



# Business Leaders' Mindset and Firms' Capabilities Change Towards the Adoption of Technology and Innovation Through Government Sponsored Entrepreneurial Training Programs: The Case of Hertfordshire, UK

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**Abstract.** The UK Government and many of the key sectors are increasingly focusing on growth, sustainability, and diversity. The paper explores the impact of a national programme to help the small business community (including micro and SMEs) to grow their businesses, with particular focus on the entrepreneurial mindset and businesses' capabilities to adopt technology and innovation. The paper aims to: (1) Understand SMEs' current mindset and capabilities, and their future expectations towards the adoption of technology and innovation and; (2) Explore the relative influence and impact of the "Help to Grow: Management programme" on the leaders' mindset and business capabilities of Hertfordshire businesses. Two surveys were conducted with different sizes to supplement information and make the analysis more accurate. The first survey was taken in 2019 and 2020 with 425 SMEs in Hertfordshire and in 2022, the second survey (and interviewed) were typically selected from the group of enterprises that were initially surveyed ( $n = 20$ ) to see more insight into the research issue. The initial analysis (Hertfordshire-wide business community) and follow-on analysis (attendees of the Help-to-Grow: Management programme) highlight the value of these short-intensive business leader skills programmes focused on developing the leadership and management skills of these business entrepreneurs and their small businesses capabilities. The research results have important implications for SMEs in identifying, evaluating and changing their mindsets as well as capabilities towards technological improvement and innovation. In addition, the research also provides more evidence and practical basis for the government and related agencies to improve such programs to better support SMEs.

**Keywords:** Leader's mindset · firm's capabilities · management practice · technology · innovation · UK

## 1 Introduction

Adopting best-practice technology and innovation gives businesses an advantage. More leaders are looking for technology and innovation solutions as a way to meet evolving customer expectations, enhance business resilience, mitigate risks, adapt to the changing workforce, and accelerate business productivity. Businesses in the UK is a particular example. In 2018<sup>1</sup>, the UK invested slightly over 1.7% of GDP in R&D while the OECD average was 2.4% and many emerging economies spent much higher than 3% of their GDP on R&D. Out of the top 2000 R&D investors companies globally, just over 100 have their headquarters in the UK, while only 3 of the top 100 global R&D investors locate their headquarters in the UK (Office for National Statistics, 2020). Out of the four main sectors of the economy – business enterprises, government (including the UKRI), Higher Education and the private non-profit sector – business enterprises performed 68% of the total £37.1 billion R&D investment in 2018. Investment by business enterprises is integral to achieving the government's objectives of raising investment in R&D to 2.4% of GDP by 2027 and unleashing innovation across the UK (Department for Business Energy & Industrial Strategy, 2021).

Given the mutual relationship between management practice, productivity and technology and innovation adoption, the UK government has prioritized on managerial improvement and raising productivity in its latest industrial strategy since 2017 (HM Government, 2018). It is reported that SME's adoption of best-practice technologies and management practices have a positive impact on the overall productivity of these businesses. Previous studies in the Information Communication Technology sector suggested that the adoption of good management practices achieved a 20% productivity improvement (Alexander Grous, 2016). Other studies identified that specific management practices like effective performance monitoring, target setting, incentives and talent management and operations management were equally correlated with higher productivity (Department for Business Energy & Industrial Strategy, 2019). But the evidence is from these studies that UK business leaders are less proficient, less qualified and under trained compared to their internal counterparts (Department for Business Energy & Industrial Strategy, 2019).

Practically, not all effort leads to expected results because adopting new technology for business becomes increasingly complex when business leaders lack of innovative mindset and management skills. Furthermore, accessing finance is an obstacle to business during innovation process. Many businesses are not able to access external finance either because it is unavailable or too expensive, meanwhile evidence suggests businesses are both likely to have developed new products and improved processes if they use external finance and continue using finance (BVA-BDRC, 2022). Access may differently depend on the sector, location and stage of growth. Innovative firms often seek finance to fund innovative ideas which have higher technical, business model or commercialization risk and rewards (Department for Business Energy & Industrial Strategy, 2021). A combination of internal resources strengthening and external resource exploiting seems to be feasible and effective solutions in these cases. Government support plays a very

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<sup>1</sup> This is the last year for which official data is available.

important role in promoting enterprises to maximize internal capacity and technological innovation. This process includes the capacity building of management leadership skills for enterprises, especially small and medium enterprises. Government-sponsored programs are therefore expected to have a positive impact on the management capacity towards technology adoption and innovation of small and medium-sized enterprises.

