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Changing Managerial Behavior through Operational Coaching™: A Cluster-Randomized Field Study in UK SMEs

Paolo Ricci[1]*, Marco De Luca[1], Giulia Ferraro[2], Antonio Russo[1]

1. Department of Organizational Leadership and Innovation, Faculty of Economics and Business, University of Naples Federico II, Naples, Italy.
2. Department of Corporate Engagement and Strategic Affairs, Faculty of Management, University of Bologna, Bologna, Italy.

Abstract

This paper presents evidence from a randomized field experiment evaluating the impact of a newly introduced business intervention for managers in small- and medium-sized enterprises (SMEs) in England. Managers (learners) were individually allocated within organizational clusters (companies) either to a treatment condition (265 learners; 40 SMEs), which involved participation in an innovative virtual blended learning program aimed at promoting changes in managerial behavior, or to a non-treatment condition (118 learners; 22 SMEs) receiving no intervention. Results demonstrate that the central aim of shifting managerial behavior toward greater use of an Operational Coaching™ approach was successfully met at a statistically significant level, despite the challenging conditions created by the COVID-19 pandemic. Furthermore, the intervention group firms exhibited positive directional changes in SME productivity indicators. These findings may offer early evidence that changes in managerial behavior can have measurable implications for productivity and economic performance, suggesting the need for further detailed investigation.

Keywords: Learning, Coaching, Management, Behavior, Training

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Corresponding author: Paolo Ricci
E-mail ✉ paolo.ricci@gmail.com

Introduction

The United Kingdom continues to underperform other G7 economies in SME productivity, with a particularly pronounced concentration of low-performing firms at the bottom of the distribution [1]. In response, the Business Basics Fund (Department for Business, Energy and Industrial Strategy, 2019–21) was launched to explore whether management and technology practices commonly used in large organizations could also generate productivity improvements when adopted by SMEs.

A substantial multidisciplinary body of research highlights the growing use of coaching as a developmental practice. However, relatively few studies extend beyond short-term Executive Coaching engagements to examine whether coaching principles can be embedded into everyday managerial behavior. Prior work on coaching effectiveness [2] and evaluation of coaching outcomes [3] has primarily focused on discrete coaching relationships aimed at supporting goal achievement [4-6], strengthening collaborative and team-oriented behaviors [7] and improving team effectiveness [8], as well as increasing self-efficacy and psychological resilience [9]. Additional reported outcomes include enhanced goal attainment, greater resilience, improved workplace well-being, reductions in stress and depression, and better adjustment to organizational change [10], along with higher engagement and well-being [11, 12].

Evidence from the UK [13] indicates that even minor variations in a composite management quality score are strongly associated with productivity outcomes, with a 0.1 increase corresponding to approximately a 9–10% productivity improvement. This suggests that enabling managers to develop coaching capabilities, thereby increasing employee engagement and shifting managerial focus from task execution toward enabling others, could generate substantial productivity gains. Nevertheless, empirical evidence demonstrating that coaching can systematically alter workforce behavior and translate into broader productivity improvements remains limited.

Notion, a long-established, award-winning consultancy specializing in management performance improvement, has over two decades of experience. Within its client work, the company has implemented its STAR Coaching Model® (developed in 2010; [14], which supports the adoption of an Operational Coaching™ management approach. Internal evaluations conducted by Notion (2011–2019) have reported improvements in engagement, performance, and productivity across multiple organizations, including Royal Mail [2011–12], National Express [2014–15], J Sainsbury plc [2015–16], Stepstone [2017–19], and Amino Communications [2019–2022].

The present study, funded by the Business Basics program, investigates whether similar productivity gains can be achieved in SME contexts when managers (learners) adopt comparable coaching-related behaviors. It also evaluates a structured experimental intervention. Two primary objectives guided the research. First, the study examined outcomes associated with applying the STAR® model to promote an Operational Coaching™ style of management within SMEs, particularly its effectiveness in shifting managerial behavior, measured as the proportion of working time spent coaching and leading versus directly managing or performing tasks. Second, it assessed whether such behavioral shifts are associated with measurable productivity improvements.

The paper is organized as follows. It begins with a brief review of literature on workplace control, with particular attention to coaching-based interventions. It then examines how adopting an Operational Coaching™ management style may influence employee behavior and performance. This theoretical foundation informs hypotheses regarding the effects of managerial coaching behaviors on workforce outcomes and overall productivity. The paper then describes the intervention (the STAR® Manager program), which trains managers in a four-step framework (Notion's STAR Coaching Model®) designed to embed Operational Coaching™ practices. Finally, it reports findings from a randomized field experiment assessing the intervention's impact on both individual managers (learners) and SME-level performance outcomes.

Architecture of the STAR® manager program (the intervention)

The design of Notion's STAR® Manager initiative is intended to shape a learning pathway that gradually shifts managerial behavior through small but sustained changes, encouraging more frequent application of Notion's STAR Coaching Model® in everyday workplace interactions and thereby fostering an Operational Coaching™ style of management. The program is delivered through an online platform that is continuously accessible across devices and time. It consists of a structured sequence of 20 modules, each involving the participant (the manager) in different learning tasks built around a cyclical "Learn, Do, Review" approach.

The first half of the program (modules 1–10) concentrates on building practical competence in applying Notion's STAR Coaching Model® to support transition toward an Operational Coaching™ style of management, primarily by increasing the use of inquiry-based dialogue, active listening, and constructive, development-oriented feedback. The latter half (modules 11–20) shifts the focus to embedding these behaviors in practice by enabling managers to intentionally support the development of others, especially direct reports, through planned, structured coaching conversations.

