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The Learning Impact of Training Programs for Growth-oriented SME Managers: Managerial Competences and Strategic Orientation

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Abstract

The literature on growth suggests that the human capital and intentions of SME managers influence their ability to cope with challenges and critical situations associated with growth processes. While there is a solid rationale for policy support to training programs for growth-oriented SME managers, in spite of the growing body of literature on entrepreneurial and organizational learning (Huber 1991, Leitch and Harrison 2008, Cope and Watts 2000), we still need more research on the outcome of such programs (Marshall et al. 1995, Jones et al. 2013). The objective of this paper is to study whether manager training programs for growth-oriented SMEs lead to the intended learning, reflected in enhanced managerial competences and changed strategic orientation. The paper is based on a longitudinal case study of a Danish nation-wide training program (called

Growth through Management) involving start, mid-term and closure interviews with the enrolled SME managers. Interview results for a group of GTM participants are compared with a control group of non-enrolled managers and we use linear regression to predict learning, both with regards to managerial competences and strategic orientation. In this paper we found that GTM managers improved their managerial competence profile more than the control group. Also on strategic alternatives, the GTM group changed their priorities significantly more than the control group. We see these higher levels of dynamics among the GTM participants as indications of learning.

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Introduction

Entrepreneurship and SME policy programs increasingly focus on economic growth (Autio et al. 2007, OECD 2010, Autio and Rennikko 2015). This growth agenda opens two different avenues for policy intervention: (1) to create more growth oriented new firms through incubation and accelerator programs and (2) to enhance the growth performance of existing firms, particularly SMEs. A number of policy interventions are used for both objectives such as easing access to finance, boosting technology development, creating new market outlets and lifting the growth competences and ambitions of entrepreneurs and managers (Hoffmann 2007, Amezcua et al. 2011).

In this paper we look at growth policy aimed at SMEs, with a particular focus on SME manager training. One of the bottlenecks for advancement of the growth performance of SMEs seems to be the competences and intentions of the managers. Studies have shown that SME managers often abstain from pursuing promising

growth opportunities. The reasons are many. Some relate to the firm and its environment while others relate to human capital, leadership and motivation factors (Storey 1994, Levie and Autio 2013, Wiklund et al. 2003). A significant proportion of the SMEs are run by owner-managers who usually enjoy their core position in the firm which is difficult to maintain in a larger and more complex company. Moreover, many SME owners and managers have a relatively low level of education and training in the business economics and management areas which may lead to hesitation in decision situations involving future growth (EU 2009, OECD 2002). Finally, growth initiatives typically imply running a higher level of risk, at least in a transitional period, which jeopardizes the situation of the owner-managers and core employees in the firm (Stevenson and Jarillo 1990).

These factors have made policy makers realize that enhancement of SME manager competences and growth intentions is important for the future growth performance of existing SMEs, which again have let to the introduction of new training and network programs aimed at growth oriented SME managers. These programs are neither relevant for the large group of SME managers who do not aim for growth and typically run firms in a locked situation, nor for SME managers who already are very competent and ambitious about growth and hence in fact in no need of policy intervention and support (Bager et al. 2015). However, in between these extreme groups a significant proportion of the SME managers share an interest in the further development and growth of their firms but are unsure about their capacity to handle a growth process and run a larger company. These interested but ambivalent SME managers are the core target group for such training programs. Before they enter a growth process, they seem to request a better understanding of the requirements and consequences of future growth through training and interaction with peers and experts. Hence, the policy rationale for a training intervention aimed at these SME managers seems justified, but it remains unclear how SME managers and their firms are affected by the intervention. Does it as intended result in improved competences and strategic reorientation which spill over in behavioral change and lead to improved growth performance of the firm? In this paper we concentrate on the first issue, i.e. to what extent the training intervention has led to cognitive change on the part of the managers. Hence the Research Question guiding our investigation is:

Do training programs for growth-oriented SME managers lead to the intended enhancement of managerial competences and change in strategic orientation?