In the UK, such programs have been launched and spread widely in recent years. This paper aims to assess the impact of this government-sponsored program on changing the the mindsets and capabilities of small and medium-sized enterprises towards technology adoption and innovation. The program was implemented with the participation of the University of Hertfordshire, along with previous formal surveys of selected small and medium enterprises for analysis and implications. Hence the interest and value of looking at the potential impact of conducting comparative studies using data from productivity studies, and that with the early data coming out of the “Help to Grow: management programme”.

The main contribution of the paper is that it adds to the existing literature of the leaders’ mindset and firm’s capabilities, clarify the relationships and change of the two concepts towards the adoption of technology and innovation in different business typologies. The scope of research in a UK locality (Hertfordshire) through the UK government sponsored entrepreneurial training programs makes the paper different to other previous studies.

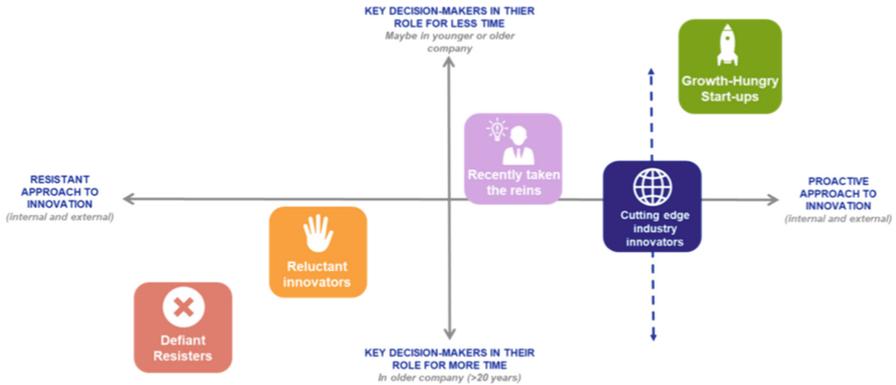
The paper’s structure is as follows: Sect. 1 introduce the research. The theoretical basis is presented in Sect. 2. Section 3 provides the research methodology. Section 4 shows the data analysis and the key findings. The discussions and conclusions are provided in Sect. 5.

## 2 Theoretical Basis

Mindsets are mental lenses through which individuals encode and organize information to make sense of their situation, influencing how they act and respond (Gottfredson & Reina, 2021). Research suggests that the mindsets of an effective individual contributor are different from those of effective leaders (Dewar et al., 2019). The managers’ behavior only changed when the organization recognized the mindset and implemented strategies to shift their mindset (Crane, 2021).

Mindsets have a close link with capabilities of businesses as synchronized change of mindset and capability within a business network can help drive by the adoption and provision of smart services (Töytäri et al., 2018), and furthermore the adoption of technology and innovation.

Referring to the relationship between business leaders’ mindset and technology adoption and innovation, Ringberg argued that technology and mindset should be analyzed in combination, as they are fundamentally co-constitutive albeit with different levels of interaction; and mindset transformative processes lead to different innovative outcomes (Ringberg et al., 2019). Business leaders’ mindset is key to a firm’s propensity to innovate, often affected by the level of understanding and the terminology used around innovation. Exploring these attitudes to adoption, Kantar research found an innovation mindset, industrial awareness and business capability are enabling factors influencing the adoption



**Fig. 1.** Five Different business typologies (Decision-maker time vs approach to innovation)

of innovations. Thus, the journey to successful adoption goes through increasing awareness, assessing business capability to introduce new products/processes, and addressing business leaders' mindset to decide to adopt new products/processes (Department for Business Energy & Industrial Strategy, 2019, 2021).

The innovation and productivity benefits to places from R&D investment depend on the capabilities and strengths of the local ecosystem. This includes differing absorptive capacity strengths across local firms to recognize and use the type of R&D being produced. The supply and demand for the skills needed to innovate, including leadership and commercialization skills; the type of innovation that comes from the R&D being produced; and the industry sector composition of the local area (Department for Business Energy & Industrial Strategy, 2021).

The most prominent factors of influence – key decision-makers possessing an “innovation mindset” and the tenure of those decision makers – led to the emergence of five business types (Department for Business Energy & Industrial Strategy, 2019) (Fig. 1).