Logic model

Figure 1 presents the logic model, which defines the STAR® Manager program as the intervention input, outlines its delivery process as activities, and specifies the assumed causal chain linking outputs to short-, medium-, and long-term outcomes. A complementary hierarchical framework [15], illustrated in **Figure 2**, was also applied to emphasize measurable outcomes and to assess the costs and benefits associated with the STAR® Manager program, including a formal cost–benefit analysis. Each level in this framework represents a distinct stage of evaluation and captures the extent to which learning is transferred from training into real-world SME practice. In simplified form:

1. A positive participant experience with the program (level 1) increases the likelihood of learning acquisition (level 2).
2. Acquisition of learning (level 2) increases the probability of behavioral and performance change in the workplace (level 3);
3. Observable improvements in behavior and performance (level 3) are expected to translate into measurable organizational benefits at the SME level (levels 4 and 5).

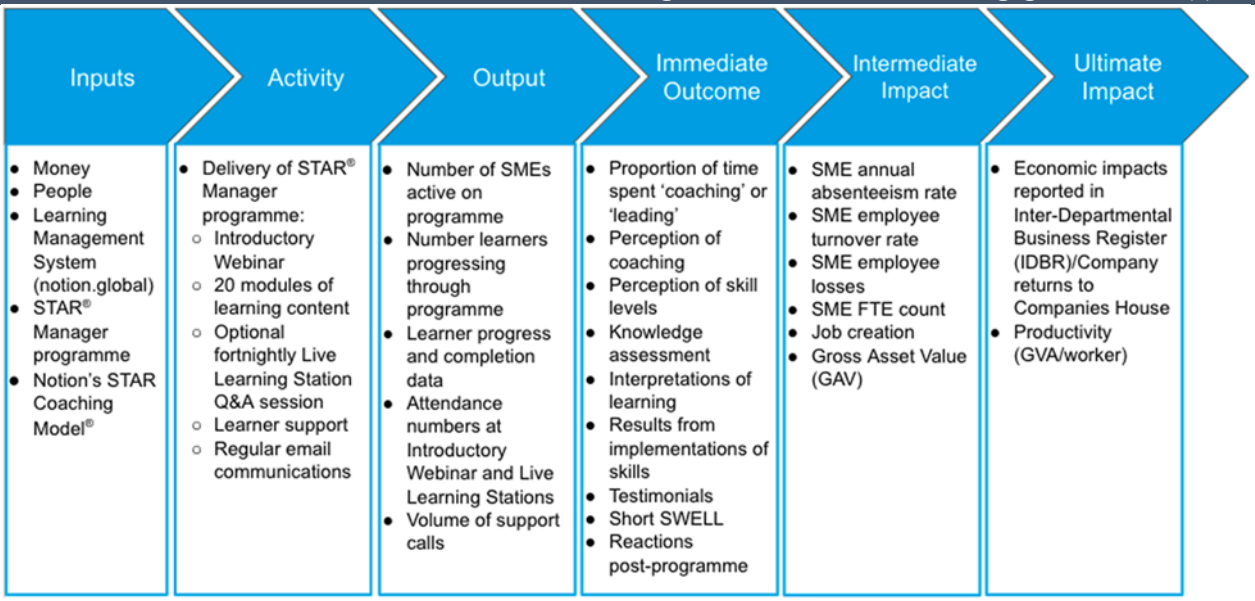

Figure 1. Logic model

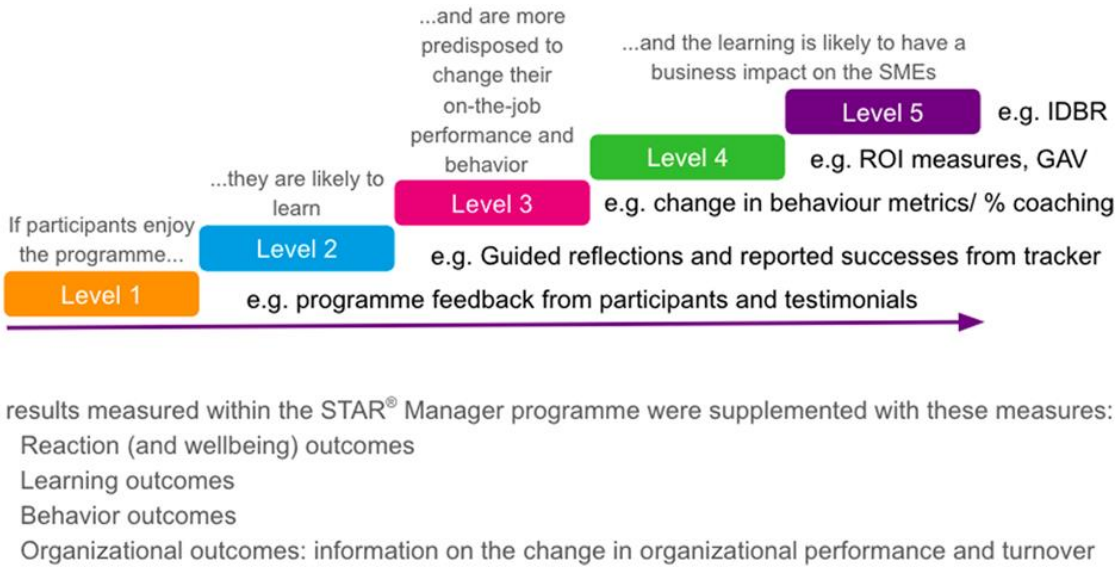

Figure 2. A hierarchical approach.

Materials and Methods

To evaluate the effectiveness of the STAR® Manager program in producing behavioral change, a cluster-randomized controlled trial (RCT) was implemented to provide a robust comparison with a control group. The study was formally registered with the American Economic Association RCT registry (AEA RCT Registry: AEARCTR-0005008 - Adopting Operational Coaching as a Management Style to Drive SME Productivity, 2019). SMEs (as clusters) were recruited, and each organization provided participating managers (individual learners) for inclusion in the trial. Ethical approval was granted by the London School of Economics and Political Science (LSE; Care Policy Evaluation Centre Research Ethics Committee) before commencement of the study.

