Evaluation of the Evolve Digital programme to promote digital adoption in family firms: A Randomised Control Trial

Final report

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EXECUTIVE SUMMARY

Key finding

Evolve Digital provided small, family-owned firms with an on-line, cohort-based, and facilitated opportunity for learning about digital technologies. Compared to a randomly selected control group, the programme had a significant and sizable positive impact on firms' confidence in their ability to identify relevant digital technologies, and on firms' attitudes towards using digital technologies.

Background to the trial

The 'Evolve Digital' trial was developed with the objective of boosting digital adoption in small family firms through identifying a cost-effective, yet productivity-enhancing programme of peer group learning for small family businesses, which can be replicated throughout the country.

The Evolve Digital trial aims to combine formal guidance on digital technologies and a strong element of peer learning to enhance firms' confidence to adopt new digital technologies. The intervention was based on experience from previous schemes but it was specifically designed to achieve the following: to be delivered over a much shorter period (4 months); to address the needs of small family businesses; and, to address the needs of **all** small family firms, not just manufacturing firms. Combined, these changes will enable a much more affordable trial and greater opportunities for replication if successful.

The Evolve Digital trial aimed to recruit a total of 420 firms comprising: a Treatment group - 140 businesses meeting the eligibility criteria and receiving peer-to-peer and online support for digital adoption; a Control group - 140 firms receiving online support only; and, a Comparison group – 140 firms similar in age, size, ownership and sector to the combined Treatment and Control group but drawn from the wider business population. This report focuses on the comparison of the Treatment and Control groups.

Initially, the Evolve Digital trial was planned as a face-to-face programme. However, because of the impact of the Covid-19 pandemic it was delivered fully online using a range of digital platforms and portals. Impact analysis therefore reflects the nature of this online delivery.

Baseline data was collected from respondents via telephone surveys between September and May 2021, prior to randomisation. The baseline survey assessed basic company details, experience with digital adoption and baseline levels of the outcome measures. The post-treatment follow-on survey was conducted six months after the end of the treatment period (October 2021 to February 2022). It focused on psychological and behavioural variables as outcome variables, as the relatively short period between the treatment and survey would not have allowed the measurement of measure training-induced changes in business performance. Primary outcomes assessed were technology use self-efficacy and the intention to use technologies. Secondary outcomes were perceived ease of use, perceived usefulness, attitude towards using, efforts and planning put into the adoption and use of digital technologies (actual system use) and the number of digital technologies adopted (digital technology use).

Trial conduct

Run during the Covid-19 pandemic several changes to the design and delivery of the Evolve Digital programme were necessary. The most critical of these was the decision to move all training online rather than having face-to-face sessions. As some participants noted, this changed the nature of the intervention considerably and, for some at least, reduced the value of the interactive and peer-to-peer learning elements of the programme.

Pressures on businesses during the pandemic also made recruitment to the trial more difficult than anticipated with implications for the size of each of the trial groups and approach to randomisation. This had potential implications in terms of the power and internal validity of the trial. Results from the baseline survey suggest that randomisation worked well in general with few significant differences in the characteristics or outcome variables between the Treatment and Control groups.

Attrition in the follow-on survey also raised some questions about the internal validity of the trial and potential survey response bias. However, tests for survey response bias suggest few differences in baseline firm characteristics, owner-manager characteristics, and ambition profiles. There was potential bias from baseline differences in two target outcomes between the Treatment and Control groups, but these were taken into account in analysing outcomes.

Trial outcomes

Despite the operational difficulties of delivering the trial and the changed nature of the intervention, analysis of the follow-on survey suggests a robust positive impact of the programme on firms' technology use self-efficacy, which encompasses the confidence in their ability to identify relevant digital technologies, to create the conditions necessary for using digital technologies in their firms, and to use these technologies. The treatment also appears to have a positive influence on firms' attitudes towards using technologies.

For the primary outcome variables:

- The regression results show a positive and statistically significant impact of treatment on technology use self-efficacy: being in the Treatment group raises technology use self-efficacy by 0.47 points on a five-point scale relative to a baseline of 4.10. This result suggests that the treatment was successful in raising firms' confidence in their ability to use digital technologies.
- The treatment also increased the intentions of firms to use digital technologies by 0.51 points on a five-point scale relative to a baseline of 4.61.

For secondary outcomes:

- The treatment significantly increased firms' perceived usefulness of digital technologies by 0.33 points on a five-point scale relative to a baseline of 4.71.
- The treatment also significantly improved the attitude of firms towards using digital technologies by 0.21 points on a five-point scale relative to a baseline of 4.84.
- The treatment had no significant effect on the other secondary outcomes, namely perceived ease of use of technologies and adoption of digital technologies. This may reflect opposing effects.

Although encouraging, the positive influences of the treatment on intentions to use technologies and on perceived usefulness of technologies should be treated with caution due to baseline differences between the Treatment and Control groups.

The positive quantitative results are also reflected in the qualitative responses of the participants in the Evolve Digital programme as well as of those having delivered the programme. Both reflected positively on the experience despite the limitations imposed by

Covid-19. Some participants valued the reflective and participatory aspects of the programme and the opportunity to develop management skills beyond the realm of digital technologies.

Implications

The impacts of the Evolve Digital programme suggest the potential value of short online training courses to support digital adoption in smaller firms, including family firms, which are usually difficult to access. Despite the online setting it was possible to establish social networks between participants – or at least social relationships between sub-groups of participants – that helped and supported both the confidence and intention to implement digital technologies.

The Evolve Digital programme may constitute a cost-effective intervention that could be delivered at scale alongside other programmes such as Made Smarter and Help to Grow Digital. Indeed, Evolve Digital might act as a feeder programme for both initiatives. It could help firms to develop the necessary confidence and intention to adopt digital technologies for a successful participation in the Made Smarter or Help to Grow Digital programme.

The move to online delivery was an unintended consequence of the Covid-19 pandemic and related restrictions. However, it may have facilitated the success of the programme, as it created a potentially more cost-effective and accessible programme, particularly for firms located in more rural or remote areas. In these areas, travelling to attend face-to-face sessions would have been more time-consuming and costly. In addition, it might have been more difficult for delivery agents to identify interested cohorts of participants in an offline setting.

SECTION 1: BACKGROUND TO THE 'EVOLVE DIGITAL' TRIAL

1.1 Introduction

There has been a longstanding recognition that the UK shows lower economic productivity than otherwise comparable economies. This is commonly attributed to a low level of productivity among small companies who form a relatively larger proportion of UK firms. Fostering the adoption of digital technologies constitutes a promising approach to improve productivity; studies suggest that the productivity (sales per employee) of micro businesses three years after digital adoption of cloud-based computing rises by 13.5 per cent [1]. Similarly, the use of CRM leads to a 18.4 per cent and the use of e-commerce to a 7.5 per cent increase in productivity. However, numerous barriers to digital adoption exist, and smaller – particularly family-owned firms – may be reluctant to adopt digital technologies due to the costs of investment and uncertainty about the returns.

One of the focal points of the Business Basics Fund Round Three was on the distinctive needs of family businesses with a broader focus on improving business performance and productivity[2]. In response, the 'Evolve Digital' trial was developed with the objective of boosting digital adoption in small family firms through identifying a cost-effective, yet productivity-enhancing programme of peer group learning for small family businesses, which can be replicated and run at scale throughout the country. The project combined the expertise of Start and Grow UK, a group of leading enterprise agencies with extensive experience in small enterprise development, and Lancaster University Management School (LUMS) which has specialist skills and prior experience in developing interventions offered to family businesses. Funding for the 'Evolve Digital' trial was agreed in September 2020 and the Trial Protocol was registered on the 12th of May 2021.

The Evolve Digital trial aimed to combine formal guidance on digital technologies and a strong element of peer learning to enhance firms' confidence to adopt new digital technologies. The intervention differed from previous schemes in that it was delivered to small family businesses over a much shorter period (4 months), enabling a much more affordable trial and greater opportunities for replication if successful.

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[1] Source: ERC State of Small Business Britain 2018, Table 6.1.
[2] See https://apply-for-innovation-funding.service.gov.uk/competition/475/overview#scope Specific themes

1.2 Overview of the Evolve Digital Trial

The Evolve Digital trial targeted family businesses[3] located in England, with between 1 and 49 employees. Target firms were in operation for more than one year and had an aspiration to grow or improve productivity. Eligibility for the programme was also limited to firms which had previously adopted two or fewer digital technologies from a list of eight productivity enhancing technologies identified by BEIS. For businesses already employing many technologies any impact would be expected to be smaller and more difficult to identify. The trial aimed to recruit a total of 420 firms comprising (Figure 1.1):

a) ***The Treatment group*** - 140 businesses meeting the eligibility criteria and receiving peer-to-peer and online support for digital adoption;

b) ***The Control group*** - 140 firms receiving online support only; and

c) ***The Comparison group*** – 140 firms similar in age, size, ownership and sector to the combined Treatment and Control group but drawn from the wider business population.

Figure 1.1: Overview of the Evolve Digital RCT
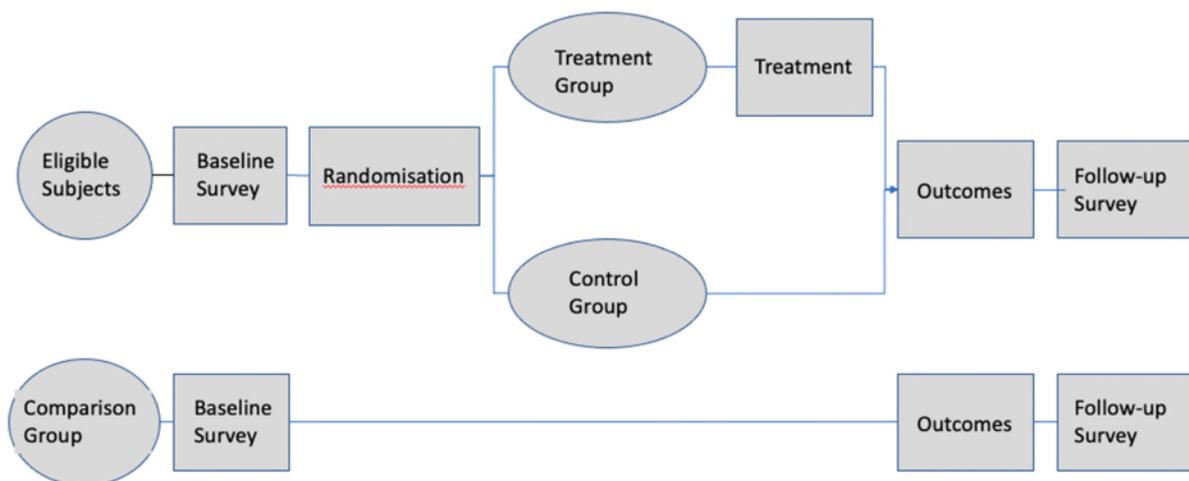
Eligible firms were required to complete the baseline survey prior to the random allocation to the Treatment group and Control groups. The process for deriving the Comparison group is outlined below. The Treatment group received 42 hours of facilitated peer-based learning

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[3] Defined as businesses which are majority owned by one or more members of the same family.

intended to increase their confidence and intention to adopt new digital technologies. This comprised a series of online sessions supported by facilitated access to a library of digital materials (see Section 2). WhatsApp groups were also encouraged and supported. The Control group received low intensity inputs in the form of guided learning materials in electronic form and included videos and quizzes. There was, though, no interaction with any facilitators. These materials were made available for self-study using the same Virtual Learning Environment (VLE) as the one used by the Treatment group, but with no support being provided for the development of peer-interaction. The Comparison group did not have access to any support materials. This group was included to provide information on the external validity of the trial, i.e., the applicability of trial results to the general population of small firms. The Comparison group was recruited immediately after the identification of the final group of eligible firms. A sample of companies matching the combined Treatment and Control groups in terms of business age, size, region and sector was obtained from a commercial list broker.

Baseline data was collected via telephone surveys between September 2020 and May 2021, prior to randomisation. The baseline survey assessed basic company details, experience with digital adoption and baseline levels of the outcome measures. The post-treatment follow-on survey was conducted six months after the end of the treatment period for each cohort. It focussed on psychological and behavioural variables, as the relatively short period between the treatment and survey would not have allowed the measurement of training-induced changes in business performance. Baseline data of the Comparison group was collected to match the Treatment and Control group by size, sector, and region. Later in Section 3, we provide more detail on the differences in, what were then, non-observable characteristics of the Treatment/Control group and the Comparison group.

1.3 Overview of the report

The remainder of this report focuses on the design, implementation, and outcomes of the Evolve Digital Trial. Section 2 provides a detailed description of the trial methodology and design, including its underlying rationale, intervention and evaluation design and data analysis approach. Section 2 also describes COVID-19-induced obstacles and resulting changes of the trial design. Section 3 provides insights into firm characteristics at baseline. The main trial results are reported in Section 4. Section 5 presents the key findings and main learnings for policy and future RCTs designed for business support.

SECTION 2: TRIAL METHODOLOGY AND DESIGN

2.1 Introduction

The overall objective of the Evolve Digital trial was to assess the potential for targeted peer learning-based interventions encouraging digital adoption in small, family-owned firms. More specifically, the central research question addressed was whether 42 hours of facilitated peer-based learning (See table below for details) generated a stronger intention to adopt digital technologies than solely providing access to online materials for self-guided learning. Peer learning was seen as a key element of the programme with the aim of developing learning networks supporting digital adoption in participating firms during and after the treatment period. The Treatment group was planned to consist of seven cohorts of 20 businesses each. LUMS were to deliver three cohorts with other partners delivering one cohort each in different geographical areas (Business West, Enterprise First[4], NBV and TEDCO Business Support).

Box 2.1 shows the content covered by the peer-based learning programme.

Within each cohort the programme was organised into:

• Webinar (1 session of 2 Hours) in Week 1.
• Programme Induction (2 sessions over 2 days) in Week 2.
• Setting the Strategic Context (1 session over 1 day) in Week 4.
• Identifying Digitalisation Opportunities (2 sessions over 1 day) in Weeks 6 & 8.
• Digitalisation Sprints in Week 9.
• Leadership Responsibility in the Family Business (1 session over 0.5 days) in Week 10.
• Final Review and reflection (1 session over 0.5 days) in Week 11.

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[4] Enterprise First changed their name to the Business South Group part way through the project.

The Evolve Digital treatment itself was developed by LUMS and built on their prior experience of working with family firms and developing interventions with a substantial peer learning component (e.g. Magnus, 2013). Key elements of the treatment as originally planned were (Box 2.1):

- Overnight Experiential: Two-day residential induction to create a platform for developing trust within the group to create ongoing peer-to-peer learning. Details of the interventions for each group with sufficient detail to allow for replication.
- Workshops: expert speakers on key topics related to digitalisation for growth in the Family Business setting; for example, value stream mapping, leading transformational change, succession planning and integration of change within the business.
- Mini design sprints (part expert-facilitated and part self-facilitated) to test out new technology adoption ideas in the workplace, providing the opportunity to create a cross-generational project
- Group reflective sessions: facilitated group sessions of 5-6 participants to discuss the opportunities and challenges facing them in their businesses and support and challenge one another in their learning.
- Final review, reflection and action plan to ensure learning is embedded and clear action plans are in place for the future
- Establishment of a digital community for ongoing knowledge exchange and learning.

Due to the relatively short project timeline of 21 months, and only 10 of those months were available between the delivery and the follow-up survey, observable changes in productivity were considered unlikely. We therefore focused on psychological and behavioural changes following our treatment. These changes were measured before the treatment and afterwards and were treated as proxies for potential future productivity. Our approach has been widely used in the evaluation literature including in the major BEIS Growth Vouchers project for the 6-month evaluation[5]. The main primary outcomes that were measured were the confidence to adopt and intentions to implement new technologies within six months of the second survey. Secondary outcome assessed include the perceived ease of use of

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[5] See
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/498329/BIS-16-30-growth-vouchers-programme-evaluation-cohort-1-impact-at-6-months.pdf.

technologies, the perceived usefulness of technologies, attitudes towards using technologies, actual implementation at various stages, e.g., awareness of technical solutions and technology purchased and implemented, as well as actual adoption of digital technologies.

The trial design also considered potential moderators of the main effects. Were there contextual factors which either enhanced or reduced the impact of the intervention? Were there any other factors – firm or participant characteristics for example – which either supported or prevented impacts?

2.2 Trial background

2.2.1 Business Boost - Business Basics Fund Round 1 trial

Learning from the Business Boost programme included:

a) Attrition rates (prospects to sign-ups) from the Business Boost programme were used to determine minimum numbers recruited to each cohort.
b) Delivery staff from each delivery agent were brought together at key points throughout the programme to share good practice and mitigate against potential issues
c) Programme participants were reminded of the need to engage with the Wave 2 survey throughout the programme and during the six months afterwards.
d) In light of the mixed take-up levels of sessions during the Business Boost programme material and recordings of workshops were made available online, benefitting many of those that had to dip in and out of the programme due to business reasons.