**Defiant Resister** – were the most defensive about their current practices, culturally opposed to innovation – instead, preferring tried and tested methods over change.

**Reluctant Innovators** – often lacked the knowledge or capability to keep up-to-date with technological changes and saw management practices as ‘for bigger companies’. However, when the need arose (either through declining profits or regulation), this group could be motivated to adopt new ways of working.

**Recently Taken the Reins** – having recently taken the role as key decision-makers this group brought professional and personal experience to the business – driving innovation and the adoption of new processes to make their mark on the business. However, they wanted to see the real-world benefit before adopting.

**Cutting edge Industry Innovators** – working in highly competitive, and technologically advanced industries, this group were, by nature of the market, innovative. Constantly seeking new technologies and practices to improve efficiency and stay ahead of the competition. Decision-makers could be in new-in-role or have a longer tenure in older companies.

**Growth-Hungry Start-ups** – the perpetual growth and expansion of their business in the start-up phase meant this group were in the process of constantly adapting and improving processes and procedures as they consolidate. This group sought information about how to run their business more effectively from a plethora of sources (Department for Business Energy & Industrial Strategy, 2019).

These different types of SMEs – vary in both business size, their scale of operations and the sectors they operate in. What we present below in terms of descriptive statistics does show their variety of knowledge and skills around their innovative practices, overall business skills and capability to both adopt technology and innovation, and thus present a significant challenge for business schools in delivering these types of intervention, in particular the Help to Grow: Management programme.

### 3 Research Methodology

#### 3.1 Research Questions

The businesses on the “Help to Grow: Management programme” complete a detailed diagnostic audit; it is suggested that we look at specific parts of this to explore the following research questions: RQ1: What are business leaders’ perspectives of the key challenges and issues impacting on their businesses’ growth and technology and innovation adoption and how do they assess their current performance; RQ2: How do the businesses plan and expect for the future development (next three years) and what do they need both internal and external to achieve their goals of increasing revenue, growth, and productivity as well as technology adoption and innovation; RQ3: How do Government Sponsored Entrepreneurial Training Programmes incentivise and improve the business participants’ business mindset and capabilities in adopting best practice technologies and innovation.

#### 3.2 Methodology

This study uses a combination of survey and interview methods. Two survey surveys were conducted with different sizes in order to supplement information and make the analysis more accurate through the selection of survey subjects and analysis and comparison of results. The subjects of the second survey (population 2) were typically selected from the group of enterprises that were initially surveyed (population 1) to see more insight into the research issue. Small and medium enterprises are also divided into 3 subgroups namely micro, small and medium enterprises to see the details of the business groups and make useful suggestions. Descriptive statistics were used to help see the characteristics of the sample.

The two business populations were taken from firms in Hertfordshire. The first, was taken from the business sample who completed a Hertfordshire-wide business survey conducted in 2019 and 2020, focused on the factors influencing productivity, particularly the leaders’ perspectives of the key challenges and issues impacting on their businesses’ growth in 2019–2023. In this dataset we looked at two key factors relating to business leaders’ mindset in management practices, firstly the businesses plans for the next

three years (2020–2023) around the areas of: increasing workforce and managements skills and capability; developing and launch new products and services; introducing new technology and processes to working practices; and creating new markets. The second, was a business sample taken from the 1<sup>st</sup> cohort on a “Help to Grow: Management programme” from January to April 2022, with a particular focus on Hertfordshire businesses. Our business sample from both of these approaches focused on micro-, small- and medium-sized firms, and the second cohort with a particular focus on firms who would describe themselves as: reluctant innovators, new to the business, cutting-edge industry innovators and growth-hungry start-ups/accelerators.

### 3.3 Data Collection

As previously mentioned we are taking two sample populations, the first is a business population of 425 enterprises in the small business communities in Hertfordshire. They were surveyed in 2019 and 2020 focusing on current managers' performance and business performance expectation.

Secondly, a business population of 20 small businesses from the “Help to Grow: Management programme” runs during the first quarter of 2022. These 20 small businesses were selected based on their attendance of the “Help to Grow: management programme” providing valuable insights across the main variables that are likely to influence the take-up of best practice technologies and management practices leading to new goods and service for their business. The businesses chosen are among the five types: Defiant Resister, Reluctant Innovators, Recently Taken the Reins, Cutting edges Industry Innovators, Growth Hungry Start-ups. The variables included: (1) Size of business; (2) Age of the business; (3) Sector challenges; (4) Managers and leaders attitudes towards the adoption of new technology and management practices; (5) Business plan activities for the next three years.