The central research question guiding the RCT was: "For SMEs (the population), does exposure to a blended Operational Coaching™ learning intervention (the STAR® Manager program) (the Intervention) result in greater uptake of coaching-based management behaviors that improve performance and productivity outcomes (the outcome) compared with no exposure to the program (the control)?"

Analysis was conducted at both individual (manager) and cluster (SME) levels. The evaluation assessed a range of impacts associated with participation in training based on Notion's STAR Coaching Model® delivered through the STAR® Manager program and examined whether the resulting adoption of an Operational Coaching™ style of management—enabled by newly acquired competencies—was associated with measurable changes in outcomes.

Strategic partner networking and sampling

The trial was conducted through a consortium involving Notion, the LSE, and the Coventry and Warwickshire Growth Hub. Recruitment of SMEs was undertaken jointly by Notion and, initially, the Coventry and Warwickshire Growth Hub. To support recruitment, Notion assembled a database of 274 contacts drawn from Local Enterprise Partnerships and Growth Hubs and contacted each to raise awareness of the study and engage SMEs within their networks. Delivery of the STAR® Manager program (intervention) was managed by Notion, while the LSE conducted an independent evaluation of outcomes.

Randomization and blinding

Following enrollment, SMEs were randomly assigned in a 2:1 ratio to either the intervention or control condition using a computer-generated allocation process. Randomization was stratified at the SME level using three variables: organizational size, industry sector, and organizational age (years since incorporation). Allocation was executed by Notion once recruitment for each cohort was complete; however, assignment results were not revealed to SMEs or participating managers until baseline measurements had been collected.

To maintain the required 2:1 distribution of intervention to control groups across both cohorts, Notion ensured balance during allocation. Because of the nature of the intervention (managers' participation in a training program), neither participants nor program deliverers could be blinded to group assignment. In contrast, the independent evaluator (LSE) remained fully blinded to SME identities, individual participants, and group allocation throughout the study period.

Experimental design

The study employed a two-arm, pragmatic, cluster-randomized controlled trial (RCT) conducted across multiple SMEs in England, featuring masked outcome assessment. Participating SMEs were allocated in a 2:1 ratio either to receive Notion's STAR® Manager program or to a control condition. The SME served as the unit of clustering.

Randomization occurred at the cluster level following confirmation of eligibility for the intervention and completion of baseline data collection at both SME (cluster) and individual levels. The assignment was carried out using a computer-generated random sequence, incorporating three stratification variables at the SME level. Upon enrollment into the RCT, SMEs were assigned a sequential alphanumeric identifier. The LSE conducted the randomization process.

After randomization and baseline data collection at both organizational and individual levels, Notion communicated the allocation status to each SME (intervention or control). Each SME independently selected the managers (learners) who would participate in the study. No standardized criteria were imposed for participant selection; instead, SMEs applied their own internal selection procedures. Organizational consent was obtained during recruitment, while individual learner consent was collected during baseline data gathering.

All participating organizations had a financial commitment to the study, as SMEs paid a per-learner participation fee, with identical pricing applied to both the intervention and control groups. SMEs and learners assigned to the intervention condition completed the STAR® Manager program. In contrast, those assigned to the control condition were granted access to the program only after follow-up data collection had concluded. Control SMEs that opted not to proceed with program access were not required to pay for it.

Measures

The primary endpoint of the trial was derived from the proportion of respondents in a self-reported assessment indicating an increased share of daily working time allocated to coaching activities, relative to leading, managing, or task execution. This change was computed by comparing responses from a baseline self-assessment conducted before program commencement with those obtained at the conclusion of the trial period. While not a traditional outcome metric in a strict sense, it serves as an indicator of treatment uptake. An increase in reported coaching time was expected to give rise to additional secondary effects, including:

1. Proportion of time spent leading;
2. Qualitative assessment of shifts in participants' perceptions of coaching.

To better capture how participants utilized the reported increase in coaching time, several additional secondary outcome categories were examined across four domains:

1. Reaction (and well-being) outcomes: participants' subjective responses, emotional reactions, and personal evaluations of their experience with the STAR® Manager program.
2. Learning outcomes: the extent to which defined learning objectives were achieved.
3. Behavioral outcomes: the degree of observable change in participants' workplace behavior resulting from the STAR® Manager program.
4. Organizational outcomes: indicators reflecting changes in overall organizational performance.

Broader societal effects were assessed through measures of workplace well-being (see Short Smith Well-being Questionnaire).

Learner outcome analysis

The analytical sample included all randomized learners and SMEs. Primary outcome analyses were conducted according to an intention-to-treat framework, meaning that all learners with available outcome data were included and analyzed according to their original group allocation. The main analysis set for the primary endpoint included all randomized learners with both baseline and 6-month follow-up data available.

If a participant left their SME during the study period, they were still invited to continue participating in follow-up data collection for the remainder of the trial. Statistical analysis was performed using linear regression models.

SME impact analysis

Further ordinary least squares (OLS) regression models were estimated to identify determinants associated with positive impacts at the SME level. Panel data combining baseline and follow-up observations were examined using OLS techniques. The principal analytical models incorporated covariate-adjusted specifications, including stratification variables (SME characteristics: organizational size, sector, and years of experience), cohort identifiers, and baseline values of the dependent variables when available. For transparency, unadjusted group differences were also reported.

The primary SME-level outcome indicators comprised the number of unexcused employee absences over the preceding 6-month period; mean workforce size (last 6 months); total number of working days (last 6 months); employee turnover rate over the last 6 months (%); total employee departures; and average payroll headcount over the same timeframe. For cost–benefit evaluation purposes, Gross Asset Value (GAV) for SMEs over the 6 months (representing economic impact) was compared against the per-participant cost of delivering the intervention (completion of 20 modules) (representing economic input costs). Treatment of missing data and comparative reporting followed the same procedures used in the primary outcome analysis.