2.2.2 Peer interaction and learning as the basis for trial design

The academic literature generally portrays peer interaction as both positive and effective for leadership learning and this provides the basis for the cohort-based trial design. Learning from peers has repeatedly been emphasised as one of the most important aspects of management training programmes and is seen as vital for the development of capacities for reflection and reflexivity. Indeed, peer-to-peer management learning networks can be traced back to the interwar period during which networks of UK firms engaged together in management training programmes (Maclean et al. 2020).

There are numerous practitioner studies which focus on peer-to-peer learning across a range of domains – e.g., at universities or in the medical sector. However, comparable research in the managerial context remains scarce. Miao et al. (2021) investigate collaborative peer-to-peer learning as a tool to help entrepreneurs in developing countries learn from more technologically advanced peers. They suggest that such peer-to-peer learning can lead to technological convergence but that over-reliance on peers can lead to diminishing marginal returns. Studies in other contexts provide insights into the channels through which peer-to-peer learning can yield benefits. For instance, Werner and Dickson (2018) explore peer learning among elite football players from the German Bundesliga. Based on in-depth interviews they highlight four knowledge-sharing channels that yielded benefits for the players concerned: observing/imitating, peer exchange/peer communication, labour mobility and knowledge brokers. These may have wider applicability in the context of other peer learning settings such as Evolve Digital.

The success of peer learning programmes has been related to programme design and the quality of programme resources. One crucial aspect in this regard is high-quality facilitation to encourage interaction and maximise the value of peer interaction. Larsson and Knudsen (2021), whose study focused on a public sector peer learning context in Denmark, suggested that the nature of facilitation in their programme led to the emergence of a 'social-moral' order in which through the conversation participants recognised each other as experts in different domains. This led to a position of mutual deference rather than challenge and discouraged reflexive thinking. This emphasises the need for facilitation which can counter the tendency for groups and participants to stay within their comfort zones and encourage individuals to challenge the statements and expertise of others. The implication is that peer-engagement is not sufficient to ensure peer learning. Instead, peer learning depends both on structural factors such as programme design but also real time influence such as the quality of facilitation.

Box 2.1 Content Overview for the Evolve Digital Programme.

Workshop	Content
Webinar	- Overview of the programme and objectives. - Timetable - Outline of the programme content and a short introduction to digitalisation.
Programme Induction	- Introduction to 'The Big Picture'. Understanding the implications for business and igniting the need for change and potential applications of technology adoption. - Engaging delegates in some ideas and theories on leadership - Promoting self-reflective practice for strategic leadership activities
Setting the Strategic Context	- Understanding the future shape of business contexts - Creating a sense of urgency to understand technological/digital futures - Identifying current business direction towards technology and digitalisation, technological audit and introducing PESTLE Analysis - Developing strategic objectives to enable digitalisation – The Strategic Workplace
Identifying Digitalisation Opportunities	- Exploring where value is lost or developed within business - Exploring where digitalisation can enhance value creation - Baselining your business to identify and prioritise digitalisation activity - Development of a plan of activity to engage with employees/family members using the Value Stream Map
Digitalisation Sprints	- Understanding how the sprint process can be used as a tool to break down barriers - Providing a platform to engage with employees to introduce digitalisation projects - Linking the Sprint to the Value Stream Mapping to identify a digitalisation project and develop strategic interventions
Leadership Responsibility in the Family Business	- Exploring the role of leadership in minimising the resistance of implementing digitalisation - Understanding how people respond to change, both positively and negatively - The importance of communication to promote progress and engage late adopters - Reviewing objectives, activities and measurements and consider the ethics of change
Final Review and reflection	- Returning to the benefits of reflective practice, sense making and sense giving - Understanding the positive impacts of the programme for your business - Identifying actions and commitment taken from the programme

Parker et al. (2008) explore the nature of facilitation and leadership in peer coaching, with potentially generalisable lessons for other peer learning contexts. Their analysis emphasises the dynamics of leadership/facilitation relationships and how these develop during a programme cohort. They argue that this can be thought of as a three-step process, each step of which requires rather different facilitation skills: (1) building the developmental relationship, (2) creating success in development, and (3) internalizing the learning tactic by applying the peer-coaching process in future relationships.

Perhaps the earliest major management and leadership training programme in the UK which had a peer learning element and was rigorously evaluated was the LEAD programme run out of LUMS. The programme used a cohort-type approach and offered 10 months of management training, including several different topics taught. Action Learning Sets, that is, facilitated subgroups of six to eight peers who met to discuss personal business issues or challenges in a trusting environment, were a key part of the LEAD programme. Listening and questioning techniques were used to share experiences, to learn from each other and establish actions to resolve issues. Participants mentioned these Action Learning Sets and the broader peer learning element as the most important element contributing to their leadership development through this programme.

An evaluation of the LUMS LEAD programme – conducted in 2013 – was based on a respondent survey and econometric analyses and focused on both a range of leadership and intermediate outcomes as well as (for earlier cohorts) a range of business outcomes (Magnus, 2013). In the context of the more recent BEIS-funded Peer-Networks programme it is interesting to note the diversity of leadership and intermediate effects found in the LEAD programme evaluation. The list below outlines the key findings of the study

- All participants stated that LEAD had positively impacted their leadership capabilities.
- A third of the respondents indicated that LEAD improved their confidence or reinforced an existing belief in the validity of their business proposition.
- Many participants had made significant changes in their business since joining LEAD, most notably a diversification of their primary business, but also the start-up of a new business or a change in their capital structure.

- All participants had made management-related changes, with over half of the participants indicating that they had appointed a business manager since joining LEAD.
- The programme enabled participants to step back and reflect
- Participants developed a better understanding of leadership, new leadership skills and management frameworks.
- Participants engaged in more effective leadership through better communication or delegation.

These echo the important role of peer learning in encouraging a more reflexive approach to management.

Studies have also shown that peer learning may encourage business owners to seek external support or external resources, which may eventually result in firm growth and development. For example, participating in peer learning networks may highlight the value of knowledge sharing to network participants, encouraging greater openness and willingness to form network relationships in the future (Douglas and Radicic 2020). Likewise, positive experience with business advice or support provided through a training or mentoring programme may encourage future participation in this type of programme. External business support (Carey 2015), network participation (Tiwasing, 2021), and the use of external finance have all been shown to be positively related to subsequent improvements in businesses performance (Serrasqueiro et al. 2021).

This prior evidence of the value of peer learning provides the rationale for the alternative models of support provided to the Treatment and Control groups. Both groups were provided with access to similar online materials. However, for the Control group this access was individual and led by the firm themselves. In the Treatment group participants were encouraged to interact and received facilitated (and collective) access to the online materials. The added value of this cohort-based approach was one of the key aspects of the trial.

2.2.3 Technology adoption as the basis for evaluation and measurement design

To understand the impact of the Treatment on technology adoption we build on the theoretical assumptions of the Technology Acceptance Model (TAM) (Davis, 1989; Davis,

Bagozzi, & Warshaw, 1989). The TAM provides the basis for the evaluation and measurement design of the Evolve Digital trial.

TAM is an adaptation of the Theory of Planned Behaviour (Ajzen, 1991) for technology adoption and use. According to TAM, the behavioural intention to use a technology, which should be the single best predictor of subsequent technology adoption, is dependent on a positive attitude towards this technology (see Figure 2.1).

Figure 2.1: The Technology Acceptance Model
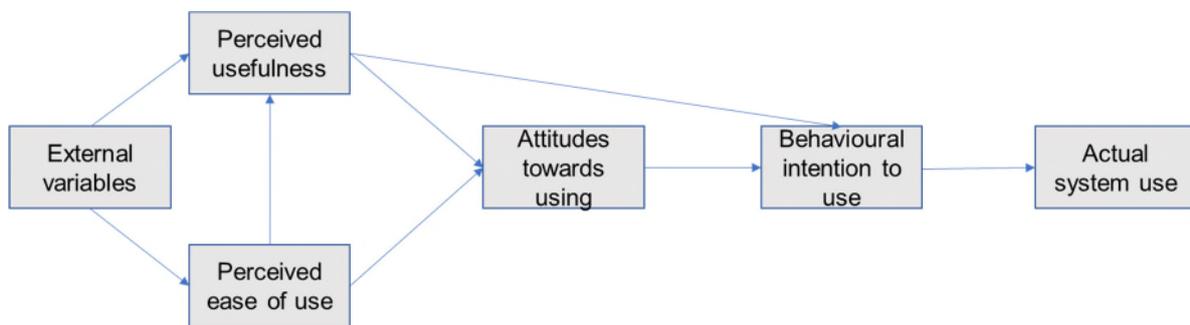
This positive attitude, in turn, is driven by two further psychological antecedents. First, perceived usefulness is an important precondition for the development of a positive attitude towards technology use. Perceived usefulness is defined as the potential user's perception of a technology as useful to increase job success (Davis et al., 1989), which in the context of this study means the perceived usefulness of the technology for business success. The more useful a technology appears to a business owner, the more positive the attitude towards this technology, and the stronger the intention to use the technology in the business. Second, perceived ease of use of a technology influences the attitude towards it. Perceived ease of use describes the perceived extent to which a technology can be adapted without having to invest significant effort (Davis et al., 1989). In more recent versions of TAM, technology-related self-efficacy, which refers to an individuals' judgment about their ability to apply digital technology, has been suggested to be a critical antecedent of perceived ease of use (e.g., Roca, Chiu, & Martinez, 2006). According to the TAM, perceived ease of use should also positively influence the perceived usefulness of a technology.

Meta-analytic results support the usefulness of TAM for the prediction of technology adoption in various contexts, such as e-service adoption, physician's acceptance of telemedicine technology, and use of internet banking services (King & He, 2006). Interventions stimulating technology use may affect the perceived usefulness and ease of technology adoption and thereby the attitude towards and intentions to use technology. Evidence suggests that training programmes for technology adoption constitute a particular promising intervention in this regard (Venkatesh & Bala, 2008). Following our theoretical reasoning, we expect our training intervention to affect business technology-related self-efficacy, the perceived ease of use and the perceived usefulness of business-relevant technology. These changes in perception should lead to a more positive attitude towards business technology, which in turn should trigger the intention to use this technology and eventually lead to actual technology use in the business.

A critical metric for any training intervention is the extent to which training contents are transferred to the workplace and thereby lead to a change in actual work behaviour (e.g., actual adoption of a technology in the business). If training does not lead to behavioural change at work, it may constitute a waste of resources. Ensuring training transfer is therefore critical for training success. A number of factors may moderate the strength of the influence of any training programme related either to individual or workplace characteristics with the literature on training transfer (e.g., Baldwin & Ford, 1988; Blume, Ford, Baldwin, & Huang, 2010) describing different individual-level (trainee characteristics) and workplace-level (work environment) determinants of training transfer (Baldwin & Ford, 1988, Grossmann & Salas, 2011).

2.3 Trial design

An overview of the Evolve Digital trial design was provided in the original registration in May 2021 prior to the start of the treatment period[6]. The design of the trial built on the experience of the Cavendish Consortium in working with early-stage businesses and the expertise of LUMS in delivering programmes with a significant peer learning element. The design also built on the lessons learnt from the 'Business Boost' trial also led by the Cavendish Consortium and funded as part of the first round of the Business Basics trials[7].

The Evolve Digital trial is profiled in Figure 2.2 and the logic model for the intervention is outlined in Figure 2.3. The trial had two arms with trial subjects being UK-based family firms with less than 50 employees. In most cases firms in the Treatment and Control groups had between 5 and 10 employees. Baseline data was collected after firms were accepted for inclusion in the trial and before randomisation. In addition to the Treatment and Control groups a Comparison group from the general population of firms was also included in the design. These firms were recruited to have characteristics broadly similar to the combined Treatment and Control groups. They did not receive any treatment. A follow-on telephone survey of the Treatment, Control and Comparison groups was undertaken six months after the completion of the treatment.

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[6] See https://www.socialscienceregistry.org/trials/7670 .
[7] See https://www.enterpriseresearch.ac.uk/wp-content/uploads/2020/12/ERC-ResReport-Business-Boost-Final.pdf.

Figure 2.2: Overview of the Evolve Digital Trial

Population
Small family businesses (fewer than 50 employees) using two or fewer productivity-enhancing digital technologies

Recruitment
Eligibility checks:
1. Family business (BEIS 2017 definition)
2. Fewer than 50 employees
3. Using 2 or fewer productivity-enhancing digital technologies
4. Willing to and assessed as being committed to the trial (regardless of their status as a member of the treatment or control groups)

Sample
280 eligible firms,
in 7 cohorts

Comparison Group
140 firms eligible in principle

Baseline data collection
Cohort by cohort for Sample, in parallel for Comparison Group

Randomisation
Cohort by cohort

Comparison Group
All 140 firms

Treatment group
140 eligible firms

Control Group
140 eligible firms

Comparison Group
140 firms eligible in principle

Facilitation
42 hours over 4 months

Access to online content
Staged release over 4 months

Access to online content
Staged release over 4 months

Follow-up data collection
Main outcomes:
Increases in confidence to implement technologies
Improvements in proxy measures fro productivity
Creation of effective peer learning networks

Figure 2.3: Logic model for Evolve Digital

Inputs	Activities	Outputs	Immediate impact	Intermediate impact	Ultimate impacts
Business Basics Funding LUMS 'soft' technology	Recruitment and engagement Facilitator training Facilitation delivery Business activity (individual and peer-to-peer) RCT	Evidence from 140 businesses having received enhanced support (Treatment group) Evidence from 140 businesses having received basic support (Control group) Evidence from 140 businesses having received no support (Comparison group)	Well-defined processes for replication Trial results (confidence measures, implementation intentions) - Improvements in proxy measures of productivity Creation of effective peer learning network Improvements in management and leadership practices	Higher productivity in the average firm treated Reliable productivity improvement process tools	An economy with greater productivity

2.4 Evaluation and analysis

2.4.1 Outcome measures

In this trial, we measure the psychological and behavioural variables that form part of the TAM, and the individual- and workplace-level influencing factors that could influence the impact of the treatment on these variables, by adapting existing validated measures to our context of digital adoption training for family business owners. We used two measures as our primary outcome indicators: a measure of technology-use self-efficacy based on the entrepreneurial self-efficacy measure used in Gielnik et al. (2015) and a measure of the intention to adopt based on Park (2009) and Turab & Casimir (2015). A list of all items is displayed in Table 2.1. All items were rated on 5-point Likert scales.

Table 2.1: Primary outcome measures for confidence and the intention to adopt

Description of variable	Detailed definition
Technology use self-efficacy (confidence)	Thinking about the implementation of new digital technologies in your business, how confident are you that you can… 1. Identify where digital technologies will add value to your business? 2. Identify how digital technologies will enable your business strategy? 3. Implement digital technologies in your business? 4. Use digital technologies in a way that they add value to your business? 5. Lead your business through the change required to adopt digital technologies? 6. Minimise the resistance by other members of the business to adopting digital technologies? 7. Collaborate successfully with other members of your business to use digital technologies?
Behavioural intention to use	Please think about your intentions to use technological tools over the next six months. To what extent do you agree with the following statements? 1. I intend to use digital technologies frequently in my business. 2. I intend to use digital technologies as much as possible in my business. 3. I intend to use digital technologies to improve the effectiveness of my business. 4. I intend to use digital technologies to improve the effectiveness of my employees.

In addition to these primary outcome measures we collected information on a range of secondary outcome measures which aimed to capture other aspects of the TAM model, as well as firms' actual adoption of new digital technologies. These measures are outlined in Table 2.2. The measures of the perceived ease of use of digital technologies, perceived usefulness and attitudes towards using digital technologies were adapted from Park (2009). The measure on the use of digital technologies was adapted from Bourke and Roper (2018). With the exception of the digital technology use measure, all secondary outcomes were rated on 5-point Likert scales. Note that, for the perceived ease of use of technologies, the expected direction of change following treatment may be uncertain: some firms may learn that certain technologies are easier and more applicable than they had thought, whilst others may learn that technologies are harder to adopt and would require further changes to their business.

Table 2.2: Secondary outcome measures

Description of variable	Detailed definition
Perceived ease of use	Now I would like to ask how easy or difficult you find it to use digital technologies. Please indicate to what extent you agree with the following statements… 1. I find digital technologies easy to use. 2. Learning how to use digital technologies is easy for me. 3. It is easy to become skilful at using digital technologies
Perceived usefulness	Thinking about how you use digital technologies in your business. Please indicate to what extent you agree with the following statements: 1. Digital technologies can improve business performance. 2. Digital technologies can increase business productivity. 3. Digital technologies can make it easier to deal with business tasks.
Attitude towards using	First, to what extent do you agree or disagree with the following statements… 1. Using digital technologies is a good idea. 2. Using digital technologies is a wise idea. 3. I am positive toward using digital technologies.
Actual System Use	Thinking about all of the digital technologies you have recently introduced, how much effort have you put into the following… 1. Discussing the introduction of the digital technologies with other members of the business 2. Looking for information on the digital technologies (e.g. on price, suppliers) 3. Assessing how the digital technologies will enable your business strategy 4. Outlining a plan on how to use the digital technologies 5. Convincing other members of the business to use the digital technologies 6. Training other members of the business in using the digital technologies Purchasing the digital technologies 7. Using the digital technologies
Digital technology use	I am going to read you a list of digital and web-based technologies. Can you please tell me which you currently use in your business? A. CRM system (i.e. Customer Relationship Management) B. E-Commerce through your own website (including web sales) C. Web-based accounting software D. Payment technologies such as e-invoicing E. Cloud based computing F. Supply chain management (SCM) software G. HR management systems (HRM) software H. Enterprise resource planning (ERP) software I. None of these J. Don't know K. Refused ASK FOR EACH SELECTED When did you first start using these technologies? Please indicate for each whether it was in the last 6 months, between 6 and 12 months ago, or before that.