## 4 Analysis and Key Findings

The research identified a number of business leader and business capacity factors that either drove or impeded the adoption of technology and management practices (Bloom et al., 2019).

- **Business leader mindset** – the self-professed strengths and weaknesses in their skills to understand and implement change on the businesses adopt of new technology and innovation. (1)
- **Current Business and Technical Capability** – the capability of the businesses to evaluate the efficacy of their current technology and management procedures. (2)
- **Business Challenges Awareness** – awareness of the business competition, and their current orientation towards improving turnover, growth and productivity. (3)

*Population 1 - Analysis*

The findings are presented as two blocks of data, the first is that of a broad survey taken of  $n = 425$  SMEs, and the descriptive statistics are shown in Tables 1 & 2. Below:

**Business population 1** – show that nearly one in two businesses surveyed in Hertfordshire small business community identified revenue growth, increasing turnover and productivity as being in their top three concerns regarding longer-term growth and survival of their businesses. So, it is not surprising that these same businesses are focusing on the key product and process innovation, general business systems and market strategies as means to engineer future solutions (adoption of new technology and innovations) that both appeal to their existing and prospective customer base, and meet either sector/government expectations for future growth business areas.

Another finding is that those businesses who have a higher propensity to innovate, that have a higher innovation activity level are more active in acquiring business support on the key factors contributing to the development of new products and services, gaining access to new technology from universities and other external R&D institutions, and gaining access to important market intelligence from both private and public bodies. The Hertfordshire business community sampled showed several issues pertaining to the adopt of new technology and innovation, that related to both internal and external factors (see Tables 1 and 2):

- Micro and small-businesses are the most effected by the lack of skilled labour and the cost of that labour with over 50% of these businesses indicating that this has a high to very high impact on their businesses performance (turnover, productivity and growth).
- Micro- and small-businesses are most effected by the lack of business support with 40% of micro's and 55% of small businesses indicating it has a high to very high impact on their business performance (turnover, productivity and growth).
- 50% of small businesses and 30% of micro-businesses indicate that increasing its workforce's and their manager's skills/leadership capacity will directly positively impact on their ability to increase turnover and productivity, and their future growth.
- 45% of small businesses and 35% of micro-businesses are focusing on developing new products and services to increase their turnover, productivity, and future growth.
- 50% of small businesses and 25% of micro-businesses are intent on introducing new working processes and practices to increase their turnover, productivity and growth.

Since turnover, productivity and growth are premises for the businesses' investment in R&D as well as technology and innovation adoption, businesses belonging to all the three sub-groups showed higher motivation of changing technology when they attained higher development. This also implies a positive correlation between the SMEs' leader skills and the adoption of technology and innovation.

**Table 1.** The SMEs community's rating of their managers' performance (n = 425)

Business Size	How well do you current managers and leaders perform						Overall Score
	Skills/Capability	Very Poor	Poor	Average	Well	Very Well	
Micro-businesses	Delivering added-value customer services (2)	3 (0.2%)	3 (0.2%)	35 (24%)	47 (32%)	57 (39%)	3.96
	Organising and motivating the Workforce (1)	2 (1%)	5 (4%)	36 (25%)	49 (34%)	51 (36%)	4.00
	Overall decision-making (1)	2 (1%)	4 (3%)	21 (15%)	59 (41%)	57 (40%)	4.16
	Organising and co-ordinating tasks (1)	5 (3%)	2 (1%)	29 (20%)	62 (43%)	47 (32%)	3.97
	Developing superior new products and services	4 (3%)	9 (6%)	49 (34%)	38 (26%)	44 (31%)	3.76
Small-businesses	Delivering added-value customer services	0 (0%)	2 (0.1%)	38 (22%)	69 (40%)	65 (37%)	4.11
	Organising and motivating the Workforce	1 (0.5%)	4 (2%)	46 (26%)	73 (42%)	51 (29%)	4.46
	Overall decision-making	0 (0%)	6 (4%)	32 (19%)	86 (50%)	48 (28%)	4.05
	Organising and co-ordinating tasks	0 (0%)	5 (3%)	40 (23%)	80 (47%)	47 (27%)	3.98
	Developing superior new products and services	3 (2%)	8 (5%)	57 (34%)	58 (34%)	44 (26%)	3.12
Medium-businesses	Delivering added-value customer services (a)	1 (1%)	2 (3%)	19 (29%)	28 (43%)	15 (23%)	3.81