Intervention delivery costs

Total program delivery costs at both SME and per-learner levels were estimated for the 6-month study duration. Intervention costs were derived from material expenses and facilitator inputs required to implement the program, represented as a per-delegate program license cost. It was assumed that SMEs did not need to purchase additional hardware or equipment for participation, as standard office infrastructure was deemed sufficient.

Employee time costs were included based on an assumed working schedule of 233 working days at 7.5 hours per day, with salary benchmarks defined as: Junior – £36,501; Middle – £50,669; Senior – £73,466 [16]. Overhead expenses were estimated at 20% of personnel time costs (Notion data).

The base case scenario used a program license fee of £350 per learner (reflecting discounted trial pricing) and assumed full completion of the 20-module program. Sensitivity analyses were conducted using a higher license fee of £600 per learner, as well as variations reflecting partial program completion. Additional subgroup analyses were also performed as follows:

1. Per SME cost analysis: results were reported both as overall averages and segmented by SME size categories (small, medium, and large).
2. Per learner cost analysis: results were reported both at the aggregate level and disaggregated by managerial level (junior, middle, and senior).

Qualitative data and content analysis from the success tracker

Data obtained from the Success Tracker (including descriptions of achieved success, categorization of success type, and estimated commercial value of outcomes) were treated as qualitative, given that reporting and valuation methods varied across individual learners. Once standardized into a consistent structure aligned with intervention group and time point, the dataset was deconstructed into meaningful units and systematically coded.

Patterns and relevant features were identified across the entire dataset at multiple analytical levels, including between-group comparisons and longitudinal time points. An initial coding framework was developed deductively based on survey instruments, relevant literature, and early insights from the first cohort. Key codes and categories representing recurring concepts were then quantified and examined using content analysis techniques [17].

Return on investment (ROI)

Return on investment (ROI) was calculated as follows: [mean reported commercial value of the STAR® Manager program per learner] divided by [mean cost of delivering the STAR® Manager program to a senior manager].

The mean commercial value per learner was derived from qualitative success narratives submitted by participants at follow-up, calculated as the total reported success value divided by 209 learners.

The fully loaded cost of delivering the STAR® Manager program for a senior manager was defined as: [STAR® Manager program license fee per delegate (trial fee £350; standard fee £600)] + [capital equipment usage cost per

delegate (£25)] + [SME administrative support cost per delegate (£51.28)] + [employee time cost (variable)] + [overhead cost (variable)].

Results and Discussion

Participant flow

Figure 3 presents the flow of participants throughout the study and the attrition rates at each trial stage. For the final analysis, 32 SMEs were assigned to the intervention condition and 15 SMEs to the control condition. At the individual level, 209 learners were included in the intervention arm and 93 learners in the control arm for analytical purposes. All analyses followed original allocation groups (intention-to-treat approach).