2.4.2 Moderator measures

We also tested whether the business owner's affinity for technology and the resistance to change of others in the firm affected the treatment effect on our primary and secondary outcomes. The measure of the affinity for technology was adapted from Franke, Attig, & Wessig (2019), while the measure of the resistance to change was adapted from Oreg (2006) (Table 2.3).

Table 2.3: Moderating variables

Description of variable	Detailed definition
Affinity for technology	To begin, please indicate to what extent you agree or disagree with the following statements… I like testing the functions of new technical systems. I predominantly deal with technical systems because I have to. I enjoy spending time becoming acquainted with a new technical system. I try to understand how a technical system exactly works. It is enough for me to know the basic functions of a technical system.
Resistance to change, measure adapted from Oreg (2006), items:	Thinking about the overall attitude of the other members of your business toward adopting digital technologies, to what extent do you agree or disagree with the following statements… They have a bad feeling about the change They are quite excited about the change (Scale reversed) They are stressed by the change They protest against the change They complain about the change to their colleagues They present their objections regarding the change to me They believe that the change will make their job harder They believe that the change will benefit the business (Scale reversed) They believe that they can personally benefit from the change (Scale reversed)

2.4.3 Control measures

In addition to the primary and secondary outcome measures we captured a range of control variables in the surveys. These were intended to evaluate the effectiveness of the randomisation process (i.e., establish the similarity of the characteristics of Treatment and Control groups) but also to control for the impact of observable factors in comparisons of the Treatment and Control groups (Table 2.4).

Table 2.4: Control variables

Description of variable
Detailed definition
Business age – years Home-based business (0/1) Family owned and controlled (0/1) Women-owned (0/1) Ethnic minority-owned (0/1) Member of formal business association (0/1) Ambition and objectives (categorical) Wider economic barriers to growth (0/1) Prior technology adoption (as 'Digital Technology Use') above External finance use during previous six months (0/1) External advice use during previous six months (0/1) Prior management experience (0/1) Age of the participant (years) Highest qualification of participant (categorical) Gender of participant (0/1)

2.4.4 Analytical approach

Primary and secondary outcome measures and control variables were measured at two points in time: the baseline survey before the treatment and the follow-on survey six months after the end of the treatment. The Evolve Digital trial had three arms: a Treatment group, a Control group and a Comparison group. For each of the primary outcome measures we estimated three main models comparing values of the measures in Table 2.1 at baseline and follow-on stages:

1) *Treatment v Control:* Pure treatment effect for firms with similar ambitions and baseline characteristics. Randomisation should ensure that this comparison reflects only the treatment effect relative to the Control group (internal validity).

2) *Treatment v Comparison:* Differences between groups reflect both the treatment effect and selection bias, with selection based on ambitions and other baseline characteristics. The results of this model, when examined alongside the Treatment vs Control results, indicate to what extent the findings from a quasi-experimental evaluation would have been biased, if it had not been possible to carry out an RCT.

3) ***Control v Comparison:*** Differences here reflect the impact of the online treatment and any selection bias. This provides insights into selection bias, or the extent of external validity.

We controlled for all baseline characteristics used for matching, and show robustness to their exclusion (Calderon et al, 2020; Fairlie et al 2015; Martinez et al 2018). Effects were estimated with and without controls to show robustness.

2.5 Covid related changes to trial conduct

The Evolve Digital trial was planned in late 2019 before the start of the COVID-19 pandemic. The spread of COVID-19 to the UK in early 2020 coincided with the planning period prior to the first pilot cohort which was being delivered by LUMS and due to start in September 2020. The first UK lockdown which began on March 23rd 2020 required a significant re-design of the treatment from face-to-face to fully online, an approach which was followed in subsequent cohorts of the trial. The move to online delivery had uncertain consequences in terms of the potential impact of the trial. On the one hand, opportunities for peer interaction and peer learning were limited online, with the face-to-face elements of the planned programme seen as crucial to the development of trust between participants. On the other hand, the move to online reduced the travel overhead for individual sessions for participants and may have increased take-up and participation with the various elements of the treatment.

Only the Treatment group was affected by the Covid-19-related changes. Delivered fully online, sessions closely followed the original treatment plan and mentor support was available to the participants throughout the duration of the programme (4 months). Materials were delivered using the University of Lancaster virtual learning environment (VLE) and peer-interaction was facilitated using Microsoft 'Teams'. For the Control group, materials were made available for self-study using the same VLE with no support being provided for the development of peer-interaction. The Comparison group firms had no access to either the online materials or other participants and was not affected by the Covid-19-related changes in the trial.

2.5.1 Recruitment

Recruitment for each of the Evolve Digital cohorts was undertaken by the delivery partner with a focus on firms meeting the eligibility criteria in their own local area. The original plan was to recruit around 40 firms to each of the seven cohorts and then randomise these to form Treatment and Control groups of similar size. However, due to the COVID-19 pandemic and related lock-down and absence from work, it became more difficult to attract firms to the programme than originally anticipated, which led to the fact that all cohort sizes other than the pilot cohort were smaller than planned. The COVID-19 pandemic may also have contributed to a reduction of take-up in the Treatment and Control group. These issues are discussed in more detail below. Recruitment difficulties also led to some changes in the randomisation approach adopted with implications for the analytical approach (see Section 2.5.2).

Recruitment difficulties during the project led to the consideration of a number of changes to eligibility conditions. Eventually only one minor change was made; we decided to increase the maximum number of digital technologies a firm could use from 2 to 4. In practice this proved minor allowing another 4-6 businesses into the programme. Of more potential importance were the smaller than desired cohort sizes and the changes this necessitated to the randomisation process.

In practice, recruitment was undertaken as follows: LUMS ran a workshop for the other delivery partners to discuss what worked and didn't work for them regarding recruitment. They also provided a series of tools for use as appropriate.

Approaches varied between the organisations with reliance being placed on a mix of advertising, mailshots to businesses known to each organisation and from lists either purchased from 3rd parties or created by them, promotions to stakeholders and business support organisations (inc. Growth Hubs). Channels used included websites, newsletters and social media. Some targeted advisers to identify prospects. This methodology proved the most successful. Both Enterprise First and NBV engaged the Family Business Network to help with recruitment, although without any success. LUMS also used the Family Business Network, with some limited success. Tedco created video recordings, typically 90 seconds, to promote the programme on their website and social media.

Recruitment activities by the partners elicited 401 Expressions of Interest which once processed resulted in 228 offers being made, 57% of the number of Expressions of Interest. 213 of the offers were accepted, 76% of the target we set ourselves. All the filtering was undertaken by the partners and involved contacting businesses that had expressed an interest. The exchange involved:

- Confirmation that the business met the eligibility criteria of:
    - being a family business;
    - an SME employing less than 50 employees; and
    - actively using no more than two from the list of 'technologies'. This was later increased to four.
- A description of the programme content, timings and that it involved online engagement.
- An explanation of the trial.

Offers were made to those businesses that met those criteria. The process was thorough, with calls lasting 20 minutes or more, and effective in enabling partners and 'applicants' to proceed where eligibility criteria were met and there was a clear interest. This was evidenced by the very high 'acceptance' rate'. Numbers were subsequently affected by business pressures associated with the Pandemic. Following randomisation, 116 participants (54%) were placed in 'Treatment 'and 97 (46%) in 'Control'.

Collectively the delivery partners came up against two main problems: one general and one in a few parts of the country. The general problem has been that businesses were much less certain in their responses than usual, which the delivery partners attribute to the evolving process of coming out of lockdown. Businesses appeared to have less "bandwidth" than usual: they were harder to get hold of, less decisive and more apt to change their minds than we have encountered before. The problem affecting specific areas was that local authorities and LEPs in some areas are trying to 'build back 'with digital programmes which made the field more crowded.

2.5.2 Randomisation

Prior to the start of the recruitment the evaluation team developed a randomisation strategy for all seven cohorts. We planned to randomly allocate recruited firms to either the Treatment or Control group. Five delivery partners covering different regions were involved in the recruitment of participants. Each delivery partner sought to develop cohorts of around

40 participants. Once a group of 5-7 eligible participants had been recruited they were allocated a unique code by the delivery partner and then – using the randomisation framework – allocated to either the Treatment or Control group. Lists of unique codes for the Treatment and Control groups were then passed back to delivery partners and matched with company names.

Recruitment to the trial proved more difficult than anticipated – probably due to the impact of the COVID-19 pandemic. This threatened the viability of the Treatment group in some cases due to the minimum numbers of participants necessary to generate the peer interaction and learning effects which were one of the key aspects of the trial. Randomisation was therefore adjusted in 3 of the 7 cohorts to ensure each Treatment cohort was of viable size to facilitate the desired peer interaction and learning:

- In two cohorts, the initial randomisation produced insufficient numbers in the Treatment group in the North East and North West (cohort 3). The project manager made a second random selection of those participants originally allocated to the Control group to bolster numbers in those two Treatment groups.
- No randomisation was applied in the East Midlands due to the very low numbers recruited (14). Here, all eligible applicants were placed in the Treatment group.

SECTION 3: BASELINE SURVEY ANALYSIS

3.1 Introduction

This section provides a brief overview of baseline survey data. This data was collected using telephone interviews conducted by staff from the Delivery Partners during the project recruitment period September 2020 to May 2021.The baseline survey results provide evidence for the effectiveness of our randomisation approach. Below we provide insights into potential differences in the observable characteristics of firms in the Treatment and Control groups. In this report, we focus on the comparison of the Treatment and Control groups since we made a decision to also focus on this group for our impact analyses (Section 4). Baseline analysis including the matched Comparison group is included in Appendix A.

3.2 Firm characteristics

Comparing a number of firm characteristics suggests no significant differences between the background of the Treatment and Control group participants (Table 3.1). Average employment was 5.6-7.7 employees in each group with some evidence that the Control group had grown slightly faster over the previous year. Around 82-84 per cent of participating firms – all of which were family-owned businesses- had women in their leadership teams with around 11-17 per cent also having members of ethnic minorities in their leadership teams. The lack of systematic differences in firm characteristics between the Treatment and Control group suggests the effectiveness of our randomisation procedure. The randomisation could prevent any systematic differences in the characteristics of firms in the Treatment and Control groups.

Table 3.1: Firm characteristics: Treatment v Control group

	Treatment	Control	T-tests	p-value
	N=102	N=97		
Business age (years)	17.274	16.227	0.400	0.708
Home based business	0.337	0.402	-0.950	0.343
Women in the leadership team	0.843	0.825	0.350	0.729
Ethnic minority in leadership team	0.117	0.175	-1.150	0.252
Part of formal business networks	0.406	0.402	0.050	0.956
Finance from family or friends	0.128	0.072	1.300	0.197
Loan finance from banks	0.510	0.444	0.950	0.350
Other external finance	0.284	0.237	0.750	0.452
External advice during last six months	0.490	0.500	-0.150	0.891
Employment numbers (current)	5.644	7.698	-1.400	0.170
Employment growth (% pa)	3.469	12.567	-0.850	0.391

3.3 Owner-manager characteristics

Comparisons of owner-manager characteristics suggest a rather similar picture with few systematic differences between the Treatment and Control groups. Owner-managers in the Treatment group were more likely to have a degree than those in the Control group, but this was not significant at the 5% level (p=0.08), (Table 3.2)

Table 3.2: Owner-manager characteristics: Treatment v Control group

	Treatment	Control	T-tests	p-value
	N=102	N=97		
Prior management experience	0.515	0.474	0.550	0.570
Owner-manager age (years)	46.456	45.959	0.300	0.758
Degree or higher qualification	0.628	0.505	1.750	0.083

3.4 Ambition profiles

The Treatment and Control groups were also broadly similar in terms of their business ambition, with no systematic differences in the proportion of firms that regarded different types of business objectives as important to their business (Table 3.3).

Table 3.3: Ambition profile: Treatment v Control group

	Treatment	Control	T-tests	p-value
	N=102	N=97		
To build a national and/or international business	0.620	0.505	1.650	0.105
To keep my business similar to how it operates now	0.192	0.158	0.600	0.535
To grow my business rapidly and profitably with a view to exit	0.320	0.368	-0.700	0.479
To develop more professional HR services	0.569	0.478	1.250	0.210
To make more effective use of digital technologies in the business	1.000	0.990	1.050	0.304
To increase the social and environmental benefits of the business	0.782	0.761	0.350	0.718

3.5 Baseline outcomes

As discussed in Section 2.4.1 and 2.4.2, we based outcome measures as well as the individual- and workplace-level moderators, from the psychological variables that form part of the TAM. The measures were based on existing validated measures and adapted to our context of digital adoption training for family business owners. The two primary outcome indicators we used were a measure of technology-use self-efficacy (confidence) and a measure of the intention to adopt technologies. All items were rated on 5-point Likert scales, except the number of digital technologies adopted the by firm, which was a count variable.

To construct the outcome and moderating variables, we calculated the average of all items used to measure the intended outcome, listed in full in Table 2.1 and Table 2.2. Below, we show the descriptive statistics of the constructed outcomes and moderators, as well as the associated Cronbach's alpha values. The latter is a measure of the internal consistency of our scales; it shows how closely related each set of items are as a group. Table 3.4 shows these measures for the combined Treatment, Control and Comparison groups. All Cronbach's alphas are above 0.70, suggesting good internal consistency of the constructed outcomes and moderators.

Table 3.4: Descriptive statistics and Cronbach's Alphas for baseline outcome and moderating variables (N=334)

Variable	Mean	S.D	Cronbach 's alpha	Example item
Primary outcomes				
Technology use self-efficacy	3.3923	0.823	0.920	How confident are you that you can identify where digital technologies will add value to your business?
Behavioural intention to use	4.265	0.957	0.936	To what extent do you agree with the statement: 'I intend to use digital technologies frequently in my business'?
Secondary outcomes				
Perceived ease of use	3.525	1.005	0.935	To what extent do you agree with the statement: 'I find digital technologies easy to use'?
Perceived usefulness	4.477	0.802	0.949	To what extent do you agree with the statement: 'Digital technologies can improve business performance'?
Attitude towards using technologies	4.722	0.525	0.859	To what extent do you agree with the statement: 'Using digital technologies is a good idea'?
Actual system use	3.201	0.973	0.883	How much effort have you put into discussing the introduction of the digital technologies with other members of the business?
Digital technology use	1.78	1.519	N/A	
Moderators				
Affinity for technology	3.438	0.576	0.769	To what extent do you agree of disagree with the following statement: 'I like testing the functions of new technical systems'?
Resistance to change	2.702	0.550	0.873	To what extent do you agree or disagree with the statement: Other member of your business 'have a bad feeling about [adopting digital technologies]'?

In Table 3.5, we present our t-test results testing for differences between the Treatment and Control groups in the baseline values of our outcome variables and moderating variables. The Treatment group displayed significantly higher behavioural intentions to use digital technologies and a higher level of perceived ease of use of digital technologies. The former is one of two primary outcomes, and the latter is one of five secondary outcomes. Randomisation did not appear to have eliminated differences in these measures at baseline. However, since we test various different characteristics, it is expected that some of them may be unbalanced by chance.

Table 3.5: Baseline outcomes: Treatment v Control group

	Treatment	Control	T-tests	p-value
	N=116	N=97		
Primary outcomes				
Technology use self-efficacy	4.152	4.005	1.250	0.214
Behavioural intention to use	4.617	4.397	2.500	0.013
Secondary outcomes				
Perceived ease of use	3.667	3.248	3.150	0.002
Perceived usefulness	4.719	4.600	1.600	0.111
Attitude towards using technologies	4.853	4.778	1.250	0.213
Actual system use	3.000	3.272	-1.200	0.231
Digital technology use	1.353	1.310	0.250	0.793
Moderators				
Affinity for technology	3.406	3.425	-0.250	0.816
Resistance to change	2.714	2.696	0.200	0.828

3.6 Joint orthogonality testing:

Here, we test for balance between Treatment and Control groups by investigating whether baseline firm characteristics, owner-manager characteristics, ambitions and outcomes can jointly predict the probability of assignment to the Treatment group (Table 3.6). To do this, we run a Probit regression of Treatment status on these baseline variables and test for their joint significance; a lack of predictive power indicates that the Treatment and Control groups are similar in terms of observable characteristics. The results indicate that the baseline variables are jointly insignificant in predicting assignment to treatment ($X^2 = 28.89, p = 0.2687$).