Answering this question is an important first step in answering the larger question about the impact of SME manager training programs for the growth performance of SMEs. Although massive investment in public supported training programs for SME managers and SME employees have taken place for decades, our knowledge about the impact of these training programs remains fragile. A major reason for this situation is weak methodological design in studies of the impact of training program which in fact has not improved much since David Storey and Paul Westhead (1994) criticized the situation in the early 1990s and called for more control group and longitudinal design.

In this study we follow their recommendations for solid impact analysis. We conduct a case study of a major Government supported training intervention in Denmark which involved more than 700 SME managers

during 2012-2015, contrasting the changes observed for the intervention group through three rounds of interview with changes observed in a control group of similar managers in the same period. For both groups we measure the change in self-assessed managerial competences and change in strategic priorities. In subsequent studies we shall focus at behavioral and performance change for these groups.

Literature review and hypotheses

Most studies agree that the human capital of the entrepreneurs/managers is important for the ability to grow a firm and it is both the formal educational level and the level of business experience, including startup experience, which has a bearing (Storey 1994, Dahlquist et al. 2001, Delmar et al. 2003). In addition to competences, the intentions of SME managers are also crucial for SME growth – and intentions are associated with competences. A recent meta-analysis of 13 growth studies concludes that growth intention had a "positive and robust" impact on growth and it also showed, based on 39 studies, that the educational level and entrepreneurial experience of the managers had a "positive and robust" impact on the growth intention of SME managers (Levie and Autio 2013, p. 5). Similarly Wiklund and Shepherd (2003) found a moderation effect in that the education and experience of entrepreneurs has a much stronger relation to growth if growth aspirations are also high.

The need for SME management training program is rooted in the fact that the competence level of SME managers generally is significantly lower than for managers in large companies (OECD 2002, OECD 2010). This relatively low competence level reduces the ability of SME managers to develop and grow their firms (Franco and Haase 2009, Bosma et al. 2004). Running a small firm can be a complicated task, but growing it is even more complicated as reflected in theories about firm growth phases (Greiner 1972, Churchill and Lewis 1983, Levie and Lichtenstein 2010). This helps explain why many SME managers hesitate when they identify promising business opportunities which entail growth. Most SME managers are stability oriented or ambivalent to growth (Wiklund et al. 2003, Gray 2002, Davidsson et al. 2010). Wiklund et al. (2003) demonstrated in a major study, based on three large data sets, that the expected consequences of growth was a decisive factor for manager attitudes to growth and they also found, rather surprisingly, that "soft" factors related to the employees and the managers themselves had a higher impact than financial concerns. The policy rationale for SME manager training programs therefore seems solid – with training defined as "any attempt, within or outside the organization, to increase job related knowledge and skills of either employees or managers" (Jayawarna et al. 2007, p. 324). Training programs promise through learning to lift off some of the educational and cognitive barriers to growth (Marshall et al. 1995). Nevertheless, it is not easy to recruit managers to training programs, even when they are free or at low cost (Webster et al. 2005a, Webster et al. 2005b, Johnston and Loader 2003). In addition to concerns about possible negative consequences of growth, other recruitment barriers are the time and task pressured situation of many SME managers and the short-termed competence perspective of some SME managers requesting immediate learning outcomes for their managerial practice in the firm (Patton and Marlow 2002). Moreover, the design of training programs seems to matter. The literature suggest that school-like designs attract some types of

SME managers, typically the more well-educated, while managers with lower educational levels seem to prefer formats which emphasize work-place and action-oriented training activities (Jones et al. 2013, Bager et al. 2015).

Measuring the learning impact of a training program is difficult for two main reasons. First, learning can take place without behavioral change. According to Huber, learning is about informational change resulting in a change in "the range of potential behaviors" (Huber 1991, p. 89). Hence it is *the potential* to behave differently which needs to be measured, not behavioral change itself which is easier to capture. Second, the learning outcome of a formal training program is difficult to separate from the continuous action-based learning process which takes place in any SME every day. Through action, reflection and interaction experience is constantly transformed into new knowledge and capabilities of the managers (Leitch and Harrison 2008). According to Minneti and Bygrave most learning is path-dependent and "takes place by filtering signals obtained by experimenting with different competing hypotheses, where some actions are reinforced and others weakened as new evidence is obtained" (Minneti and Bygrave 2001, p. 13). This continuous and path-dependent learning process is predominantly "single-loop learning" in character (Argyris and Schon 1978, Cope and Watts 2000) and difficult to measure separately from the learning gained through formal training programs. Control group design is therefore a must in order to gain knowledge about the learning impact of training programs.