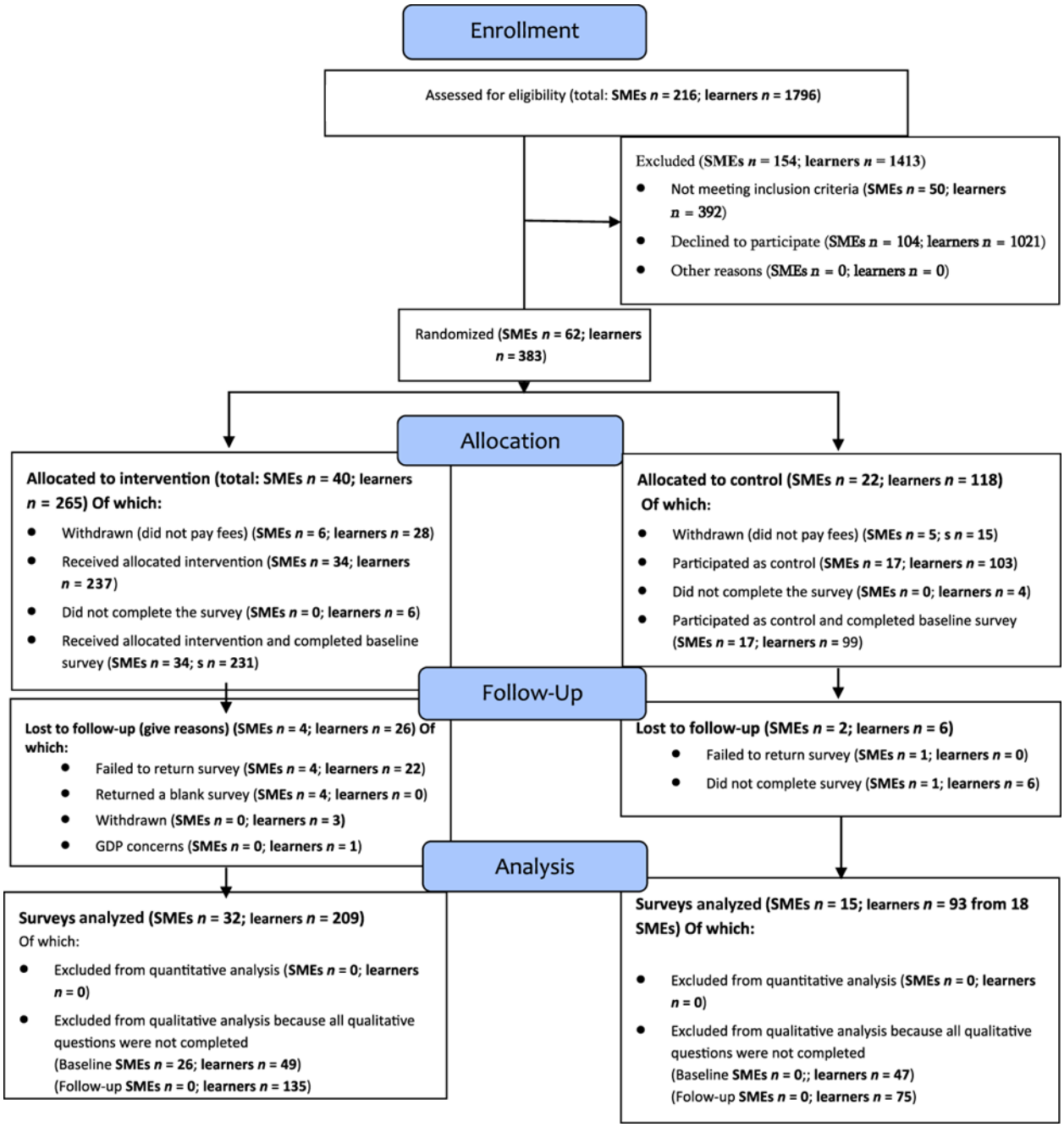

Figure 3. CONSORT flow diagram SMEs and learners

Baseline characteristics

The sample of SMEs and participating managers displayed wide variation across measured attributes, suggesting good coverage of the target population. At the SME level, 55% of firms employed between 11 and 49 staff and operated across diverse sectors, with most organizations having been established for at least 5 years.

At the learner level, participants were predominantly male, white British, aged 35–54, and mainly in middle- or senior-level management roles.

An F-test assessing joint orthogonality of learner-level covariates indicated no meaningful systematic relationship between baseline characteristics and treatment allocation (F test = 2.1, P-value = 0.06). A comparable result was observed for SME-level covariates, which also showed no clear association with assignment status (F test = 2.2, P-value = 0.07).

Primary outcome: proportion of time spent coaching

Respondents were asked to estimate how their working day was distributed across four categories: coaching, leading, managing, and task execution, expressed as percentage shares.

Results show that participants in the intervention group reported allocating a larger share of time to coaching (24.3% [SD: 14.7]) and leading (19.7% [SD: 10.2]) compared with those in the control group (12.6% [SD: 9.9] and 16.2% [SD: 9.6], respectively). Differences between groups were statistically significant, with average marginal effects of 13.8 [SE: 1.75; P < 0.01] and 2.76 [SE: 1.3; P < 0.04;] **(Table 1)**. Sensitivity checks confirmed that these results remained stable under alternative specifications **(Table 2)**.

Table 1. Proportion of time (%) currently spent coaching, leading, managing, and doing during a typical working day, and perception of coaching.

Primary outcome: Coaching		
Stage	**Intervention**	**Control**
Baseline	14.4 (10.7)	14.7 (9.9)
Follow-up	24.3 (14.7)	12.6 (9.9)
Average marginal effect: • Unadjusted: 12.8 • Fully adjusted: 13.8 • SE: 1.75 • P-value: < 0.01		
Leading		
Stage	**Intervention**	**Control**
Baseline	17.2 (11.2)	17.2 (12)
Follow-up	19.7 (10.2)	16.2 (9.6)
Average marginal effect: • Unadjusted: 3.52 • Fully adjusted: 2.76 • SE: 1.3 • p value: 0.04		
Managing		
Stage	**Intervention**	**Control**
Baseline	23.5 (15.3)	24.1 (12.7)
Follow-up	20.9 (11.8)	24.2 (14.4)
Average marginal effect: • Unadjusted: −3.34 • Fully adjusted: −2.21 • SE: 1.63 • p value: 0.18		
Doing		
Stage	**Intervention**	**Control**
Baseline	45 (22.7)	44 (20.2)
Follow-up	35 (20.2)	46.9 (20.3)
Average marginal effect: • Unadjusted: −12.15 • Fully adjusted: −5.54 • SE: 4.9 • p value: 0.71		

Note(s): SD = standard deviation

‡ A random-effects linear specification was used (intervention vs control comparison) to adjust for clustering of individuals within SMEs. The fully adjusted model incorporated stratification variables (SME size, SME industry sector, SME organizational experience, years since incorporation), along with learner characteristics (management level, number of direct reports, number of SME learners, age, gender, ethnicity), cohort indicators, and baseline values of the outcome variable where available. SE = standard error for marginal effect (fully adjusted model). *P-value = fully adjusted model

Table 2. Sensitivity analyses for the main outcomes.

Stage	Intervention N (%)	Control N (%)
Baseline	14.4 (10.7)	14.7 (9.9)
Follow-up	24.3 (14.7)	12.6 (9.9)
Average marginal effect: • Unadjusted: 12.8 • Fully adjusted: 13.8 • Fully adjusted (excluding larger clusters): 14.21 • SE: 2.03 • P-value: < 0.01		
Leading		
Stage	**Intervention**	**Control**
Baseline	17.2 (11.2)	17.2 (12)
Follow-up	19.7 (10.2)	16.2 (9.6)
Unadjusted: 3.52 Fully adjusted: 2.76 Fully adjusted (excluding larger clusters): 2.64 SE: 1.44 P-value: 0.05		
Managing		
Stage	**Intervention**	**Control**
Baseline	23.5 (15.3)	24.1 (12.7)
Follow-up	20.9 (11.8)	24.2 (14.4)
Average marginal effect: • Unadjusted: −3.34 • Fully adjusted: −2.21 • Fully adjusted (excluding larger clusters): −2.76 • SE: 1.85 • p value: 0.14		
Doing		
Stage	**Intervention**	**Control**
Baseline	45 (22.7)	44 (20.2)
Follow-up	35 (20.2)	46.9 (20.3)
Average marginal effect: • Unadjusted: −12.15 • Fully adjusted: −5.54 • Fully adjusted (excluding larger clusters): −5.73 • SE: 2.77 • p value: 0.80		

Note(s): SD = standard deviation

‡ Random-effects linear regression models were applied to account for intra-SME clustering of learners

& Sensitivity test: models were re-estimated using random-effects linear regression (see note ‡), excluding the four largest clusters (control = 21, 25; intervention = 24 and 38)

Secondary outcomes (for learners and SMEs)

Table 3 summarizes the key findings from the study. Although the post-intervention observation window was relatively short and statistical power at the SME level was limited due to the small number of cluster-level observations (47 SMEs), the data still show encouraging directional trends at the organizational level linked to changes in managerial behavior.