Table 3.6 Joint orthogonality tests

VARIABLES	Treatment status
Chi2 test of joint insignificance of baseline variables	28.89
p-value	0.2687
Observations	185

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regression includes all baseline firm-level characteristics, owner-manager characteristics, ambition profiles and target outcomes. These are omitted for brevity. Due to missing data, this test excludes employment growth (firm level characteristic), actual system use (secondary outcome), and resistance to change (moderator). However, even after including these variables in the model and with a smaller sample size, joint insignificance is maintained ($X^2 = 32.22, p = 0.224$).

SECTION 4: FINDINGS FROM THE FOLLOW-ON SURVEY OF TREATMENT AND CONTROL GROUPS

4.1 Introduction

This section presents findings from the follow-on survey administered to firms six months after the end of the treatment period. Again, our focus is on comparing trial participants, i.e., Treatment and Control groups; impact analysis involving the Comparison group is to be conducted at a later date (see Section 5.5). The impact analysis reported here is based on a pre-specified statistical analysis plan and any divergence from that plan is described.

There was considerable attrition in the follow-on survey, with smaller than anticipated numbers of firms responding to the survey. Only 66 of 112 firms in the Treatment group (59%), and 44 of 97 firms in the control group (45%) responded to the follow-on survey[8]. Firms in the Treatment group were more likely to respond to the survey than those in the Control group, but this difference is not significant at the 5% level (t=1.68, p=0.094). Given the extent of non-response, we start our analyses by assessing the degree of survey response bias, or attrition bias, and its potential implications for the analysis and interpretation of trial outcomes.

4.2 Assessing survey response bias

A low number of responses to the follow-on survey can introduce bias into the estimation of treatment effects if survey respondents differ significantly from non-responders or if, among respondents, firms in the Treatment group differ significantly from those in the Control group. We test for these potential biases in three ways.

First, we conduct a two-sample t-test to examine whether, on average, responders differ from non-responders in a number of baseline characteristics, i.e., firm characteristics, owner manager characteristics, business ambitions, and target outcomes (Table 4.1). Second, following Fairlie et al, (2015) and Martinez et al, (2018), we regress attrition status, i.e. response in the follow on survey, on all baseline variables, treatment status and interactions between each baseline variable and treatment status. We then test for joint significance of the interaction terms, where joint insignificance indicates absence of attrition

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[8] In the Comparison group 69 (57.0 per cent) of the 121 firms responded to the follow-on survey.

bias (Table 4.2). Together, these tests provide insight into whether the follow-on survey respondents are broadly typical of the whole group of Treatment and Control firms. The third test we conduct is a two-sample t-test to examine whether, on average, the follow-on survey respondents in the Treatment group significantly differ from those in the Control group in terms of baseline firm characteristics, owner-manager characteristics, business ambitions and target outcomes (Table 4.3). Essentially, this amounts to checking if balance is maintained for the sample as analysed, helping to give insights into whether the pattern of non-response has compromised the benefits of randomisation. We also conduct a joint orthogonality test to examine whether baseline variables are jointly significant in predicting treatment status for the sample as analysed.

Table 4.1 shows that the follow-on survey respondents are broadly similar to non-respondents for most baseline characteristics. However, at baseline, respondents are more likely to be home-based businesses (p=0.05) and to have accessed business finance from sources other than family and friends or bank loans (p=0.01).technologies (p=0.04) More importantly, respondents display greater intentions to use digital technologies (p=0.03) and better attitudes towards u. The latter is one of the target primary outcomes of the programme, so it is crucial that the baseline level of intentions are controlled for in estimating treatment effects. No other differences are significant at the 5% level. The regression-based tests in Table 4.2 show that treatment status has no statistically significant impact on the likelihood of non-response, and the interaction terms between treatment status and baseline characteristics are jointly insignificant. This result suggests the absence of attrition bias resulting from these characteristics. Finally, Table 4.3 shows that on average, respondent firms in the Treatment and Control groups are remarkably similar in terms of baseline firm characteristics, owner-manager characteristics, ambition profiles and primary outcomes. They differ only in terms of one secondary outcome, where firms in the Treatment group have a significantly higher perception of the usefulness of digital technologies at baseline (p=0.03). Again, controlling for the baseline level of outcomes should account for this difference between groups. Results from joint orthogonality tests confirm the similarity in baseline characteristics and outcomes for respondent firms: these variables are jointly insignificant in predicting treatment status ($X^2 = 30.42, p = 0.209$) (Table 4.5).

Taken together, the tests for survey response bias suggest few differences in baseline firm characteristics, owner-manager characteristics and ambition profiles. However, there remains potential bias from baseline differences in two target outcomes. This not only

suggests the need for careful interpretation, but also the importance of including baseline control variables and outcomes in estimating treatment effects.

4.3 Trial results

In this section we present the impact of our treatment on primary and secondary outcomes. Given the smaller than anticipated sample size, we do not analyse mediating and moderating effects. differences in average outcomes between Treatment and Control groups are shown shown in Figure 4.1, and Figure 4.2 compares the distribution of outcomes between groups.

4.3.1 Mean comparisons of differences in outcomes for the Treatment and Control groups

Table 4.4 compares average primary and secondary outcomes of Treatment and Control groups using two-sample t-tests. For the primary outcomes, firms in the Treatment group display significantly greater confidence in using digital technologies (p=0.002) and significantly greater intentions to use digital technologies (p=0.001). The latter result should be treated with caution since the baseline level of intentions to use technologies differed between Treatment and Control groups, and between follow-on survey respondents and non-respondents.

For secondary outcomes, firms in the Treatment group have significantly greater perceptions of the usefulness of technologies (p=0.001) and significantly better attitudes towards using digital technologies (p=0.007). Treatment appears to have increased the perceived ease of use of digital technologies but this is significant only at the 10% level (p=0.076). The treatment appears to have had no impact on other secondary outcomes, i.e., actual system use, and digital technology adoption.

4.3.2 Treatment effects from regression analysis

In this section, we estimate the impact of treatment status, i.e., being in the Treatment group, on the primary and secondary target outcomes using a simple OLS regression model:

$$Outcome_i = \alpha + \beta_1 Treatment_i + \beta_2 Controls_i + \varepsilon_i$$

Where $Outcome_i$ is the primary or secondary outcome of interest, $Treatment_i$ is an indicator variable equal to 1 if the firm is in the Treatment group, and 0 if the firm is in the Control group. Its coefficient, β_1, provides an estimate of the treatment effect. $Controls_i$ is a vector of the full set of baseline control variables, i.e., firm level characteristics, owner-manager characteristics, ambition profiles and the baseline level of $Outcome_i$. [9] Table 4.6 shows the estimated treatment effect for each outcome; regression tables with the full set of control variables are included in Appendix B, and correlation coefficients are provided in Appendix C. As a departure from our pre-specified analysis plan, we do not report the Bonferroni correction to adjust for multiple comparisons: this is only necessary in comparing more than two trial arms, and the current analysis focuses on the Treatment and Control groups only[10]. We also exclude observations with missing data on our outcome variables and covariates, rather than using some form of imputation, as we had sufficient observations to reliably estimate most models.

For each outcome, Table 4.6 presents three models: models with the baseline variables only (model 1), models with the baseline variables and treatment status (model 2) and models with the treatment status only (model 3). This allows us to see how the models' explained variance change with the inclusion of the treatment variable, and whether the treatment effect is affected by the exclusion of baseline control variables.

For the primary outcomes, the regression results show a positive and statistically significant impact of treatment on technology use self-efficacy or confidence: being in the Treatment group raises technology use self-efficacy by 0.47 points on a five-point scale (baseline level

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[9] The only baseline control variable not included is employment growth, due to the marked smaller number of observations for this variable. The baseline level of employment is however included in the models

[10] Experimenting with the Bonferroni correction makes little difference to t-stats of p-values for our two primary outcome measures. With correction these are for confidence t=3.09, rho=0.003; for intention to use 3.74, rho=0.004).

= 4.10). Here, the inclusion of treatment status raises the model's explained variance by about 6 percentage points and the exclusion of control variables raises the treatment effect to 0.51 percentage points. This result suggests that the treatment was successful in raising firms' confidence in their ability to use digital technologies. The treatment also had a statistically significant positive impact on the intentions of firms to use digital technologies. The inclusion of the treatment status variable increases the model's explained variance by about 7 percentage points, but the treatment effect is markedly lower when control variables are included in the model (0.51 points on a five-point scale, baseline average= 4.61) than when they are excluded (0.61 points on a five-point scale). This underlines the importance of the inclusion of baseline controls and outcomes in this model where the outcome differed between groups at baseline: not controlling for these factors would lead to an overestimation of the treatment effect.

For secondary outcomes, the treatment has no significant impact on the perceived ease of use of digital technologies except in the model where control variables are excluded; here the impact is only significant at the 10% level. The treatment, however, has a significant positive impact on firms' perceived usefulness of digital technologies. The inclusion of treatment status increases the explained variance by about 4 percentage points, but the treatment effect is much lower in the model with control variables (0.33 points on a five-point scale, baseline average 3.64) than in the model without control variables (0.44 points on a five-point scale). This suggests the importance of baseline control and outcome variables in helping to mitigate bias related to differences in baseline outcomes. The treatment also improved the attitude of firms towards using digital technologies. Here also, the inclusion of treatment status increases explained variance by about 4 percentage points, and the treatment effect in models with baseline controls is lower (0.21 points on a five-point scale, baseline average=4.84) than in models without these controls (0.24 points on a five point-scale). This may partly reflect some degree of attrition bias related to the difference in baseline attitudes between follow-on survey respondents and non-respondents, (Table 4.1). Again, this emphasizes the importance of the baseline control variables. The treatment appears to have had no significant effects on the other secondary outcomes, namely perceived ease of use of technologies and adoption of digital technologies. There were insufficient observations to estimate the impact of treatment on actual system use.

Overall, the mean comparison tests and the regression analyses suggest a robust impact of the programme on building firms' technology use self-efficacy, which encompasses confidence in their ability to identify relevant digital technologies, to create the conditions necessary for using digital technologies in their firms, and to use these technologies. The treatment had a positive influence on firms' intentions to use digital technologies, attitudes towards using technologies, and perceived usefulness of technologies.

It is worth noting that, as discussed in Section 2.5.2, randomisation was not applied to firms in the East Midlands due to the very low numbers recruited, such that all eligible applicants in the East Midlands were placed in the Treatment group. In our analysis, we exclude these firms from the sample. However, we show in Appendix D that our main results are remarkable similar even when these firms are included in the sample.

Table 4.1: Attrition tests- t-tests of baseline characteristics of follow-on responders and non-responders: Treatment and Control groups

	Responder N=98	Non-responder N=101	t-statistic	*p_value*
Firm characteristics				
Business age (years)	15.43	18.06	-0.95	0.35
Home based business	0.30	0.44	-2.00	0.05
Women in the leadership team	0.86	0.81	0.85	0.39
Ethnic minority in leadership team	0.14	0.15	-0.10	0.91
Part of formal business networks	0.45	0.36	1.40	0.17
Finance from family or friends	0.12	0.08	1.00	0.31
Loan finance from banks	0.51	0.45	0.90	0.36
Other external finance	0.18	0.34	-2.50	0.01
External advice during last six months	0.50	0.49	0.15	0.89
Employment numbers (current)	6.17	7.11	-0.65	0.53
Employment growth (% pa)	12.67	2.71	0.95	0.35
Owner-manager characteristics				
Prior management experience	0.56	0.44	1.70	0.09
Owner-manager age (years)	46.35	46.08	0.15	0.87
Degree or higher qualification	0.54	0.59	-0.75	0.45
Ambition				
To build a national and/ or international business	0.58	0.55	0.40	0.70
To keep my business similar to how it operates now	0.18	0.17	0.20	0.84
To grow my business rapidly and profitably with a view to exit	0.41	0.28	1.80	0.07
To develop more professional HR practices	0.58	0.48	1.45	0.15
To make more effective use of digital technologies in the business	0.99	1.00	-1.00	0.31
To increase the social and environmental benefits of the business	0.80	0.74	1.00	0.32

Primary outcomes				
Technology use self-efficacy	4.07	4.09	-0.15	0.88
Behavioural intention to use	4.61	4.41	2.20	0.03
Secondary outcomes				
Perceived ease of use	3.39	3.54	-1.10	0.27
Perceived usefulness	4.72	4.60	1.60	0.11
Attitude towards using technologies	4.88	4.76	2.05	0.04
Actual system use	3.05	3.22	-0.75	0.46
Digital technology use	1.41	1.26	0.90	0.37
Moderators				
Affinity for technology	3.35	3.48	-1.65	0.10
Resistance to change	2.67	2.73	-0.65	0.52

Note: The number of observations are lower for Employment growth (75 responders and 70 non-responders) and Actual system use (37 responders and 36 non-responders)

Table 4.2: Attrition bias tests: regression based tests for attrition bias

	(1)
VARIABLES	Non-response, Treatment and Control groups
Treatment	0.301
	(1.275)
Chi2 test of joint insignificance of interactions between Treatment group and covariates	25.67
p-value	0.425
Observations	129

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regression includes all baseline firm-level characteristics, owner-manager characteristics, ambition profiles and target outcomes, as well as the interactions between these and treatment status. These are omitted for brevity.

Table 4.3: Two-sample t-test of baseline characteristics of follow on respondents: Treatment v Control groups

	Treatment N=57	Control N=44	t_value	*p_value*
Firm characteristics				
Business age (years)	18.070	18.046	0.000	0.995
Home based business	0.368	0.522	-1.550	0.123
Women in the leadership team	0.825	0.795	0.350	0.714
Ethnic minority in leadership team	0.141	0.159	-0.250	0.795
Part of formal business networks	0.386	0.318	0.700	0.485
Finance from family or friends	0.087	0.068	0.350	0.722
Loan finance from banks	0.473	0.409	0.650	0.522
Other external finance	0.386	0.273	1.200	0.236
External advice during last six months	0.473	0.512	-0.350	0.711
Employment numbers (current)	6.357	8.068	-0.650	0.509
Employment growth (% pa)	-1.153	7.854	-0.700	0.474
Owner-manager characteristics				
Prior management experience	0.421	0.455	-0.350	0.740
Owner-manager age (years)	46.107	46.045	0.050	0.979
Degree or higher qualification	0.632	0.545	0.850	0.387
Ambition				
To build a national and/or international business	0.590	0.500	0.900	0.378
To keep my business similar to how it operates now	0.197	0.137	0.800	0.432
To grow my business rapidly and profitably with a view to exit	0.285	0.279	0.050	0.943
To develop more professional HR services	0.473	0.477	-0.050	0.972
To make more effective use of digital technologies in the business	1.000	1.000	.	.
To increase the social and environmental benefits of the business	0.755	0.728	0.300	0.760

Primary outcomes				
Technology use self-efficacy	4.158	3.997	1.050	0.301
Behavioural intention to use	4.495	4.313	1.350	0.178
Secondary outcomes				
Perceived ease of use	3.691	3.341	1.900	0.061
Perceived usefulness	4.702	4.478	2.100	0.037
Attitude towards using technologies	4.790	4.712	0.800	0.432
Actual system use	3.076	3.462	-1.150	0.261
Digital technology use	1.158	1.387	-0.950	0.354
Moderators				
Affinity for technology	3.519	3.433	0.700	0.474
Resistance to change	2.768	2.678	0.750	0.446

Note: The number of observations are lower for Employment growth (47 in the Treatment group and 30 in the Control group) and Actual system use (26 in the Treatment group and 13 in the Control group

Figure 4.1: Average outcomes: Treatment v Control groups
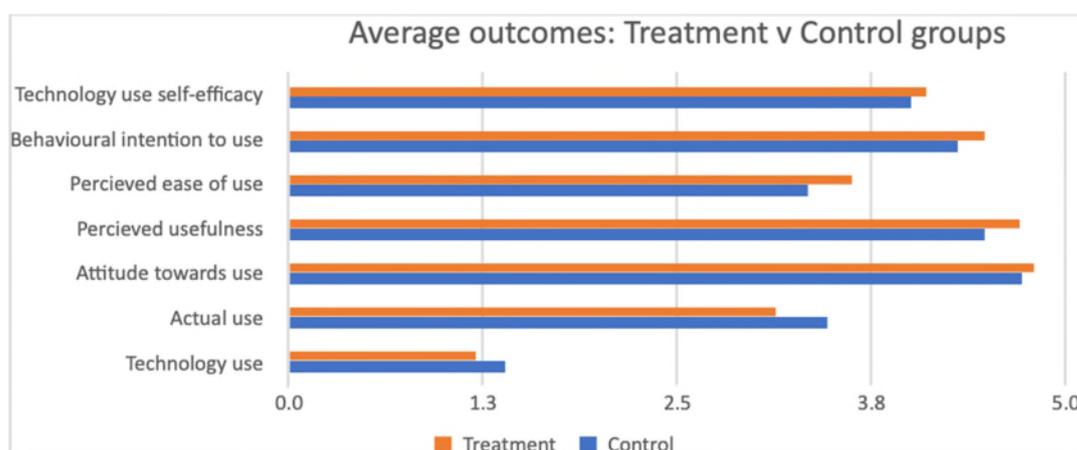
Notes: Technology use is measured as the average number of technologies that were not used at baseline but were used at follow-on, i.e., average number of technologies adopted. All other outcomes are measured as averages of 5-point Likert scales (see section 3.5).