Training programs can have multiple outcomes. Figure 1 illustrates the possible pitfalls on the route from a training intervention to higher growth performance: The training intervention may not lead to the intended competence enhancement and strategic reorientation; competence enhancement and strategic reorientation may not spill over in changed manager and employee behavior; and behavioral change may not induce a change in the growth performance of the firm. Moreover, we cannot at any of these stages know the direction of change. Perhaps the training intervention does actually lead to competence enhancement and strategic reorientation but, in contrast to the intentions of policy makers, some managers decide to aim for contraction of their firm rather than growth because they become aware of the difficulties and risks associated with growth and the running of a larger firm. Behavioral change may also be aimed at improvement of efficiency rather than growth and therefore result in negative growth performance, at least in the initial phase. Finally, at all stages we cannot know if the observed changes are a result of the intervention or of other factors such as changes in the larger economy.

Figure 1. *The intended impact of a growth oriented training intervention on manager competences, strategic orientation, behavior and performance*
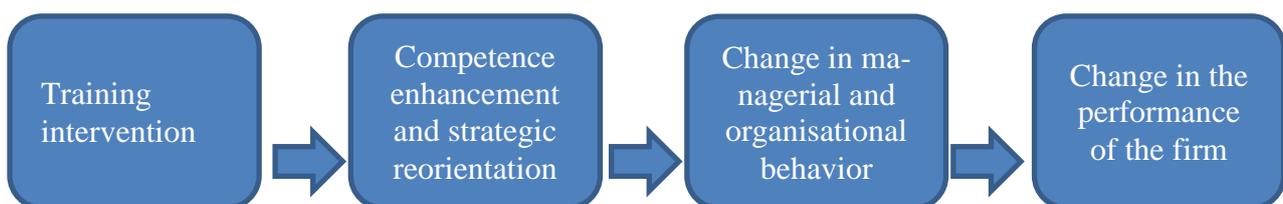
In this paper we only focus at the first stage in the process, i.e. the implication of a training intervention for the managerial competences and strategic orientation of the managers, measured at the program closure stage.

Taken together, the literature suggests that we need to focus on cognitive change and it also suggests that we should concentrate on change in the competences and strategic orientation of the managers as this constitutes the foundation for subsequent behavioral and performance change. Guided by our research question we therefore propose two hypotheses:

H 1: *Participants in a growth-oriented training program for SME managers enhance their perceived managerial competences more than a control group of similar SME managers.*

H 2: *Participants in a growth-oriented training program for SME managers change their strategic orientation more than a control group of similar SME managers.*

Empirical context - The Growth through Management program

In 2012 the Growth through Management (GTM) program was initiated by the Danish Government as a country-wide training program for minimum 600 owner-managers of small firms (5-50 employees). The main operators of the program were five regional business development centers in partnership with three national business associations and a university. The role of the university was purely scientific, not to be involved in the training activities or the design of these activities.

The GTM program reached out to the entire country and all industries. It consisted of three main phases for each manager: a screening/interview phase, a seminar/training phase and an individual competence enhancement phase (such as personal coaching, specific advisory services, further training courses). The first two phases were completely covered by public funding and therefore free of charge for the participants. For the third phase, the company paid half the expenses while the remaining 50% is sponsored by public funding.

The program had a standard evaluation component built into it (a combination of internal and external evaluators). The program was completed in March 2015 and a final evaluation report elaborated (Center for Vækstanalyse 2015). The program ended up encompasses 729 participants but only a minority provided a final evaluation. The evaluation report builds on the answers of 179 managers who were interviewed when they entered the program and again in the final stage of the program in 2014. The report demonstrate substantial success of the program in terms high satisfaction with program activities, improved managerial competences, enhanced growth ambition (measured by turnover) and a significant shift in the way the

participants prioritized their work hours (less time spend on for production, accounting and administration purposes and more for development, strategy and innovation purposes).

