West Scotland Loan Fund		Scottish Women in Business (SWiB)		EOS Technology Investment Syndicate		Young Company Finance Scotland
10	UWS	Glasgow Kelvin College	East Dunbartonshire Council	East Scotland Investment Fund		Social Enterprise Academy		Equity Gap		Enterprise Lab
11	Napier University	Glasgow School of Art	Edinburgh Council	Cultural Enterprise Office		Women's Enterprise Scotland		Gabriel Investments		IFB
12	Robert Gordon University	Leith School of Art	East Lothian Council	FirstPort		Young Enterprise Scotland (YES)		Gramplan Biopartners		Borders Exporters
13	Abertay University	New College Lanarkshire	East Renfrewshire Council	Global Scot		Youth Employment UK		Halo		Chambers of Commerce
14	University of Strathclyde	Newbattle Abbey College	Falkirk Council	Just Enterprise				Hamilton Portfolio		Power of Youth
15		North East Scotland College	Fife Council	Scottish Employability Forum				Highland Venture Capital		Power Lunch Club
16		Royal Conservatoire of Scotland	Glasgow Council	Scottish Institute for Enterprise				Innova Partnerships		WeDO Scotland
17		Scotland's Rural College (SRUC)	Highland Council	Scottish Investment Bank				Investing Women		Aberdeen & Grampian Chamber of Commerce
18		South Lanarkshire College	Inverclyde Council	Creative Clyde				Kelvin Capital		Ayrshire Chamber of Commerce & Industry
19		West College Scotland	Midlothian Council					Lancaster Capital		Cairngorms Business Partnership Ltd
20		West Lothian College	Moray Council					London & Scottish Investment Partners		Dumfries & Galloway Chamber of Commerce
21			North Ayrshire Council					Par Equity		Dunbartonshire Chamber of Commerce
22			North Lanarkshire Council					Tri Capital Ltd		Dundee & Angus Chamber of Commerce
23			Orkney Council					Linc Scotland		East Renfrewshire Chamber of Commerce
24			Perth & Kinross Council							Edinburgh Chamber of Commerce
25			Renfrewshire Council							Fife Chamber of Commerce
26			Scottish Borders Council							Forth Valley Chamber of Commerce Group
27			Shetland Islands Council							Glasgow Chamber of Commerce
28			South Ayrshire Council							Inverclyde Chamber of Commerce
29			South Lanarkshire Council							Inverness Chamber of Commerce
30			Stirling Council							Lochaber Chamber of Commerce
31			West Dunbartonshire Council							Midlothian & East Lothian Chamber of Commerce
32			West Lothian Council							Moray Chamber of Commerce
33										Perthshire Chamber of Commerce
34										Renfrewshire Chamber of Commerce
35										Scottish Borders Chamber of Commerce
36										West Lothian Chamber of Commerce

Source: Organisation websites, Power of Youth, Scottish Government, LINC Scotland.

Appendix 3: Examples of Respondent Company Profiles

Company A

Turnover	2015: £303,000 2014: £230,000 2013: £79,000
Location	Glasgow
No. of employees	10 FTE
Year founded	2013
Industry	Other information services (online marketing)
International markets	Europe, USA, Asia
Investment gained	£440,000 (2015) + £750,000 (2016)
Ecosystem engagement	Scottish Enterprise (High Growth Programme, Account Management, Regional Selective Assistance) Scottish EDGE SDI Infomatic Ventures Business Gateway Creative Scotland Scottish Investment Bank University of Strathclyde
Sales Focus	B2B

Company B

Turnover	2015-2016: £600,000 2014-2015: £190,000
Location	Glasgow
No. of employees	4 FTE
Year founded	2014
Industry	Other manufacturing
International markets	Europe
Investment gained	None
Ecosystem engagement	Scottish Enterprise Business Gateway E-Spark Startup Loan West of Scotland Loan Fund University of Strathclyde RBS
Sales Focus	B2B

Company C

Turnover	2015-2016: £15m 2014-2015: £5m
Location	Glasgow
No. of employees	75 FTE
Year founded	2007
Industry	Education
International markets	None
Investment gained	None
Ecosystem engagement	Chambers of Commerce University of Strathclyde Glasgow Caledonian University
Sales Focus	B2B, B2C

Company D

Turnover	2013-2014: £19,400 2014-2015: £57,000 2015-2016: £83,000
Location	Borders
No. of employees	4 FTE
Year founded	2011
Industry	
International markets	Europe, North America, Asia
Investment gained	None
Ecosystem engagement	Scottish Enterprise SDI Business Gateway Borders Exporters UKTI Scottish Edge British European Design Group
Sales Focus	B2C

Company E

Turnover	2014-2015: £54,000 2015-2016: £85,000
Location	Edinburgh
No. of employees	1 FTE
Year founded	2010
Industry	Manufacturing
International markets	Europe, North America, Australia
Investment gained	None
Ecosystem engagement	Scottish Enterprise E-Spark Scotland Food and Drink Business Gateway
Sales Focus	B2C

Company F

Turnover	2014-2015: £100,000 2015-2016: £200,000
Location	Glasgow
No. of employees	1.5 FTE
Year founded	2011
Industry	Manufacturing
International markets	Europe, North America
Investment gained	None
Ecosystem engagement	Scottish Enterprise Business Gateway Cultural Enterprise Office Scottish EDGE
Sales Focus	B2C

Company G

Turnover	2013-2014: £2m 2014-2015: £3.04m 2015-2016: £3.2m
Location	Borders
No. of employees	42 FTE
Year founded	1998
Industry	Chemicals
International markets	Europe, Middle East, North America, South America, South Africa, Asia, Australia
Investment gained	£100k (crowdfunded)
Ecosystem engagement	Business Gateway Scottish Enterprise (High Growth Programme, Account Management, Regional Selective Assistance) FE Colleges Universities SDI Skills Development Scotland Interface Funding Circle ZeroWaste Scotland InnovateUK
Sales Focus	B2B