Figure 4.2: Density distributions of outcomes: Treatment and Control groups

Density distributions of outcomes: Treatment and Control groups

Treatment group
Control group
Kernel density estimates, epanechnikov function, bandwidth = 0.5
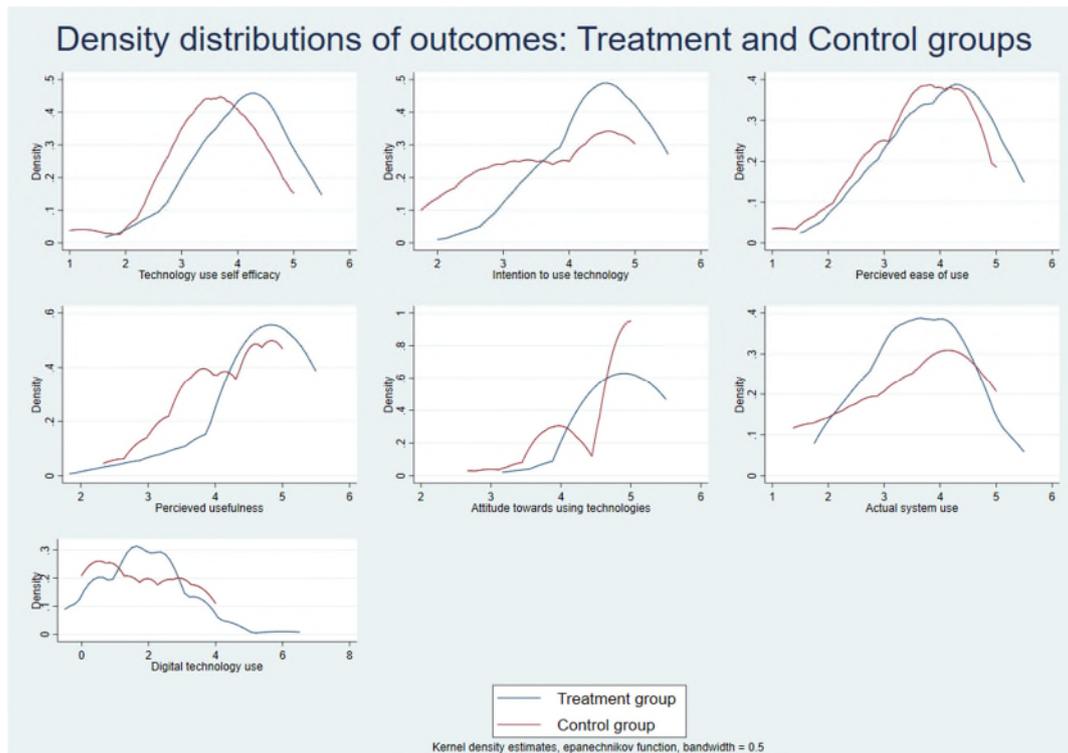
Table 4.4: Treatment effects for primary and secondary outcome measures: two sample t-tests

	Treatment	Control	t-value	p-value
	N=57	N=44		
Primary outcomes				
Technology use self-efficacy	4.111	3.599	3.200	0.002
Behavioural intention to use	4.413	3.801	3.450	0.001
Secondary outcomes				
Perceived ease of use	3.994	3.667	1.800	0.076
Perceived usefulness	4.678	4.242	3.350	0.001
Attitude towards using technologies	4.889	4.652	2.750	0.007
Actual system use (N=21,11)	3.619	3.511	0.300	0.768
Digital technology use	1.895	1.659	0.900	0.380

Table 4.5: Joint orthogonality tests for the final sample analysed

VARIABLES	Treatment status
Chi2 test of joint insignificance of baseline variables	30.42
p-value	0.2089
Observations	185

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regression includes all baseline firm-level characteristics, owner-manager characteristics, ambition profiles and target outcomes. These are omitted for brevity. Due to missing data, this test excludes employment growth (firm level characteristic), actual system use (secondary outcome), and resistance to change (moderator). However, even after including these variables in the model and with a smaller sample size, joint insignificance is maintained ($X^2 = 33.82, p = 0.1719$).

Table 4.6: The Effect of Treatment on primary and secondary outcomes: OLS regression models of Treatment vs Control groups

		(1)	(2)	(3)
Outcome		**Control variables only**	**Control variables and treatment effect**	**Treatment effect only**
Primary Outcomes				
Technology use self-efficacy	Treatment	-	0.47**	0.51***
	S.E		(0.20)	(0.17)
	Observations	87	87	95
	R-squared	0.21	0.27	0.10
Intention to use technologies	Treatment	-	0.51***	0.61***
	S.E		(0.18)	(0.18)
	Observations	90	90	96
	R-squared	0.38	0.45	0.11
Secondary outcomes				
Perceived ease of use of technologies	Treatment	-	0.22	0.33*
	S.E		(0.19)	(0.19)
	Observations	93	93	101
	R-squared	0.46	0.47	0.03
Perceived usefulness of technologies	Treatment	-	0.33**	0.44***
	S.E		(0.14)	(0.13)
	Observations	94	94	101
	R-squared	0.39	0.43	0.10
Attitude towards using technologies	Treatment	-	0.21**	0.24**
	S.E		(0.09)	(0.09)
	Observations	94	94	101
	R-squared	0.29	0.33	0.07
Digital technology use	Treatment	-	0.07	0.24
	S.E		(0.26)	(0.27)
	Observations	94	94	101
	R-squared	0.41	0.41	0.01

we could not run a model for actual system use (secondary outcome). Digital technology use is measured as the number of
technologies that were not used at baseline but were used at follow-on, i.e., number of technologies adopted. Here, using an
ordered probit model produces qualitatively similar results. All other outcomes are measured as averages of 5-point Likert
scales (see section 3.5). Control variables omitted for brevity.

Due to non-response from some firms in both Treatment and Control groups, there are missing observations for the two
primary outcomes i.e., technology self-efficacy and intentions to use technology. The missingness stems from non-response
from firms on one or more of the component questions that make up the aggregate outcome. There is a possibility that
omitting these firms may influence the treatment effects, but any bias is likely have caused an underestimate of the treatment
effect, rather than an overestimate. This is because four out of five omitted firms from the Treatment group consistently
scored 4 or 5 (on the five point scale) for those component questions they did respond to. On the other hand, one of the two
omitted firms from the Control group consistently scored 3 or less (on a five point scale) for those component questions they
responded to. Overall, however, we expect any bias to be negligible given the very few observations are omitted.

4.4 Programme participation and attendance

Programme participation and attendance varied between delivery locations but the more
pronounced difference was between the Treatment and the Control groups. The content
was made available to both groups at the same timed intervals. Attendance by Treatment
Group members at online sessions was generally governed by the day-to-day demands on
the businesses, although it should be noted that several members of the Treatment Group
did not attend any sessions. The lack of peer relations, and the lack of an event to provide
a focus is associated with the much lower engagement with the materials in the Control
Group members. Information on Control Group engagement was drawn from on-line
diagnostics, which monitored whether the online resources were opened or not but did not
gather further information.

**Table 4.7: Participation and engagement by cohort; Treatment Group and Control
Group**

Cohort	1.1 - LUMS	1.2 - LUMS	1.3 - LUMS	2.1 - EF	2.2 - BW	3 - NBV	4 - Tedco	Total	%
Treatment Group									
No. participated in 0 programme elements	0	1	3	3	0	4	8	19	17%
No. participated in 1 programme element	0	0	0	4	6	0	0	10	9%
No. participated in 2 programme elements	0	0	1	0	2	1	1	5	4%
No. participated in 3 programme elements	1	1	1	0	2	0	0	5	4%
No. participated in 4 programme elements	0	4	0	0	0	1	0	5	4%
No. participated in 5 programme elements	0	0	3	1	1	0	1	6	5%
No. participated in 6 programme elements	0	1	1	5	0	3	3	13	12%
No. participated in all programme elements	10	5	13	4	7	5	5	49	44%
Total	11	12	22	17	18	14	18	112	100%
Control Group*									
No. participated in 0 programme elements	7	10	1	6	5		7	36	37%
No. participated in 1 programme element	6	0	0	1	1		0	8	8%
No. participated in 2 programme elements	8	1	3	2	2		1	17	18%
No. participated in 3 programme elements	3	2	5	1	2		0	13	13%
No. participated in 4 programme elements	0	1	0	1	1		0	3	3%
No. participated in 5 programme elements	0	1	0	0	1		1	3	3%
No. participated in all programme elements	1	1	3	8	3		1	17	18%
Total	25	16	12	19	15		10	97	100%

4.5 Qualitative findings

While the positive quantitative treatment effects provide robust evidence of the value of the Evolve Digital intervention on both primary and secondary outcome indicators we also collected some supporting qualitative evidence. Case studies were conducted with a small group (7) of firms in the Treatment group and observations on programme delivery were collected from the Delivery Partners. This data provides additional insight into the operation of the Evolve Digital programme and how it was perceived by those involved.

4.5.1 Delivery Partner perspectives

Each of the Delivery Partners was asked to provide feedback on their view of interactions with the Treatment group. Asked which elements of the programme were most beneficial one Delivery Partner commented:

> 'All of it, they all enjoyed the two days induction and sessions around leadership. A lot of very open and honest feedback was shared and this created a domino effect so more people shared experiences right from the first session'.

> 'The clients were able to reflect on past experiences of how the business had been run in the past and self-reflection on major milestones how things had been handled brought a lot of the past fresh into people's minds. The peer-to-peer learning and other people's observations really shined through in this part … we were giving the clients time and space to reflect and listen to other family business owners about how they would handle/tackle specific issues'.

Another Delivery Partner commented:

> 'My overall impression of the ED programme for the Treatment group was that the attendees who were able to stick with the course found the whole 'journey' really enlightening. Although around half of the delegates had been in business for some years, everyone was really open to new ideas and suggestions presented to them by the course material and / or by their fellow delegates. Once people relaxed, a trust was evident between the group members as well as with the presenter; people became more forthcoming and this was frequently demonstrated by continuation of conversations when the delegates came back to the main meeting from their

breakout groups or later, their Sprint Groups. Confidence grew within the group that they would be able to more easily lead and implement change'.

Participants views on the content of the programme varied (see Section 4.4.2) but one Delivery Partner commented:

'Feedback from a number of the delegates mentioned various tools, templates and concepts they were introduced to, which they will definitely use in their business going forwards, e.g., Johari Window, Value Stream Map, Sprint Project, Hot Spots, SWOT, Timeline, River. One delegate mentioned that he really enjoyed the spaghetti challenge!'

In terms of the outcomes from the programme the positive comments of the Delivery Partners reflect the quantitative outcomes noted earlier. One commented:

'Most participants from Treatment group that joined the live sessions went onto complete a project. Some were large-scale and some were simple but the learnings from SME's implementing these installed a lot of confidence for future digital projects. They all gained a huge amount of confidence for adopting digital for the future'.

Delivery agents reported some significant changes in participating firms. One noted

'One client started off on day one with a big issue around shift management and organising rotas/annual leave for her staff. Another Evolve Digital client shared that they struggled with this for a long time and after a lot of trial and error had started using Breathe HR which they now love and it transformed their business and made it much easier to manage. The next time we were back all together this client said a big thank you for this recommendation and had already started using this and it was really helping them to manage and run the business. This gave the owner a lot of confidence and self belief in what she was trying to do, she went on by the end of the programme to hire x2 new staff members and promoted someone to "management" level to help grow the business and embrace change'.

Another participant was also noted:

> 'Another client found the programme so useful as it allowed him to formulate a plan, he used this plan in meetings with his brother. By the end of Evolve they had moved into e-commerce sales and were looking to do this with a very specific line of jewellery. The business also went on to bring in an ERP system to help with digitalisation of their stock control and financial management. This would not have happened without Evolve Digital'.

In another situation

> 'A complete 'about face' of exit strategy for one business decided due to the course. This business owner is going to 'step back and take stock'. He is going to benchmark this business against competitors to identify areas to work on and formalise the direction. Although he is not new to management training courses, he has found Evolve Digital really powerful in refreshing his management techniques and adopting strategies used by his employer, for use in his own business. He is going to take time to work on the business and has decided that as a result, he will need a senior member of staff. To this end he has made a job offer to a more highly skilled individual than he had originally planned to recruit'.

Another case also suggested the value of a reflective approach to the current approach to doing business:

> 'This business owner has recognised that if the business cannot exist without the owner then there is no satisfactory future and nothing to sell as an exit strategy. He will therefore go through every area of the business to embed technology into the business to overcome the 'knowledge in his head liability which is of no commercial value'. He plans to do this by developing the staff and passing on the knowledge and areas of responsibility. He said that 'embedding technology is a no brainer' and will make the business easier to run! He is going to re-evaluate their current software which they 'have lazily stuck to'. His chief worry is the threat of ransomware and so his first project is to start implementation of a 'disaster recovery plan' with the IT contractor. He was also recommended to use some online video training resources to train staff about the risk of phishing attacks'.

Delivery Partners were also asked to comment on the delivery of the programme and any challenges this presented. Online and operational aspects of the programme were generally thought to work well and effectively but one Delivery Partner noted:

'Getting people to turn up was difficult to manage and sometimes drop out was higher than we anticipated. Sometimes day to day issues within the business stopped people from logging onto sessions on time or not at all. Would this have happened if in person? We will never know but some of the "no shows" were higher than I would have liked. Maybe some of the clients felt they could watch the recordings back and maybe this was a little bit of a get out of jail free card?'

The importance of the style of delivery was commented on by one Delivery Partner:

'The delivery of the workshop was facilitated which means that the attendees generate the conversation and help each other while being guided. The businesses did not respond well to this style and I feel that if it was delivered in a training style using the areas that the businesses wanted to address and guided by the trainer, the other businesses would have interacted better'.

The move to online delivery has some advantages and disadvantages noted by one Delivery Partner:

'Although the programme was online due to the Covid pandemic, If you look at the locations of the delegates for our cohort, there would have been number of delegates travelling some significant distances to attend a physical event. I think, had it been a physical event, potentially participation would have been lower (due to travel times) and would have been more disruptive to the delegates and their businesses'.

And, some of the content of the programme focused on issues which were not always relevant to participants. One Delivery Partner commented:

'The workshops had too much content around lots of styles of leadership models which diverted the businesses away from looking at the hotspots in their business and how technology might be able to help. The programme gave examples of Value stream mapping but did not give solutions/options of technology that could be used to make the process more efficient.'

4.5.2 Treatment group perspectives

Treatment group perspectives on the Evolve Digital programme were sought through a series of case studies undertaken following the Follow-on Survey. Firms were asked in the Follow-on Survey whether they were willing to take part in a further discussion and seven company case studies were then undertaken through online interviews. Case studies were chosen to reflect the full geographical coverage of the Evolve Digital programme and are included in full in Appendix E.

The case studies largely supported the positive overall impression of the quantitative analysis reported earlier. Company A, for example, commented that:

> 'The project "reinforced my view that the business was on the right track and made me more likely to adopt some new technologies'.

As a result of the Evolve Digital programme Company A went on to develop an app for customer use, introduced further staff training and expanded their use of cloud computing.

Similar sentiments were evident from Company D who was very positive about the training provided:

> "It more than met my expectations. It provided insights into more than the digital; looking at the business as a whole".

This participant found the coverage of management and leadership skills to be a relevant and useful feature of the programme. Not least because this allowed her to consider both which new technologies would be relevant to the business and how better use could be made of the technologies the business was already using. She also found that the support provided allowed her to take an informed strategic review of the business. "It was good to just stop and think what is the vision for the business; where are we going, what are we trying to achieve". The training has had clear impacts on the business including allowing the owner to consider how various systems used by the business could be made more efficient.

> "We have actually adopted some of the technologies and we are looking at others"

The emphasis of Company D on the value of the digital training and management and leadership content of the course was echoed by Company E. This business owner was extremely positive about the Evolve Digital programme. As she put it "we wouldn't be where we are now without this support. It's given me so much confidence". As a direct result of their involvement, they have adopted a number of new technologies and made better use of some technologies they were already using. Within this, the training provided enabled the business owners to start undertaking a number of previously outsourced functions themselves and in doing so significantly reduce the business' outgoings. And, as a direct result of the support provided, the owners are about to expand the business to include online sales.

Company D was clear that participation in this programme provided support beyond that concerned with new technologies; not the least of which was the development of management and leadership skills which enabled them to undertake a considered strategic review of the business and gave them the confidence to move forward and pursue their growth ambitions, As the business owner puts it:

> "I have developed lots of leadership skills that I really didn't have before….and to undertake a holistic view of the business and to focus on key aspects that I wasn't doing before."

For other firms the programme was rather over-structured and not focused sufficiently on the needs of participating firms. Company B reported being "frustrated" by the content of the project; feeling that this generally lacked relevance to his specific needs. He commented:

> "It would have been more helpful to ask businesses what are your specific concerns and then address these throughout the project".