*(continued)*

**Table 1.** (continued)

Business Size	How well do you current managers and leaders perform						Overall Score
	Skills/Capability	Very Poor	Poor	Average	Well	Very Well	
Organising and motivating the Workforce (b)	1 (2%)	1 (2%)	27 (40%)	26 (39%)	12 (18%)	3.62	
Overall decision-making ©	1 (2%)	3 (4%)	24 (35%)	29 (43%)	11 (16%)	3.67	
Organising and co-ordinating tasks (d)	1 (2%)	1 (2%)	20 (30%)	33 (49%)	12 (18%)	3.82	
Developing superior new products and services (e)	1 (2%)	4 (6%)	23 (35%)	26 (39%)	12 (18%)	3.65	

The results from Table 2 show that although the results do not differ significantly between the three groups of the businesses, it is still possible to see some activities that are expected to contribute more to increase sales, growth, and productivity. For instance, for the group of micro-businesses, while the development and launching new products and services will be expected to promote sales, the introduction of new working practices will be considered as a main way to enhance productivity. The analysis on differences and similarities in the mindsets among the three business sub-groups was used as an important argument to choose the second population for the program.

The businesses surveyed then classified into categories of defiant resister, reluctant innovators, recently taken the reins, cutting edge industry innovators, and growth-hungry start-ups based on their attitudes, capabilities, and readiness to innovate and embrace technology.

#### *Business Population 2 – Intervention Programme*

Besides using elements of the data collected in the initial diagnostic survey, the second survey with additional interview of 20 businesses in the four session workshops conducted every three weeks to apply the learning from the webinars and peer group calls to the development of their growth action plans. This helped the authors understand both the conscious and unconscious drivers behind the business leaders' attitudes and behaviour towards the adoption of both new technology and driving innovative activities inside the business towards developing new products and services. The surveyed was implemented after nearly 3 years of implementing the "Help to Grow: management programme". The overall descriptive statistics shown in Table 3 below:

**Table 2.** The SME community's plans for the next three years (n = 425)

Business Size	Expectation on Business Performance						
	Three-year Activity	Increase Sales		Increase Growth		Increase Productivity	
Micro-businesses	Increase Workforce Skills	72	31%	70	30%	88	38%
	Increase Managers Capability in decision-making	49	29%	55	33%	60	36%
	Develop and launch new products and services	84	44%	62	33%	44	23%
	Introduce new working practices/processes	38	28%	38	28%	60	44%
	Create new markets	50	47%	33	31%	23	22%
Small-businesses	Increase Workforce Skills	110	31%	107	31%	133	38%
	Increase Managers Capability	91	32%	89	32%	101	36%
	Develop and launch new products and services	102	40%	84	33%	71	28%
	Introduce new working practices/processes	71	30%	70	30%	94	40%
	Create new markets	58	42%	47	34%	32	23%
Medium-businesses	Increase Workforce Skills	50	35%	45	31%	49	34%
	Increase Managers Capability	43	31%	47	34%	48	35%
	Develop and launch new products and services	42	40%	38	36%	26	25%
	Introduce new working practices/processes	29	28%	33	32%	40	39%
	Create new markets	27	36%	26	35%	21	28%

**Table 3.** The Business Leaders' perceived skills & capability changes through Help to Grow management programme (n = 20)

Self-professed skills and competencies (over the next 3 years)	Strongly Agree	Agree	Neither Agree/Disagree	Disagree	Unsure	Overall Score
<b>Business Leader Mindset and Skills in Management Practices</b>						
I have the skills to manage my workforce over the next 3 years	1 (5%)	8 (40%)	2 (10%)	8 (40%)	1 (5%)	3.00
I have the skills needed to lead my business over the next 3 years	0 (0%)	8 (40%)	5 (25%)	6 (30%)	1 (5%)	3.00
I am confident in achieving the goals even if there are obstacles	4 (20%)	12 (60%)	3 (15%)	1 (5%)	0 (0%)	3.95
I am confident that I can adapt to changes that come along	8 (40%)	11 (55%)	1 (5%)	0 (0%)	0 (0%)	4.35
I am confident in my ability to collaborate with colleagues to develop a growth action plan	7 (35%)	9 (45%)	3 (15%)	1 (5%)	0 (0%)	4.10
I am confident in knowing what changes I need to make to my business in order to grow	2 (10%)	8 (40%)	6 (30%)	3 (15%)	1 (5%)	3.35
	Very Strong	Strong	Average	Weak	Very Weak	
<b>Firm's Capabilities</b>						
Ability to implement the business plan and strategy of the business	1 (5%)	8 (40%)	6 (30%)	5 (25%)	0 (0%)	3.25
Ability to develop and introduce new products/services into the marketplace	2 (10%)	9 (45%)	7 (35%)	2 (10%)	0 (0%)	3.15
Ability in using data to inform the decision-making	3 (15%)	8 (40%)	5 (25%)	4 (20%)	0 (0%)	3.50