Gross Asset Value (GAV) increased across both groups during the study period; however, growth was noticeably stronger among intervention SMEs. Similarly, average full-time equivalent staffing increased from baseline to follow-up in the intervention group, whereas the control group showed a decline in FTEs over the same period.

Both groups experienced reductions in staff turnover at follow-up, which may reflect increased job retention driven by uncertainty and perceived job security during COVID-19-related disruptions. Nevertheless, turnover was lower in the intervention group than in the control group.

Although total staffing levels rose in intervention SMEs, the number of managers within those firms decreased on average. In contrast, the control group showed an increase in managerial headcount. This pattern suggests that managers trained under the intervention may have improved their ability to enhance team output, enabling higher productivity with fewer managerial roles.

Table 3. Summary results for learners and SMEs

Hierarchy level	Outcome	Measure	Summary of results
Level 1	Secondary: reaction	Post-Program Reactions Questionnaire	Participants rated the program as "Good" across 7 dimensions, including: usefulness of overall content, relevance to job role, course structure, diversity of learning activities, quality standards, ease of navigation, and accessibility/availability of the program.
Levels 1 and 2	Secondary: learning	Program completion rate	Completion performed as expected, with 70% of learners meeting compliance with the treatment.
Levels 1 and 2	Secondary: reaction	Short Smith Well-being (SWELL) questionnaire	A positive personality change was observed in the intervention group compared with the control group.
Levels 1 and 2	Secondary: reaction	Organizational development opportunities	No statistically meaningful change in outcomes was found compared with the control group.
Levels 1 and 3	Secondary: learning	Attendance at live learning stations	55% of sessions were attended by SME participants, which aligned with expectations based on Notion practice.
Level 2	Secondary: learning	Knowledge assessment	95% of participants who completed the knowledge tests passed. The mean score was 82% on the Anon™ Coach Assessment and 75% on the Anon™ Manager Assessment (with a 70% pass threshold).
Levels 2 and 3	Secondary: learning	Perception of skill levels	Skills were higher in the intervention group, although the difference between groups was not statistically significant. For example, at follow-up, skill levels in giving feedback, handling difficult conversations, and demonstrating strong communication were higher in the intervention group (39.7% and 43.5%) than in the control group (18.3% and 29%, respectively). These reflect core Anon™ competencies.
Level 3	Primary	Proportion of time spent coaching	Time spent on coaching (24.3%) and leadership (19.7%) was higher in the intervention group than in the control group (12.6% and 16.2%, respectively), with a statistically significant difference between groups **(Table 1)**.
Level 3	Secondary	Perception of coaching	Participants in the intervention group showed a shift toward less negative views of coaching, alongside an increased perception of who can be positively influenced by coaching.
Levels 3 and 4	Secondary: behavior	Outcomes from applying skills	A total of 166 successful outcomes were documented across 62 individuals.
Level 4	SME impact	SME absenteeism (unexcused absences)	No statistically significant differences in outcomes were observed.
Level 4	SME impact	Annual turnover and average employee numbers	At follow-up, staff turnover was lower in the intervention group than in the control group; however, no statistically significant difference remained after adjusting for baseline values.
Level 4	SME impact	Annual employee losses and average payroll headcount	SMEs in the intervention group increased their FTE numbers compared with the control group, although this was not statistically significant after baseline adjustment.
Level 5	SME impact	Cost–benefit analysis: Gross Asset Value (GAV) and intervention delivery costs	SMEs in the intervention group had higher Gross Asset Value (GAV) than those in the control group. Still, the difference was not statistically significant after adjusting for baseline values.

Intervention delivery costs

Figure 4 illustrates the total accumulated participation cost per delegate across the full duration of the program, starting from induction through to completion of module 20. It was assumed that participants engaged with the program alongside their normal working responsibilities over time, and the associated opportunity cost of this time was incorporated into overall

delivery costs. When discounted per-participant fees are included, the total intervention cost per individual (up to completion of module 20) ranges from £892 for junior employees to £1,364 for senior employees.