Other case study respondents (Company C) felt they had misunderstood the aims of the programme and had wanted more detail on the specific capabilities of alternative digital technologies. They suggested more consideration might usefully have been given to how businesses were recruited with more effort being made to ensure that prospective participants had a full and accurate appreciation of the aims and content of the programme. Company F also felt that neither the scope of the course nor the commitment of time it would involve were clear to her, or other participants, at the time of enrolling on the

programme. As she put it, the content of the programme "wasn't really clear at the beginning".

Similar sentiments were noted by Company G. While this participant was generally positive about the programme, he did feel that a fuller briefing on the content at an early stage would have improved their experience. As he put it:

"I don't want to sound too negative because I really support the initiative and on the whole it was positive, but I just did not come away with a better understanding of how I was going to utilise various digital technologies". He does believe that a fuller briefing before his enrolment on the programme would have provided for more realistic expectations and a better experience for him.

For Company F the diverse nature of the businesses on the programme also reduced relevant networking opportunities. As she put it:

"It's a shame. I could see this programme working really well but it would have worked better with people from more similar industries".

The online nature of the programme reduced its value for some participants. Company A commented for example:

"overall, it was good and it was interesting, but personal interactions are important to me… being able to meet somewhere would have made a difference for me, made it a different experience".

The networking element of the Evolve Digital programme was seen as important by other respondents. For Company B this was the most positive aspect of the project. As he put it "I do think that the networking thing was excellent".

SECTION 5: KEY CONCLUSIONS

5.1 Effects of key challenges during the trial

Run during the Covid-19 pandemic a number of changes to the design and delivery of the Evolve Digital programme were necessary. The most critical of these was the decision to move all training online rather than having face-to-face sessions. As some participants noted this changed the nature of the intervention considerably and, for some at least, reduced the value of the interactive and peer-to-peer learning elements of the programme.

Pressures on businesses during the pandemic also made recruitment to the trial more difficult than anticipated with implications for the size of each of the trial groups and approach to randomisation. This had potential implications in terms of the power and internal validity of the trial. Results from the baseline survey suggest that randomisation worked well in general with few significant differences in the characteristics or outcome variables between the Treatment and Control groups. Attrition in the follow-on survey raised some questions about the internal validity of the trial and potential survey response bias. However, tests for survey response bias suggest few differences in baseline firm characteristics, owner-manager characteristics and ambition profiles. However, there was potential bias from baseline differences in two target outcomes between the treatment and Control groups.

5.2 Overall findings

Despite the operational difficulties of delivering the trial and the changed nature of the intervention, analysis of the follow-on survey suggests a robust impact of the programme on building firms' technology use self-efficacy, which encompasses confidence in their ability to identify relevant digital technologies, to create the conditions necessary for using digital technologies in their firms, and to use these technologies. The treatment also appears to have positively influenced firm's attitudes towards using technologies.

For the primary outcome variables:

- The regression results show a positive and statistically significant impact of the treatment on technology use self-efficacy: being in the Treatment group raises technology use self-efficacy by 0.47 points on a five-point scale relative to a baseline of 4.10 (Confidence Interval: 0.23-0.87). This result suggests that the treatment was successful in raising firms' confidence in their ability to use digital technologies.

- The treatment effect is also significantly increased the intentions of firms to use digital technologies by 0.51 points on a five-point scale relative to a baseline of 4.61 (CI 0.16-0.87) but, as discussed above, this result should be treated with caution.

For secondary outcomes:

- The treatment significantly increased firms' perceived usefulness of digital technologies by 0.33 points on a five-point scale relative to a baseline of 4.71 (CI 0.06-0.61), a result that should again be treated with caution due to baseline differences between the Treatment and Control groups.

- The Treatment also improved the attitude of firms towards using digital technologies by 0.21 points on a five-point scale relative to a baseline of 4.84 (CI 0.03-0.38).

- The treatment appears to have had no significant effects on the other secondary outcomes, namely perceived ease of use of technologies and adoption of digital technologies.

To sum up, the positive effects of the treatment on intentions to use technologies and on perceived usefulness of technologies are encouraging. However, these effects should be treated with caution due to baseline differences between the Treatment and Control groups.

These positive impacts are also reflected in the qualitative responses of both participants in the Evolve Digital programme and those delivering the programme. Both reflected positively on the experience despite the limitations imposed by Covid-19 and the programme moving to online delivery. Some participants also valued the reflective and

participatory aspects of the programme and the opportunity to develop management skills beyond the realm of digital technologies. Other participants wanted a stronger focus on digital technologies themselves.

5.3 Policy Implications

The impacts of the Evolve Digital programme suggest the potential value of short online training courses to support digital adoption in smaller firms, including family firms, which are usually difficult to access. Despite the online setting it was possible to establish social networks between participants – or at least social relationships between sub-groups of participants – that helped and supported both the confidence and intention to implement digital technologies.

The Evolve Digital programme may constitute a cost effective intervention that could be delivered at scale alongside other programmes such as Made Smarter and Help to Grow Digital. Indeed, Evolve Digital might act as a feeder programme for both of these initiatives. It could help firms to develop the necessary confidence and intention to adopt digital technologies for a successful participation in the Made Smarter or Help to Grow Digital programme.

The move to online delivery was an unintended consequence of the Covid-19 pandemic and related restrictions. However, it may have facilitated the success of the programme, as it created a potentially more cost-effective and accessible programme, particularly for firms located in more rural or remote areas. In these areas, travelling to attend face-to-face sessions would have been more time-consuming and costly. In addition, it might have been more difficult for delivery agents to identify interested cohorts of participants in an offline setting

5.4 Lessons for future trials

The operational aspects of the Evolve Digital trial proved complex and required some re-thinking as the trial developed. The pandemic led to slower than anticipated recruitment – often an issue in this sort of trial – and this led to some compromises in randomisation to preserve the viability of the cohorts of treated firms. These compromises led to little effect on the comparison of Treatment and Control groups with baseline characteristics of the two groups remaining remarkably similar.

Uptake of the different sessions which formed the treatment was variable across participants. In part this probably reflected the pressures on firms during the Covid-19 pandemic. Countering this the move on-line may have helped to maintain attendance by reducing travel time etc. Future trials should consider how to maximise attendance throughout the programme sessions.

One issue highlighted by a number of participants in the case studies was that they did not fully understand the nature of the programme before they started. Future trials should be very clear and explicit with potential participants regarding the nature and objectives of the programme.

Attrition between the baseline and follow-on surveys was significant. Only 66 of 112 firms in the Treatment group (59%), and 44 of 97 firms in the control group (45%) responded to the follow-on survey responded to the follow-on survey. This raised the potential for survey response bias and threatened the internal validity of the trial. In the end attrition analysis suggested that the final respondent groups were broadly similar to the wider Treatment and Control groups in most aspects and so internal validity was maintained. Future trials need to consider carefully how to minimise survey attrition and maximise response to the final follow-on survey. Here, we considered incentives as one possible route but, based on our own partners experience with other surveys, discussions with IGL, BEIS, and OMB, our field research partner, dismissed this eventually as we expected them to likely have little significant effect on response.

5.5 Further analyses

This initial report concentrates on the main trial results from the Treatment v Control group analysis. A number of further analyses are possible using the data collected as part of the trial:

a) It would be interesting to compare treatment effects for firms which had different uptake patterns for the treatment itself. This may be restricted by the relatively small number of respondents to the final Follow-on survey.

b) Including the Comparison group in future analysis might provide an indication of the external validity of the trial by suggesting differences between the combined Treatment and Control group and the wider population of family firms.

c) Moderation analysis was planned in the original trial design to explore how treatment effects differed between groups of participants. This remains a possibility but again may be restricted by the small number of final respondents.

d) The datasets will be made available to BEIS to continue tracking the productivity performance of the businesses involved in the trial in the longer term

APPENDIX A: COMPARING BASELINE CHARACTERISTICS OF THE MATCHED COMPARISON GROUP WITH THE TREATMENT AND CONTROL GROUPS.

Firm characteristics

Comparisons between the Treatment and Comparison groups show only one significant difference in firm characteristics – the proportion of firms with women in the leadership team (Table A1). Firms in the Treatment group were significantly more likely to have women in their leadership team, otherwise there were no significant differences in any other firm characteristics.

Comparing firm characteristics between the Control and Comparison group suggests a similar picture with the only significant difference relating to the presence of women in the firms' leadership teams (Table A2). Firms in the Control group were more likely to have women in their leadership team than firms in the Comparison group.

Overall, few systematic differences between the Comparison group and the trial participants suggests that the firms included in the experimental element of the trial – i.e., the Treatment and Control groups – are not very different in terms of their characteristics to firms in the general population of smaller, family-owned firms. This provides some confidence about the generalisability of trial outcomes to the broader group of family-owned firms.

Table A1: Firm characteristics: Treatment v Comparison group

	Treatment	Comparison	T-tests
	N=116	N=121	
Business age (years)	16.16	18.63	-1.047 (p=0.296)
Home based business	0.34	0.28	0.964 (p=0.336)
Women in the leadership team	0.85	0.67	3.378 (p=0)
Ethnic minority in leadership team	0.15	0.18	-0.729 (p=0.466)
Part of formal business networks	0.39	0.44	-0.687 (p=0.492)
External advice during last six months	0.48	0.40	1.3 (p=0.194)
Employment numbers (current)	5.55	7.23	-1.507 (p=0.133)
Employment growth (% pa)	9.42	7.76	0.148 (p=0.882)

Table A2: Firm characteristics: Control v Comparison group

	Control	Comparison	T-tests
	N=97	N=121	
Business age (years)	16.23	18.63	-1.181 (p=0.238)
Home based business	0.40	0.28	1.889 (p=0.06)
Women in the leadership team	0.82	0.67	2.622 (p=0.009)
Ethnic minority in leadership team	0.18	0.18	-0.125 (p=0.906)
Part of formal business networks	0.40	0.44	-0.497 (p=0.138)
External advice during last six months	0.50	0.40	1.486 (p=0.138)
Employment numbers (current)	7.70	7.23	0.316 (p=0.752)
Employment growth (% pa)	12.57	7.76	0.49 (p=0.623)

Owner-manager characteristics:

The question relating to prior management was not asked of the Comparison group as part of a move to shorten the baseline questionnaire for this group. As might be anticipated, we do see some significant differences in owner-manager characteristics between the Treatment and Comparison groups: Owner-managers in the Treatment group are typically younger and better qualified than those in the Comparison group (Table A3). Only the age comparison proves significant however in the Control group v Comparison group comparison (Table A4). Note that questions of business ambitions were also not asked of the Comparison group to shorten the baseline questionnaire for this group.

Table A3: Owner-manager characteristics: Treatment v Comparison group

	Treatment	Comparison	T-tests
	N=116	N=121	
Owner-manager age (years)	45.9	51.8	-3.99 (p=0.000)
Degree or higher qualification	62.1	47.9	2.195 (p=0.029)

Table A4: Owner-manager characteristics: Control v Comparison group

	Control	Comparison	T-tests
	N=97	N=121	
Owner-manager age (years)	46.0	51.8	-3.67 (p=0.000)
Degree or higher qualification	50.5	47.9	0.381 (p=0.704)

Baseline outcomes:

Tables A5 and A6 show that the Comparison group differs significantly from the Treatment and Control groups for most outcomes. In particular, the Treatment and Control groups have significantly higher levels of technology use self-efficacy, greater intentions to use technologies, higher perceptions of the usefulness of technologies and more positive attitudes towards using technologies. On the other hand, the Comparison group has a higher baseline level of adoption, using over two technologies on average, compared to an average of just over one technology adopted by the Treatment and Control groups. The Comparison group also has a higher perception of the ease of use of technologies relative to the Control group.

Table A5: Baseline outcomes: Treatment v Comparison group

	Treatment	Comparison	T-tests
	N=116	N=121	
Primary outcomes			
Technology use self-efficacy	4.101	3.679	3.40 (0.001)
Behavioural intention to use	4.614	3.822	6.20 (0.000)
Secondary outcomes			
Perceived ease of use	3.638	3.634	0.05 (0.975)
Perceived usefulness	4.713	4.153	5.15 (0.000)
Attitude towards using technologies	4.845	4.562	4.15 (0.000)
Actual system use	3.05	3.311	-1.15 (0.248)
Digital technology use	1.362	2.570	-6.30 (0.000)

Table A6: Baseline outcomes: Control v Comparison group

	Control	Comparison	T-tests
	N=97	N=121	
Primary outcomes			
Technology use self-efficacy	4.005	3.679	2.45 (0.015)
Behavioural intention to use	4.397	3.822	4.10 (0.000)
Secondary outcomes			
Perceived ease of use	3.248	3.634	-2.65 (0.009)
Perceived usefulness	4.60	4.153	3.70 (0.001)
Attitude towards using technologies	4.778	4.562	2.75 (0.006)
Actual system use	3.272	3.311	-0.15 (0.868)
Digital technology use	1.310	2.570	-6.05 (0.000)

APPENDIX B: FULL REGRESSION TABLES FOR TREATMENT EFFECTS: TREATMENT V CONTROL GROUPS

B1: Primary outcomes: The Effect of Treatment on technology use self-efficacy and intention to use technologies: OLS regression models of Treatment vs Control groups

VARIABLES	Technology use self-efficacy			Intention to use technologies		
	(1)	(2)	(3)	(1)	(2)	(3)
Treatment		0.47**	0.51***		0.51***	0.61***
		(0.20)	(0.17)		(0.18)	(0.18)
Business age	-0.01	-0.01		-0.01	-0.01	
	(0.01)	(0.01)		(0.01)	(0.00)	
Home-based	0.00	0.18		-0.03	0.15	
	(0.24)	(0.23)		(0.21)	(0.19)	
Female-led	0.32	0.20		-0.07	-0.20	
	(0.22)	(0.25)		(0.19)	(0.21)	
Ethnic-led	-0.02	0.00		0.08	0.09	
	(0.29)	(0.28)		(0.19)	(0.17)	
Business network	0.15	0.15		0.04	0.07	
	(0.21)	(0.21)		(0.17)	(0.17)	
Loans from family/friends	-0.24	-0.15		0.09	0.10	
	(0.41)	(0.40)		(0.49)	(0.48)	
Bank loan/overdraft	0.22	0.17		0.07	0.04	
	(0.21)	(0.20)		(0.17)	(0.17)	
Other finance	-0.04	-0.10		0.17	0.09	
	(0.23)	(0.23)		(0.19)	(0.18)	
External advice	0.44**	0.41**		0.24	0.21	
	(0.21)	(0.20)		(0.18)	(0.17)	
Employment	-0.01	-0.00		0.00	0.01	

	(1)	(2)	(3)	(4)	(5)	(6)
	(0.01)	(0.01)		(0.01)	(0.01)	
Prior business experience	0.11	0.07		0.05	0.04	
	(0.21)	(0.21)		(0.18)	(0.18)	
Entrepreneur age	-0.01	-0.01		-0.01	-0.01	
	(0.01)	(0.01)		(0.01)	(0.01)	
Entrepreneur qualifications	-0.11	-0.13		0.18	0.19	
	(0.26)	(0.24)		(0.21)	(0.21)	
National/international business	0.24	0.20		0.23	0.17	
	(0.21)	(0.20)		(0.17)	(0.15)	
Keep business similar	-0.32	-0.40		-0.01	-0.09	
	(0.27)	(0.28)		(0.27)	(0.25)	
Grow and exit	-0.00	0.04		0.07	0.12	
	(0.27)	(0.26)		(0.23)	(0.22)	
Professional HR practices	0.10	0.17		0.07	0.15	
	(0.21)	(0.19)		(0.20)	(0.19)	
Social/environmental benefits	0.08	0.01		0.30	0.20	
	(0.33)	(0.32)		(0.25)	(0.24)	
Baseline outcome	0.21	0.14		0.52***	0.45***	
	(0.16)	(0.16)		(0.13)	(0.14)	
Constant	2.75***	2.85***	3.60***	1.59**	1.73**	3.80***
	(0.77)	(0.72)	(0.13)	(0.77)	(0.74)	(0.16)
Observations	87	87	95	90	90	96
R-squared	0.21	0.27	0.10	0.38	0.45	0.11

Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Due to low observations in follow on response, we could not run model for actual system use (secondary outcome). Digital technology use is measured as the number of technologies that were not used at baseline but were used at follow-on, i.e., number of technologies adopted. Here, using an ordered probit model produces qualitatively similar results. All other outcomes are measured as averages of 5-point Likert scales (see section 3.5).