*(continued)*

**Table 3.** (continued)

<b>Ability in understanding the effectiveness of operational process and how they could be improved</b>	3 (15%)	5 (25%)	8 (40%)	4 (20%)	0 (0%)	3.35
<b>Ability in adopting and embedding digital systems and processes into my business</b>	2 (10%)	7 (35%)	8 (40%)	3 (15%)	0 (0%)	3.40
<b>Ability in using new technology to help grow the business</b>	1 (5%)	7 (35%)	7 (35%)	4 (20%)	1 (5%)	3.15
<b>Ability in understanding and entering new markets (including overseas)</b>	1 (5%)	3 (15%)	5 (25%)	9 (45%)	2 (10%)	2.60
<b>Ability in understanding our target customer segments and their needs</b>	0 (0%)	10 (50%)	9 (45%)	1 (5%)	0 (0%)	3.45
<b>Ability in knowing the business positioning compared to market competitors</b>	0 (0%)	13 (65%)	6 (30%)	1 (5%)	0 (0%)	3.60

According to the research conducted by the UK government on looking at the influencing factors impacting the adoption of new technologies and management practices, UK wide (Department for Business Energy & Industrial Strategy, 2019), adoption of new technology and innovation is strongly linked to the availability of the tangible evidence supporting its positive impact on increasing turnover and productivity, and long-term growth of the business. In the descriptive statistics, see Table 3 above, showed that the understanding of the important link to the adoption of new technology and acquiring new management practices was low. But that with the attendance of these businesses at the “Help to Grow: management programme”, this was dramatically improved and made more tangible. This was plainly evidenced in the following ways (see Table 3) relating to the business leaders' skills and knowledge: The skills of the leaders to manage workforce and lead the business is only in the average level. However, they seems to be confident in achieving goals if there are obstacles (80%), knowing what changes need to be made in order that the business can grow (50%) and confident to adapt to changes (90%). They are also easy to collaborate with colleagues to develop a growth action plan.

Relating to the business capabilities, the respondents have to rate their firm's capabilities and their experiences on the way the firms faces with challenges and the needs

to change. In fact, according to the answers, we may see that there are quite a few company strong in implementing their business plan and strategy (45%). The rate of companies understand well the effectiveness of their operation process and how they could be improved is also not much (40%). However, relating to the new challenges in applying innovation and technology, they are quite strong in adopting and embedding digital systems and process as well as developing and introducing new products or new services into the marketplace. They really care on extending the digitalisation of their business processes, particularly the extensions of this into buying software beyond just accountancy and digital capabilities (cloud based facilities – internet and marketing services). Both of these types of software capabilities were perceived to contribute clear, tangible and short-term benefits to the business. Besides, only 40% of the firms surveyed are strong in having ability to using new technology to help growth the business. An understanding of new technology, and the value and impact these would have on their long-term business growth and ability to deliver competitive advantage. In contrary, the firms are quite reserved in approaching new market, and still having difficulties in understanding their targeted customers and their needs, even they know well about their business positioning compared to their competitors.