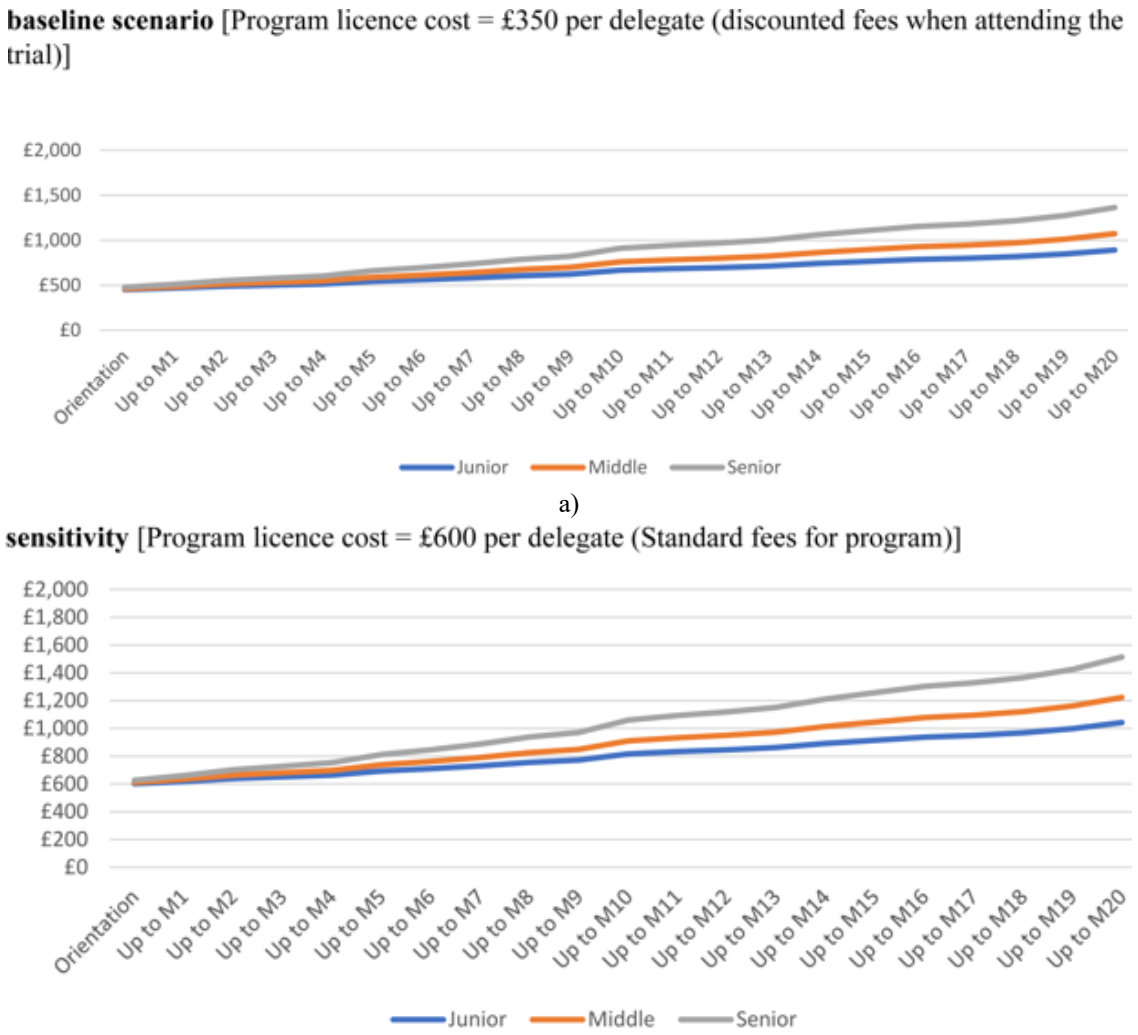

Figure 4. Intervention costs

Qualitative data from the success tracker and ROI analysis

As part of documenting outcomes, learners were invited to record each instance of success and, where feasible, assign an estimated monetary value to the associated organizational benefit. Across 166 recorded success cases, qualitative analysis suggests that participants attributed approximately £19 million in value creation to their organizations, although a substantial portion of this estimate originates from a single respondent.

As noted earlier, beyond the participation fee charged to SMEs for each learner enrolled in the STAR® Manager program (£350 + VAT), we also estimated the total fully loaded cost per participant for the organization. Based on the aggregated value associated with the 166 reported success cases, the implied average return on investment per learner is approximately 74 times the initial SME expenditure on the program. If the program is valued at the upper fee level of £600 + VAT, the estimated ROI remains substantial at around 65 times the initial investment. These figures should be interpreted as indicative approximations derived from qualitative self-reported success narratives rather than as formal cost–benefit estimates embedded within the experimental evaluation. Nonetheless, they are consistent with the broader positive productivity trends observed among intervention SMEs at the 6-month follow-up point.

The findings from the randomized controlled trial indicate that exposure to the blended learning intervention, STAR® Manager, was associated with increased adoption of coaching-oriented management behaviors (Operational Coaching™), which, in turn, supported improvements in performance and productivity within SMEs. When mapped onto the evaluative framework proposed by [15], the evidence suggests that impacts can be identified across all five levels of analysis, both in measurable quantitative terms and in qualitative dimensions.

Within this trial, shifts in managerial awareness regarding their influence on others, together with training in applying the STAR® model to implement an Operational Coaching™ approach, were associated with observable behavioral change among

participants in the intervention group and contributed to stronger performance on primary outcomes. Notably, the process evaluation reported elsewhere indicated that adoption, reach, implementation, and effectiveness did not vary meaningfully across SMEs or learners. This pattern is unlikely to be explained by insufficient statistical power, suggesting that these capabilities are broadly applicable across managerial contexts and leadership situations.

Although coaching has become increasingly popular as a developmental tool, previous observations from Notion suggest that its application has largely remained confined to isolated "sessions" rather than being embedded into everyday managerial behavior. However, evidence from the [13] indicates that even marginal improvements in a composite management score can yield substantial productivity gains (with a 0.1 increase associated with a 9–10% rise in productivity). This implies that enabling managers to adopt the STAR® model as a mechanism for Operational Coaching™ could generate significant productivity gains by strengthening engagement and shifting managerial focus toward enabling employee development and performance improvement.

Existing research on dominant coaching approaches [18] suggests that traditional models emphasize structured coaching interactions focused primarily on the coachee, rather than fostering behavioral change in managers themselves. In contrast, Notion's STAR Coaching Model® represents an Operational Coaching™ framework designed to embed coaching as an ongoing behavioral habit, integrated into routine work interactions and applied in real time to immediate workplace issues.

The STAR® model provides managers with a cognitive framework that supports rapid adoption of an inquiry-driven mindset across diverse situations. Central to Operational Coaching™ is the manager's ability to identify moments when coaching is possible and leverage them through higher-quality questioning techniques. This interactional approach is expected to strengthen social exchange processes, trust, and mutual understanding, thereby contributing to improved performance, productivity, innovation, employee engagement, and retention outcomes.

It has previously been highlighted that much of the existing evidence on coaching effectiveness has focused on specific cohorts engaging in direct coaching relationships with a practitioner to achieve predefined research or performance objectives [19]. Unsurprisingly, given the intensity of this closely supervised 1:1 interaction, improvements are commonly observed in the targeted outcomes.

In contrast, in the present RCT, the statistically significant behavioral changes observed were achieved without reliance on a dedicated or charismatic coach and without guaranteed participant engagement or compliance throughout the trial. Instead, the observed changes emerged entirely through participants' interaction with the STAR® Manager learning program itself, and these outcomes were achieved under exceptionally challenging external circumstances, arguably among the most difficult in recent decades. This represents a novel contribution within coaching research.