B2: Secondary outcomes I: The Effect of Treatment on perceived ease of use of technologies: OLS regression models of Treatment vs Control groups

VARIABLES	Perceived ease of use			Perceived usefulness		
	(1)	(2)	(3)	(1)	(2)	(3)
Treatment		0.22	0.33*		0.33**	0.44***
		(0.19)	(0.19)		(0.14)	(0.13)
Business age	-0.01**	-0.01**		-0.00	-0.01	
	(0.00)	(0.00)		(0.00)	(0.00)	
Home-based	0.05	0.12		-0.14	-0.03	
	(0.16)	(0.16)		(0.18)	(0.18)	
Female-led	0.04	0.02		0.19	0.15	
	(0.21)	(0.22)		(0.18)	(0.17)	
Ethnic-led	-0.12	-0.10		0.13	0.16	
	(0.24)	(0.24)		(0.12)	(0.12)	
Business network	0.43**	0.43**		-0.04	-0.02	
	(0.20)	(0.20)		(0.16)	(0.16)	
Loans from family/friends	-0.37	-0.37		-0.07	-0.07	
	(0.28)	(0.29)		(0.31)	(0.31)	
Bank loan/overdraft	0.20	0.19		0.07	0.03	
	(0.17)	(0.17)		(0.15)	(0.16)	
Other finance	-0.41*	-0.44**		-0.06	-0.11	
	(0.21)	(0.21)		(0.15)	(0.14)	
External advice	-0.02	-0.04		0.01	0.00	
	(0.16)	(0.16)		(0.14)	(0.13)	
Employment	0.01	0.01		-0.00	0.00	
	(0.01)	(0.01)		(0.01)	(0.01)	
Prior business experience	0.23	0.20		0.14	0.11	
	(0.16)	(0.16)		(0.15)	(0.15)	

Entrepreneur age	-0.01	-0.00		-0.00	-0.00	
	(0.01)	(0.01)		(0.01)	(0.01)	
Entrepreneur qualifications	0.15	0.15		0.13	0.12	
	(0.17)	(0.17)		(0.15)	(0.15)	
National/international business	-0.07	-0.09		0.24*	0.21*	
	(0.20)	(0.20)		(0.13)	(0.13)	
Keep business similar	-0.06	-0.10		-0.01	-0.05	
	(0.23)	(0.23)		(0.15)	(0.14)	
Grow and exit	0.12	0.13		0.11	0.11	
	(0.19)	(0.18)		(0.16)	(0.16)	
Professional HR practices	0.47**	0.49**		0.23	0.26*	
	(0.19)	(0.20)		(0.15)	(0.14)	
Social/environmental benefits	-0.44**	-0.48***		-0.02	-0.07	
	(0.17)	(0.17)		(0.19)	(0.19)	
Baseline outcome	0.54***	0.51***		0.57***	0.47***	
	(0.09)	(0.10)		(0.14)	(0.16)	
Constant	2.09***	2.06***	3.67***	1.67*	2.04**	4.24***
	(0.55)	(0.56)	(0.15)	(0.85)	(0.86)	(0.11)
R-squared	93	93	101	94	94	101
Treatment	0.46	0.47	0.03	0.39	0.43	0.10

Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Due to low observations in follow on response, we could not run model for actual system use (secondary outcome). Digital technology use is measured as the number of technologies that were not used at baseline but were used at follow-on, i.e., number of technologies adopted. Here, using an ordered probit model produces qualitatively similar results. All other outcomes are measured as averages of 5-point Likert scales (see section 3.5).

B3: Secondary outcomes II: The Effect of Treatment on attitude towards using technologies and on using technologies: OLS regression models of Treatment vs Control groups

VARIABLES	Attitude towards technologies			Using digital technologies		
	(1)	(2)	(3)	(1)	(2)	(3)
Treatment		0.21**	0.24**		0.07	0.24
		(0.09)	(0.09)		(0.26)	(0.27)
Business age	-0.00	-0.00		-0.01*	-0.01*	
	(0.00)	(0.00)		(0.01)	(0.01)	
Home-based	-0.10	-0.04		-0.02	-0.00	
	(0.13)	(0.13)		(0.32)	(0.33)	
Female-led	0.04	0.01		-0.46	-0.47	
	(0.14)	(0.14)		(0.34)	(0.34)	
Ethnic-led	0.03	0.04		-1.19***	-1.18***	
	(0.09)	(0.10)		(0.38)	(0.39)	
Business network	0.06	0.07		0.63**	0.63**	
	(0.09)	(0.09)		(0.27)	(0.27)	
Loans from family/friends	-0.06	-0.07		0.45	0.45	
	(0.18)	(0.17)		(0.45)	(0.46)	
Bank loan/overdraft	0.00	-0.02		0.30	0.30	
	(0.10)	(0.10)		(0.25)	(0.25)	
Other finance	0.17	0.15		-0.19	-0.20	
	(0.10)	(0.10)		(0.27)	(0.27)	
External advice	0.17*	0.16		0.27	0.26	
	(0.10)	(0.10)		(0.28)	(0.28)	
Employment	-0.00	-0.00		0.01	0.01	
	(0.00)	(0.00)		(0.01)	(0.01)	
Prior business experience	0.08	0.07		0.03	0.02	

	(1)	(2)	(3)	(4)	(5)	(6)
	(0.12)	(0.12)		(0.25)	(0.25)	
Entrepreneur age	-0.01	-0.01		0.00	0.00	
	(0.00)	(0.00)		(0.01)	(0.01)	
Entrepreneur qualifications	0.06	0.05		0.34	0.34	
	(0.10)	(0.10)		(0.28)	(0.29)	
National/international business	0.09	0.07		0.20	0.18	
	(0.10)	(0.10)		(0.31)	(0.30)	
Keep business similar	0.15	0.12		0.38	0.37	
	(0.12)	(0.11)		(0.36)	(0.37)	
Grow and exit	-0.04	-0.02		-0.23	-0.22	
	(0.11)	(0.12)		(0.34)	(0.35)	
Professional HR practices	0.09	0.11		0.59**	0.60**	
	(0.11)	(0.11)		(0.29)	(0.29)	
Social/environmental benefits	-0.06	-0.08		0.08	0.07	
	(0.11)	(0.11)		(0.32)	(0.32)	
Baseline outcome	0.24*	0.21*		-0.47***	-0.47***	
	(0.13)	(0.13)		(0.09)	(0.10)	
Constant	3.72***	3.73***	4.65***	1.88***	1.85**	1.66***
	(0.68)	(0.63)	(0.09)	(0.66)	(0.71)	(0.20)
R-squared	94	94	101	94	94	101
Treatment	0.29	0.33	0.07	0.41	0.41	0.01

Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Due to low observations in follow on response, we could not run model for actual system use (secondary outcome). Digital technology use is measured as the number of technologies that were not used at baseline but were used at follow-on, i.e., number of technologies adopted. Here, using an ordered probit model produces qualitatively similar results. All other outcomes are measured as averages of 5-point Likert scales (see section 3.5).

APPENDIX C: CORRELATION COEFFICIENTS

C1: Correlation Tables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Business age (years)	1.00													
2	Home based business	-0.24	1.00												
3	Women in the leadership team	-0.08	0.01	1.00											
4	Ethnic minority in leadership team	-0.11	-0.13	0.01	1.00										
5	Part of formal business networks	0.18	-0.08	0.10	-0.08	1.00									
6	Finance from family or friends	0.00	-0.12	-0.02	0.02	-0.09	1.00								
7	Loan finance from banks	0.14	-0.15	0.00	0.05	0.13	0.11	1.00							
8	Other external finance	-0.03	-0.02	0.00	0.03	0.12	-0.07	-0.09	1.00						
9	External advice during last six months	0.05	-0.06	-0.04	0.05	0.14	-0.02	0.06	0.02	1.00					
10	Employment numbers (current)	0.30	-0.33	0.03	0.12	0.03	0.06	0.20	0.07	0.09	1.00				
11	Employment growth (% pa)	-0.10	0.07	0.06	0.07	0.00	-0.02	0.05	0.04	0.08	0.12	1.00			
12	Prior management experience	0.00	0.04	-0.07	-0.06	-0.01	0.11	0.12	-0.08	0.14	0.07	-0.02	1.00		
13	Owner-manager age (years)	0.11	0.13	0.04	-0.03	0.20	0.07	-0.02	0.08	0.02	-0.17	-0.16	0.11	1.00	
14	Degree or higher qualification	-0.10	0.09	0.09	0.15	0.04	0.05	-0.01	0.08	0.11	-0.05	-0.05	0.13	-0.08	1.00
15	To build a national and/or international business	-0.01	0.06	-0.09	0.03	0.04	-0.03	0.01	0.01	-0.07	0.00	-0.01	0.10	0.00	0.08
16	To keep my business similar to how it operates now	-0.03	-0.01	0.02	0.08	-0.12	0.07	-0.06	-0.11	-0.08	-0.06	0.01	-0.15	-0.08	-0.02
17	To grow my business rapidly and profitably with a view to exit	-0.13	0.03	0.07	0.09	0.04	0.08	-0.04	-0.11	0.02	-0.07	0.11	0.00	0.22	-0.08
18	To develop more professional HR services	0.00	-0.20	-0.07	0.07	0.10	0.11	0.18	0.04	0.06	-0.15	0.04	0.12	-0.04	-0.08
19	To make more effective use of digital technologies in the business	0.05	0.05	-0.03	0.03	0.06	0.02	-0.07	0.04	0.07	0.01	0.06	0.07	-0.09	0.08
20	To increase the social and environmental benefits of the business	-0.13	0.01	0.07	0.05	0.05	-0.01	0.13	0.02	0.04	0.08	0.05	0.10	0.01	0.01

#	Variable														
21	Technology use self-efficacy	-0.16	-0.04	0.02	0.10	-0.01	0.01	0.01	-0.01	0.11	-0.01	0.05	0.14	-0.08	0.05
22	Behavioural intention to use	-0.18	-0.12	0.05	0.12	0.04	0.03	-0.13	0.03	0.21	0.07	0.06	0.12	-0.17	0.09
23	Ease of use	-0.09	-0.06	-0.08	0.12	-0.11	0.04	0.01	-0.03	0.02	-0.02	-0.03	-0.01	-0.13	0.05
24	Perceived usefulness	-0.10	-0.10	0.06	0.12	0.05	-0.07	-0.05	0.05	0.24	0.12	0.07	0.07	-0.24	0.09
25	Attitude towards use	-0.24	-0.04	0.07	0.08	-0.02	0.00	-0.02	0.02	0.15	0.03	0.05	0.11	-0.13	0.14
26	Actual use	0.10	-0.26	-0.07	0.12	-0.06	-0.04	-0.09	0.11	0.39	0.26	0.04	0.29	0.01	-0.04
27	Technology use	0.07	-0.17	-0.16	0.06	0.02	-0.05	0.17	0.03	0.14	0.12	0.03	0.05	-0.01	0.01
28	Affinity for technology	-0.04	-0.04	0.02	0.10	0.08	-0.01	-0.06	-0.12	0.06	-0.17	-0.02	-0.06	-0.08	-0.08
29	Resistance to change	0.03	-0.32	0.06	0.08	0.02	-0.02	0.14	-0.01	0.05	0.33	-0.08	0.09	-0.14	-0.16
30	Technology use self-efficacy 2	-0.22	0.03	-0.05	0.09	0.06	0.06	0.13	0.04	0.21	-0.05	0.03	0.06	0.00	0.10
31	Behavioural intention to use 2	-0.22	-0.06	-0.08	0.13	-0.01	0.05	0.09	0.10	0.17	0.14	0.04	-0.01	-0.23	0.21
32	Ease of use 2	-0.14	-0.05	-0.08	0.01	0.03	0.06	0.10	-0.14	0.04	0.02	0.00	0.09	-0.12	0.11
33	Perceived usefulness 2	-0.21	-0.04	-0.02	0.17	-0.01	0.04	0.09	0.04	0.17	0.09	0.12	0.10	-0.14	0.20
34	Attitude towards use 2	-0.21	-0.02	-0.11	-0.04	-0.02	0.04	0.03	-0.16	0.18	-0.02	-0.08	0.05	-0.12	0.11
35	Actual use 2	-0.18	-0.15	0.13	0.03	0.08	-0.11	-0.12	0.17	0.13	0.17	0.15	-0.29	-0.28	0.30
36	Technology use 2	-0.08	0.01	0.05	-0.11	0.06	0.11	0.06	0.09	0.15	0.09	0.02	0.01	-0.17	0.08

C2: Correlation Tables, contd

		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
15	To build a national and/or international business	1.00														
16	To keep my business similar to how it operates now	-0.06	1.00													
17	To grow my business rapidly and profitably with a view to exit	0.16	0.07	1.00												
18	To develop more professional HR services	0.09	-0.03	-0.02	1.00											
19	To make more effective use of digital technologies in the business	0.08	0.03	-0.09	0.07	1.00										
20	To increase the social and environmental benefits of the business	0.08	0.00	0.00	-0.19	0.04	1.00									
21	Technology use self-efficacy	0.15	0.01	0.00	0.16	-0.01	0.07	1.00								
22	Behavioural intention to use	0.03	-0.12	0.00	0.25	-0.05	0.12	0.64	1.00							
23	Ease of use	0.05	-0.02	-0.03	-0.02	-0.11	0.03	0.43	0.34	1.00						
24	Perceived usefulness	0.06	-0.01	-0.06	-0.08	-0.04	0.12	0.57	0.70	0.27	1.00					
25	Attitude towards use	0.03	-0.06	-0.04	-0.14	-0.03	0.16	0.52	0.58	0.23	0.53	1.00				
26	Actual use	0.09	0.07	0.01	0.01	0.09	-0.13	0.33	0.43	0.21	0.31	0.31	1.00			
27	Technology use	0.17	0.04	-0.07	0.10	0.02	0.11	0.06	0.15	0.17	0.06	0.13	0.35	1.00		
28	Affinity for technology	0.16	0.04	-0.07	0.06	0.00	-0.03	0.23	0.25	0.31	0.18	0.14	0.25	0.13	1.00	
29	Resistance to change	-0.02	-0.08	-0.03	0.23		0.09	0.07	0.21	0.07	0.01	0.11	0.29	-0.10	0.07	1.00
30	Technology use self-efficacy 2	0.14	-0.17	0.02	0.12		0.10	0.25	0.42	0.34	0.21	0.27	0.26	0.16	0.14	-0.08
31	Behavioural intention to use 2	0.16	0.02	0.07	0.19		0.23	0.29	0.52	0.17	0.44	0.40	0.34	0.12	0.19	0.09
32	Ease of use 2	0.03	-0.03	-0.08	0.26		-0.15	0.34	0.23	0.58	0.10	0.27	0.02	0.03	0.13	0.19
33	Perceived usefulness 2	0.22	0.01	0.05	0.24		0.10	0.38	0.64	0.20	0.54	0.44	0.24	0.15	0.19	0.02
34	Attitude towards use 2	0.09	0.10	-0.04	0.19		0.04	0.40	0.54	0.24	0.40	0.49	0.27	0.17	0.14	0.00
35	Actual use 2	0.20	-0.03	0.09	0.12		-0.15	0.10	0.27	0.31	0.27	0.19	0.52	-0.10	0.15	0.30
36	Technology use 2	0.00	0.04	-0.05	0.17		0.04	0.16	0.23	0.01	0.22	0.22	0.14	-0.37	0.01	0.06

C3: Correlation Tables, contd

		30	31	32	33	34	35	36
30	Technology use self-efficacy 2	1.00						
31	Behavioural intention to use 2	0.64	1.00					
32	Ease of use 2	0.42	0.26	1.00				
33	Perceived usefulness 2	0.57	0.71	0.26	1.00			
34	Attitude towards use 2	0.47	0.58	0.41	0.67	1.00		
35	Actual use 2	0.41	0.37	0.30	0.19	0.05	1.00	
36	Technology use 2	0.19	0.32	0.25	0.24	0.28	0.22	1.00

APPENDIX D: ESTIMATES OF TREATMENT EFFECTS INCLUDING EAST MIDLANDS FIRMS

D1: Attrition tests- t-tests of baseline characteristics of follow-on responders and non-responders: Treatment and Control groups including firms in the East Midlands

	Responder	Non-responder	t-statistic	*p_value*
	N=103	N=110		
Firm characteristics				
Business age (years)	15.049	17.255	-0.850	0.403
Home based business	0.304	0.427	-1.850	0.063
Women in the leadership team	0.864	0.818	0.900	0.363
Ethnic minority in leadership team	0.155	0.164	-0.150	0.870
Part of formal business networks	0.451	0.345	1.550	0.117
Finance from family or friends	0.126	0.082	1.050	0.289
Loan finance from banks	0.514	0.436	1.150	0.256
Other external finance	0.194	0.337	-2.350	0.019
External advice during last six months	0.495	0.486	0.150	0.897
Employment numbers (current)	6.010	7.009	-0.700	0.478
Employment growth (% pa)	14.393	7.178	0.600	0.544
Owner-manager characteristics				
Prior management experience	0.549	0.418	1.900	0.057
Owner-manager age (years)	46.233	45.669	0.350	0.714
Degree or higher qualification	0.534	0.600	-0.950	0.334
Ambition				
To build a national and/ or international business	0.569	0.532	0.550	0.596
To keep my business similar to how it operates now	0.182	0.211	-0.550	0.599
To grow my business rapidly and profitably with a view to exit	0.406	0.296	1.650	0.098
To develop more professional HR practices	0.590	0.472	1.700	0.090
To make more effective use of digital technologies in the business	0.991	1.000	-1.050	0.304

To increase the social and environmental benefits of the business	0.802	0.746	1.000	0.330
Primary outcomes				
Technology use self-efficacy	4.049	4.064	-0.150	0.900
Behavioural intention to use	4.624	4.415	2.400	0.018
Secondary outcomes				
Perceived ease of use	3.406	3.515	-0.850	0.404
Perceived usefulness	4.713	4.615	1.350	0.173
Attitude towards using technologies	4.872	4.761	1.900	0.057
Actual system use	3.059	3.240	-0.800	0.413
Digital technology use	1.408	1.272	0.850	0.394
Moderators				
Affinity for technology	3.380	3.493	-1.400	0.160
Resistance to change	2.678	2.722	-0.550	0.590

Note: The number of observations are lower for Employment growth (79 responders and 77 non-responders) and Actual system use (38 responders and 39 non-responders

D2: Attrition bias tests: regression based tests for attrition bias including East Midlands firms

VARIABLES	(1) Non-response, Treatment and Control groups
Treatment	0.03
	(1.10)
Chi2 test of joint insignificance of interactions between Treatment group and covariates	23.14
p-value	0.570
Observations	140

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regression includes all baseline firm-level characteristics, owner-manager characteristics, ambition profiles and target outcomes, as well as the interactions between these and treatment status. These are omitted for brevity.