## 5 Discussion

### *Relating the Early Findings from This Study with Previous Research Findings:*

The general findings from comparing the established enablers and barriers from business population 1 with those from business population 2, has highlighted a few interesting insights and attitudes/behaviours from both the business leaders and relating to the businesses' capabilities, on the "Help to Grow: Management programme" (January – April 2022):

- These participants expressed a general lower understanding and knowledge of new technologies, either those that would have a short-term benefit in both delivering increased productivity and increasing sales. These findings are supported by previous national research findings conducted pre-Covid-19 (HM Government, 2019). Though our findings suggest that this general lack of awareness is both firm-type and sectors specific. A factor that is explored further in the next sub-sections.
- These participants also showed a general lack of confidence, see Table 3 see above, in both how to use these new technologies and processes and most importantly how to select the most appropriate for their businesses. This last aspect is being addressed in terms of selecting software through the Help to Grow: Digital funding offer from the UK government (Department for Business Energy & Industrial Strategy, 2022).
- These participants generally agreed that their businesses' culture would have to change to both understand and accept the need for change, and then embrace the processes that would enable adoption and dissemination of new technology and innovation.
- Most of the participants acknowledge the difficulty of looking longer term, when factors like Covid-19 and difficulties in sourcing materials both locally and from previous EU suppliers, challenged the very sustainability of their business model. However, many accepted that they did need to lift their horizon to look to making longer-term investments in new technology and processes.

*Utilising the Business Typology to Help Support the Perceived Barriers to Adoption*

Increasing in the business population 1 & 2 we could see some of the clear barriers typified by the business typology framework presented in the literature review. Actually, over 15% of the **business population 2** had **recently taken the reins** of their business, within the last 18 months. Often being taken on to provide a new initiative for the family business, new products and services or updating the processes and working practices. Something that was noted by **business population 1** as being particularly impactful on increasing turnover and productivity. By the nature of the Help to Grow: Management programme the **business population 2** did not include any of those business leaders or businesses falling into the '**Defiant resisters and reluctant innovator's** types. On the other side, over 25% of the **business population 2** would qualify as '**Growth-Hungry Start-ups**', at least they were travelling that journey, experiencing rapid growth, often growing by as much as 25% per year. Challenged by the difficulty of recruiting highly skilled staff and having gaps in their knowledge concerning the decision-making around the adopting of both the technology and innovations that would deliver the business model innovation needed to address the business opportunities they had identified.

The business types identified above do help in the understanding of how difficult it is to communicate effectively to these businesses about the initial advantages of adopting new technologies and innovations. It also identifies that the business data often used to promote the various types of business support programmes and funding have different impact on the appropriate business leaders. With many business leaders either discounting the claimed benefits to turnover and productivity, and/or the credibility of the evidence presented to support these claims. This is something picked up in other more national studies undertaken by the CBI and BEIS (Bloom et al., 2019; CBI, 2017; Department for Business Energy & Industrial Strategy, 2019).

*Link Between the SME'S Management Practices and Adoption of New Technology and Innovation*

The findings and discussions indicate several factors and drivers that influence and impact on management practices in the Hertfordshire SME community and seen with the Help to Grow: Management participants. Some of the more impactful informal and formal management practices are: (1) The growth-hungry start-ups in the business population 2 suggested that their regular Monday morning catch-up meetings, mostly for project updates and resourcing management, did not classify as formal processes; (2) The constant conflict between managing and leading, as perceived by the business leaders and the workforce, suggested that management practices were often seen as a barrier to productivity and general project progress.

## 6 Conclusion

The researchers have shown how there is a clear need for further support of the SME community to help them adopt new technology and innovation and change their management practices. Programmes or services focused on supporting these businesses with the skills, capabilities and expose to these new technologies and innovation is essential to help grow this sector in the UK.

There are a number of initiatives that the University of Hertfordshire are likely to take to increase the value and impact of the Help to Grow programme over the remaining

three years of its life. Relating to the **regional networking events** – in Hertfordshire, the Hertfordshire Business School and Hertfordshire Growth Hub are active in running networking events for the SME community. However, it is difficult to make these as impactful as possible, with many SMEs considering that existing industry network events are both more focused on their sector and deliver better value to them specifically. To **strengthen the value of the diagnostic tools** – again the Help to Grow: Management programme is just the starter pack for those businesses' intent on growth, and business model innovation. Using specific workshops to continue the development and skills-building of these business leaders, by the introduction of further diagnostic tools that analyse how these new technologies and innovations can benefit and impact on their business, is needed. Further extension of the **business leaders' management practices** is done through extending the mentoring and coaching that they enjoyed whilst on the programme. And finally, the **creation of further workshops connecting the business leaders to successful role models** – it is something that happens to a limited extent on Knowledge Transfer Partnership projects, but that could be extended to these Help to Grow: Management participants and would be another way to further embed these business leaders in the university's collaborative community.

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