The coaching sector frequently emphasizes the development of "coaching cultures" within organizations, often highlighting either the number of managers trained in coaching techniques or the presence of formally trained internal coaches. However, as discussed in earlier referenced literature, the current model of coaching skills development—largely centered on episodic executive coaching conversations—raises questions regarding the extent to which managers can realistically apply such approaches consistently within the constraints of fast-paced, operational work environments, both practically and ethically.

Similarly, while embedding trained coaches within organizations has been shown to benefit individuals and teams, prior evidence also indicates that it faces structural limitations. Internal coaches are typically few in number (often only in the single digits or low tens within organizations). They are usually only able to dedicate limited time to coaching activities, as this is not their primary role. In addition, reliance on external professional executive coaches introduces significant cost barriers that restrict scalability. Drawing on Notion's experience over the past 20 years across multiple organizational contexts, these constraints mean that coaching support typically reaches fewer than 5% of employees; for example, providing coaching to 200 individuals in a workforce of 28,000 does not constitute a scalable or sustainable coaching culture (Notion data).

By shifting the focus away from formal coaching sessions and toward the habitual adoption of coaching-related behaviors in everyday management practice—facilitated through access to the STAR® Manager program and the use of the STAR® model to support an Operational Coaching™ approach—coaching interactions can be expanded substantially. Rather than training managers to conduct structured coaching conversations that are difficult to schedule and maintain, this approach embeds coaching into routine interactions. A genuine coaching-oriented organizational culture exists only when such behaviors are widely adopted by managers across the organization, extending beyond a limited minority and engaging the remaining 95% of employees through an Operational Coaching™ style.

From both a methodological and applied perspective, the RCT proved successful. It included SMEs drawn from across England and represented a wide range of industrial sectors. Allocation between intervention and control groups was balanced with respect to SME size and industry classification. The achieved sample coverage aligned with expectations and was consistent with prior Notion implementation studies. Sectoral reach was comparable across both highly operational and less operational industries. SME size distribution centered around the 11–49 full-time equivalent range, consistent with UK norms [20]. The demographic profile in terms of age and gender was broadly consistent with national workforce statistics [21]. Collectively, these factors support the external validity and generalisability of findings to the English SME context. Overall, the study achieved a robust sample of SMEs and learners, with balanced characteristics and strong data completeness at both

baseline and follow-up stages. The resulting outcomes are therefore methodologically robust and contribute meaningfully to the evidence base on drivers of SME performance improvement. High levels of SME engagement were also evident, reflected in strong program uptake, sustained participation, and high adherence to the intervention protocol.

Nevertheless, the study is subject to several limitations. Some attrition occurred after randomization into the intervention and control conditions, with a higher dropout rate in the control group. This was largely due to the reluctance to pay the participation fee and the requirement to wait until the trial was completed before gaining access to the program.

From this perspective, it is reasonable to infer that, on average, SMEs who remained in the control condition were more inclined to persist in participation and may therefore have been more predisposed to recognize the value of coaching than those who remained in the intervention condition. As a result, any differential attrition between intervention and control groups at the point of allocation is likely to have led to a conservative estimate of the intervention's true effect, potentially understating its impact.

The study was not statistically powered to detect SME-level effects and conducted a relatively short 6-month evaluation window to assess organizational outcomes. Operational delays in data collection, combined with the breadth of variables collected, prevented certain exploratory analyses from being completed. In addition, the study design did not allow for assessment of longer-term sustainability of learner-level outcomes beyond the 1+ year horizon due to overall project time constraints. Broader macroeconomic disruptions, including Brexit and the COVID-19 pandemic, also constrained recruitment capacity and limited sample size. Furthermore, the ROI analysis does not conform to standard economic evaluation protocols within cluster RCT frameworks. Instead, ROI estimates are derived from a restricted set of qualitative success narratives reported by intervention participants.

A substantial body of additional research opportunities remains following completion of this study. The findings demonstrate that participants completing the STAR® Manager program adopt coaching-related behaviors (Operational Coaching™) and adjust their management approach in ways that generate benefits at multiple levels, including the individual manager, team, organization, and client outcomes. Future research should extend the observation period for both SMEs and learners beyond the 6-month timeframe used here to assess whether behavioral changes and associated outcomes persist over longer durations and whether statistically significant effects at the SME level remain stable over time. Further investigation could also examine how managers' behavioral changes are perceived by their teams and direct reports. However, it is important to acknowledge that, since the onset of the COVID-19 pandemic, the broader economic context has undergone multiple structural changes, including flexible furlough arrangements, tier-based local lockdown systems, and shifts in business confidence, which complicate the extraction of clean longitudinal effects from the original sample. Nonetheless, secondary analysis of the dataset may still yield valuable insights into how the pandemic environment influenced participating SMEs and learners, as well as the effectiveness of the STAR® Manager program under such conditions.

Conclusion

This randomized controlled trial carries significant implications. It demonstrates that participation in the STAR® Manager program is associated with increased adoption of coaching-oriented management behaviors (Operational Coaching™) among SME managers, and that such an approach can be implemented in SMEs with comparable ease to larger corporate environments as a mechanism for transforming managerial culture.

Given the substantial body of research indicating a relationship between management quality and organizational productivity, these findings may provide early evidence of the potential economic and productivity gains associated with shifts in managerial behavior toward an Operational Coaching™ style, and they clearly justify further in-depth investigation.

There is also scope to explore strategies for broader dissemination of the STAR® Manager program across UK businesses. As a scalable intervention, this RCT demonstrates that the STAR® Manager program can effectively expose large numbers of managers across diverse organizations and geographical locations to the STAR® model, supporting adoption of Operational Coaching™ as a dominant management approach. Additional research is required to further the causal relationship between the adoption of coaching behaviors and measurable improvements in organizational performance and productivity.

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