D3: Two-sample t-test of baseline characteristics of follow on respondents: Treatment v Control groups including East Midlands firms

	Treatment N=66	Control N=44	t_value	*p_value*
Firm characteristics				
Business age (years)	16.727	18.046	-0.350	0.725
Home based business	0.363	0.522	-1.650	0.100
Women in the leadership team	0.834	0.795	0.500	0.618
Ethnic minority in leadership team	0.167	0.159	0.100	0.917
Part of formal business networks	0.363	0.318	0.500	0.627
Finance from family or friends	0.091	0.068	0.400	0.673
Loan finance from banks	0.455	0.409	0.450	0.641
Other external finance	0.379	0.273	1.150	0.253
External advice during last six months	0.469	0.512	-0.400	0.672
Employment numbers (current)	6.293	8.068	-0.750	0.464
Employment growth (% pa)	6.745	7.854	-0.050	0.945
Owner-manager characteristics				
Prior management experience	0.394	0.455	-0.650	0.532
Owner-manager age (years)	45.416	46.045	-0.300	0.772
Degree or higher qualification	0.637	0.545	0.950	0.345
Ambition				
To build a national and/or international business	0.554	0.500	0.550	0.585
To keep my business similar to how it operates now	0.262	0.137	1.550	0.118
To grow my business rapidly and profitably with a view to exit	0.307	0.279	0.300	0.753
To develop more professional HR services	0.469	0.477	-0.100	0.939
To make more effective use of digital technologies in the business	1.000	1.000	-	-
To increase the social and environmental benefits of the business	0.758	0.728	0.350	0.724

Primary outcomes				
Technology use self-efficacy	4.107	3.997	0.700	0.470
Behavioural intention to use	4.484	4.313	1.250	0.214
Secondary outcomes				
Perceived ease of use	3.631	3.341	1.600	0.111
Perceived usefulness	4.707	4.478	2.250	0.027
Attitude towards using technologies	4.793	4.712	0.850	0.392
Actual system use	3.130	3.462	-1.000	0.331
Digital technology use	1.197	1.387	-0.800	0.418
Moderators				
Affinity for technology	3.530	3.433	0.850	0.394
Resistance to change	2.751	2.678	0.650	0.514

Note: The number of observations are lower for Employment growth (47 in the Treatment group and 30 in the Control group) and Actual system use (26 in the Treatment group and 13 in the Control group

D4: Treatment effects for primary and secondary outcome measures: two sample t-tests including East Midlands firms

	Treatment	Control	t-values and *p*-values
	N=66	N=44	
Primary outcomes			
Technology use self-efficacy	4.083	3.667	3.10 (0.003)
Behavioural intention to use	4.431	4.242	3.80 (0.001)
Secondary outcomes			
Perceived ease of use	3.959	3.667	1.65 (0.100)
Perceived usefulness	4.662	4.242	3.25 (0.002)
Attitude towards using technologies	4.884	4.652	2.75 (0.006)
Actual system use (N=24,11)	3.61	3.511	0.30 (0.776)
Digital technology use	1.833	1.659	0.70 (0.491)

D5: The Effect of Treatment on primary and secondary outcomes: OLS regression models of Treatment vs Control groups excluding firms in the East Midlands

		(1) Control variables only	(2) Control variables and treatment effect	(3) Treatment effect only
Primary Outcomes				
Technology use self-efficacy	Treatment	-	0.48**	0.48***
	S.E		(0.20)	(0.16)
	Observations	96	96	104
	R-squared	0.23	0.30	0.09
Intention to use technologies	Treatment	-	0.56***	0.63***
	S.E		(0.18)	(0.18)
	Observations	99	99	105
	R-squared	0.34	0.42	0.12
Secondary outcomes				
Perceived ease of use of technologies	Treatment	-	0.19	0.29
	S.E		(0.18)	(0.18)
	Observations	102	102	110
	R-squared	0.48	0.49	0.02
Perceived usefulness of technologies	Treatment	-	0.33**	0.42***
	S.E		(0.13)	(0.13)
	Observations	103	103	110
	R-squared	0.36	0.40	0.09
Attitude towards using technologies	Treatment	-	0.19**	0.23**
	S.E		(0.08)	(0.10)
	Observations	103	103	110
	R-squared	0.29	0.33	0.07
Digital technology use	Treatment	-	0.03	0.17
	S.E		(0.25)	(0.26)
	Observations	103	103	110
	R-squared	0.39	0.40	0.00

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Due to low observations in follow on response, we could not run a model for actual system use (secondary outcome). Digital technology use is measured as the number of technologies that were not used at baseline but were used at follow-on, i.e., number of technologies adopted. Here, using an ordered probit model produces qualitatively similar results. All other outcomes are measured as averages of 5-point Likert scales (see section 3.5).

ANNEX E: TREATMENT GROUP CASE STUDIES

Case study A

The project "reinforced my view that the business was on the right track and made me more likely to adopt some new technologies".

Business A, which currently employs 19 people, is an established family business that has been trading for six years supplying wood burning stoves and distributing parts to a range of other firms. The business also provides training for individuals and businesses operating in this quite heavily regulated sector.

One of the business owners enrolled in the Evolve project in part to develop their understanding of the digital marketing opportunities open to them. However, at the time of joining the project he was somewhat unclear about what else the project would provide. As he suggested he was "open to looking and listening to what is new and what is available".

Despite the business already being engaged in some of the social media activities covered in the training, most of the support package including the discussions of digital technologies in areas such as invoicing, using a Cloud database and options for warehousing and stock control were generally found to be relevant and useful. For example, following the training, Business A is now in the process of further progressing the development of an app to support the certification of their trade customers that was already in development prior to the course. Beyond this, one further impact of the training was that it encouraged and enabled the business owner to review the strengths and weaknesses of their employees and to position them more effectively.

The training also clearly added to the business owner's motivation and confidence. As he suggested, the project "reinforced my view that the business was on the right track and made me more likely to adopt some new technologies and processes".

While this business owner was generally very positive about the project, he did note that the WhatsApp group, set up by the project, "didn't really go anywhere". And perhaps more significantly he was very clear that the constraints resulting from Covid related restrictions limited the usefulness of the initiative for him. As he put it "overall, it was good and it was interesting, but personal interactions are important to me… being able to meet somewhere would have made a difference for me, made it a different experience".

Case Study B

This participant was "frustrated" by the content of the project; feeling that this generally lacked relevance to his specific needs. "It would have been more helpful to ask businesses what are your specific concerns and then address these throughout the project".

Business B is a family run silver wholesaler that has been operating for almost 30 years and is now managed by the son of the firm's founder. The business currently has six full-time employees.

In response to the changing retail environment and the reduction in the number of high street jewellery retailers, the business is in the process of developing an online retail sales platform. As this participant put it "the high street of the sixties, seventies, eighties a thing of the past … so this was really about future proofing the business". Gaining a fuller understanding of how a successful online sales presence can best be achieved was the business owner's primary motivation for enrolling on the Evolve Digital project following a word-of-mouth recommendation. As he put it, "I am very confident that I can talk to people about the wholesales side of the industry, but retail was very new to me, especially the digital part of this … I was keen to get as much information as possible to avoid any obvious pitfalls".

This participant was somewhat "frustrated" by the content of the project; feeling that this generally lacked relevance to his specific needs and was often delivered in an abstract, generalised, way. In part he takes responsibility for this, recognising that he should have sought more information about the project before enrolling. As he put it, "I felt that it was too generalised and I would have liked something more specific … here is a case study from a firm that did w, y and z and found that this worked and this didn't … more real practical examples".

From this participant's perspective, the most positive feature of the project was the opportunity to engage with other business owners which provided a number of practically useful contacts. As he put it "I do think that the networking thing was excellent". This is despite the fact that it is clear that the potential for networking and engagement with peers was significantly limited by the Covid related need to deliver the project totally online.

Case Study C

This case study suggests that more consideration might usefully have been given to how businesses were recruited with more effort being made to ensure that prospective participants had a full and accurate appreciation of the aims and content of the programme.

This participant in the Evolve Digital project is the joint owner of a family business concerned with the construction of high-end residential and industrial units. The business was established in 2019 and currently has two full-time employees.

She was encouraged to enrol in the project by a local business network. On joining the project, she hoped to gain a better knowledge and understanding of the digital technologies that might be relevant and useful to business. As she puts it, "I expected it to give me more ideas of content for digital technologies and how they can affect your business, for example, what posts get the most engagement, how hashtags work, how keywords within your website help grow your business, what pitfalls could be present with certain digital technologies".

In general terms she is quite positive about the support provided. As she put it, "I enjoyed the course and the presenters were great and really supportive". That said, she feels that many of her expectations have not been met. With hindsight she now believes that her original understanding of the course's aims and content were inaccurate. In particular, she found that much of the support provided was concerned with management practices associated with the process of adopting new digital technologies rather than a practical understanding of the technologies *per se*.

To date, the support provided has had little impact on mindsets or confidence of the business owners and there are no immediate plans to engage with new digital technologies beyond those they current use.

While the project did not meet her original expectations, she did recognise that aspects, of the support provided were likely to become more relevant in the future as the business grows.

She also felt that the training she received allowed her to develop a number of management and leadership skills, over and above those associated with digital technologies, that will

be useful as the business moves forward and grows. This participant also found that being encouraged to reflect on her own leadership style was interesting and constructive.

However, this participant did not feel that her involvement in the project provided useful contacts with the owners of similar businesses. She believes that this is largely a consequence of the participant businesses spanning a wide range of sectors which meant that their experiences often lacked real relevance to her business.

This participant was also clear that whilst Covid related issues meant that the project had to be delivered on line, it also meant that many of the participating business were also facing significant challenges with their businesses with many of them facing Covid driven challenges.

Case Study D

"It more than met my expectations. It provided insights into more than the digital; looking at the business as a whole".

This case study relates to a business established in 2018. It operates in the hospitality sector providing short-term letting of serviced accommodation.

The business owner enrolled on the programme to gain a better understanding of how digital technologies could help the business become more efficient and generate more sales.

Overall, this participant was very positive about the support provided. She was particularly impressed by the relatively broad scope of the programme which went beyond simply discussing various technologies. "It more than met my expectations. It provided insights into more than the digital; looking at the business as a whole".

This participant found the coverage of management and leadership skills to be a relevant and useful feature of the programme. Not least because this allowed her to consider both which new technologies would be relevant to the business and how better use could be made of the technologies the business was already using. She also found that the support provided allowed her to take an informed strategic review of the business. "It was good to just stop and think what is the vision for the business; where are we going, what are we trying to achieve".

The training has had clear impacts on the business including allowing the owner to consider how various systems used by the business could be made more efficient. "We have actually adopted some of the technologies and we are looking at others"

Despite her generally positive experience, this participant did suggest some aspects of the programme that were not as successful as they might have been. She noted that the businesses involved in the programme spanned a wide range of different sectors. And she felt that the relevance and usefulness of the support might have been improved by the involvement of trainers with an appreciation of the specific technologies most relevant to the individual businesses involved. As she put it, there would be merit in "bringing in experts from different industries to talk about the technologies that have helped them".

She also found that the peer-to-peer elements of programme were very limited in practice. As she put it "that hasn't happened." She suggested that this might well have been improved by the establishment of a 'buddy' scheme amongst the programme participants.

Case study E

"*We wouldn't be where we are now without this support. It has given me so much confidence".*

This business involves the sale of fruit and vegetables from vans. The enterprise has been successfully established over the last 18 months and the owners are now looking to grow the business based on this positive launch.

The owners had no experience of running a business before establishing their current venture and enrolled on this programme because they recognised a need to engage with a range of digital technologies to support the sales and management of their business.

This business owner is extremely positive about the Evolve Digital programme. As she put it "we wouldn't be where we are now without this support. It's given me so much confidence".

As a direct result of their involvement, they have adopted a number of new technologies and made better use of some technologies they were already using. Within this, the training provided enabled the business owners to start undertaking a number of previously outsourced functions themselves and in doing so significantly reduce the business' outgoings. And, as a direct result of the support provided, the owners are about to expand the business to include online sales.

The business owners are clear that participation in this programme provided support beyond that concerned with new technologies; not the least of which was the development of management and leadership skills which enabled them to undertake a considered strategic review of the business and gave them the confidence to move forward and pursue their growth ambitions, As the business owner puts it "I have developed lots of leadership skills that I really didn't have before….and to undertake a holistic view of the business and to focus on key aspects that I wasn't doing before.

Despite the programme being delivered totally on line, this participant also found the peer-to-peer element of the support provided to be effective and useful to them. They suggested that the engagement with businesses in a range of sectors was an interesting and helpful part of the programme. Unlike some participants in the programme, they reported that the WhatsApp group established was providing ongoing engagement with a number of other

business owners As this business owner suggested, "It was lovely to make contact with other small business owners. I found it so useful. We formed a very tight group and we still stay in touch and help each other out".

While the programme did not always meet their specific needs, this participant found that the programme staff responded very positively to requests for specific advice on a one-to-one basis. However, this participant did feel that more routine one-to-one support would have been a useful addition to the programme.

Following their participation in the Evolve Digital programme, this business has been shortlisted as finalists in the 'Innovation in Business Improvement' category of the Leicestershire Live Innovation award scheme.

Case Study F

Although this was not necessarily a problem in practice, neither the scope of the course or the time it would involve were clear to participants at the time of enrolling on the programme. "It would have worked better with people from more similar industries"

This case study relates to a family-owned construction business. The business has no employees but uses subcontractors.

One of the business owners became aware of the Evolve Digital project through her involvement with Business West. The participant was interested in the Evolve programme largely because she and her business partner husband were in the process of setting up a second business which they believed would necessitate the use of new software. As she put it "when I saw the course, I thought that it might help, particularly through networking with similar businesses". While this wasn't what she originally expected from the programme, she was very positive about the management and leadership skills development included in the programme. "I wasn't aware that this would be part of the programme, but it was very very useful for me. My management skills are very poor and the course pointed me in the right direction".

She was also positive about the task-based approach used in the programme. In particular, she felt that making presentations to the group helped her gain confidence in her ability to do this. As she put it "I didn't like doing it, but it made me aware that I need to work on this and I can definitely see value in it".

This participant had two key concerns about the project. First, while this was not a problem for her in practice, neither the scope of the course or the commitment of time it would involve were clear to her, or other participants, at the time of enrolling on the programme. As she put it, the content of the programme "wasn't really clear at the beginning".

Second, while she hoped for useful networking opportunities with similar businesses, in practice she found that few if any of the businesses involved had much in common with hers. Accordingly, she had little contact with business owners during or after the programme was completed. As she put it "It's a shame. I could see this programme working really well but it would have worked better with people from more similar industries".

Case Study G

"The content was interesting and valuable but it was not what I thought it would be about"

This participant in the Evolve Digital programme is the owner of a technology-based business which was founded in 2008 and currently has 15 employees. The business provides consultancy and software development to both the public sector and major private sector businesses.

This participant enrolled on the programme with the expectation that it would inform and enable further growth for the business. However, scope and content of the programme did not match his expectations. In particular, there was little specific focus on the practicalities of identifying and adopting the kinds of technologies he was interested in. As he put it, "the content was interesting and valuable but it was not what I thought it would be about …. there was nothing practical, it was almost like being in a business school…. encouraging people to get beyond a resistance to change – but we are not resistant to change – we just don't know where to start …. I know that I need a CRM system, so what I expected was a day on CRM; here are the top five systems, here is how they work, here is how you can maximise benefits…. Similarly, with online accounting software and digital marketing".

This participant was positive about the networking opportunities and peer-to-peer engagement provided by the programme. Within this, he did not see the diverse range of businesses participating in the project to be a concern. Rather he was clear that the businesses involved face a number of common challenges. However, he recognised that the networking opportunities available were limited in practice by the necessarily online rather than face-to-face delivery of the training. As he put it, "it would have been a very different dynamic had it been delivered in person".

Overall, this participant was generally positive about the programme, but he did feel that a fuller briefing on the content at an early stage would have improved their experience. As he put it, "I don't want to sound too negative because I really support the initiative and on the whole it was positive, but I just did not come away with a better understanding of how I was going to utilise various digital technologies". He does believe that a fuller briefing before his enrolment on the programme would have provided for more realistic expectations and a better experience for him.

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