A group of researchers from the University followed the program and had unlimited access to the data generated by the GTM program. Data collected by the program include interview data from the participant screening process, mid-term and final evaluation of participants' satisfaction with the program, and a range of process data such as the involvement of participants in particular program elements.

Data and Methods

To evaluate the outcome of GTM program participation, start, midterm, and end surveys were distributed to program participants. These start and the end surveys asked program participant to indicate perceptions of their management role in their firms, with regard to the extent to which they (1) have defined personal goals, (2) delegate authority, (3) inspire and motivate, (4) are aware of their management style, (5) communicate clearly, and (6) employ long term planning. Also, the start and end surveys asked participants to indicate their priority given to a set of strategic alternatives for the development of their firms; developing their firms through (1) sales, (2) profit, (3) export, (4) market development, (5) larger customer portfolio, (6) larger product portfolio, (7) strategic change, (8) relational strategies, and (9) growth in number of employees. The midterm survey asked for more static information in terms of employee education levels, years of experience, age, etc. From the national firm data base ("Navne og Numre", which translates to "Names and Numbers") we further acquired data on firm characteristics such as number of employees, and founding data. We combine the participant and firm data into a joined data set, which define our Treatment group, i.e. the group of managers who participated in and finalized the GTM program.

A total of 366 names occurred in the survey response. In the final data base for the treatment group, however, the number is reduced to 66 participants. This reduction occurs because some firms had different individuals participating at different times over the program period, and because of non-response in one or more of the three surveys. Particularly the final survey round had a relatively low response rate with only 179 responses, and not all of these were complete. The 66 participants in the treatment group are those participants who answered to all three surveys fully.

In order to establish a control group, 1.500 firms were randomly selected from a pool of 19.333 firms matching the selection criteria from the GTM program. These firms were identified through the "Navne and Numbers" data base. Surveys were then conducted for the control group in two steps. First, one survey similar to the start and midterm surveys in the treatment group was performed through a mixture of telephone interviews, reading the questionnaire to the respondent, and e-mail, sending the same questionnaire to the respondent. The result for this first survey of the control was, after screening, 228 completed telephone interviews and 119 questionnaires returned by e-mail. This gives a response rate of 19.5% for this first survey. To further ensure comparability between treatment and control group, we deselected those managers who said they would not consider participating in similar programs as the GTM program. This reduces the number of managers in the control group to 292. In the second survey, the questions for the control group mirrored the questions in the final survey of the treatment group. We here

contacted the 292 managers who responded to the first survey. A total of 57 managers answered to the second survey, three of those were incomplete. We thus end up with 54 cases in the control group, which gives a response rate of 18.5%.

Variables and measures

Dependent variables

Learning benefits from the GTM program were measures as two composite variables, one for perceived management competencies, and one for strategic orientation. For the management competence learning variable we constructed a formative index based on six questionnaire items. We here consider the learning effect as any positive change from the start survey to the end surveys in term of the degree to which managers (1) have defined personal goals, (2) delegate authority, (3) inspire and motivate, (4) are aware of their management style, (5) communicate clearly, and (6) employ long term planning. We here use the sum of changes across the six questionnaire items as an indicator of management learning.

For the strategic orientation learning variable, participants were asked to indicate whether they prioritized each of a set of strategic alternatives for the development of their firms [yes or no]: developing their firms through (1) sales, (2) profit, (3) export, (4) market development, (5) larger customer portfolio, (6) larger product portfolio, (7) strategic change, (8) relational strategies, and (9) growth in number of employees. In this case, decreasing as well as increasing priority to any of the 9 growth strategies is considered as an indication of a learning result. Indeed, some managers may initially have too little overview of their growth opportunities and hence wanting to do too many things at the same time. Creating an overview (i.e. learning) often has the effect of narrowing down the strategic priorities and give a more clear direction for the firm. In that sense, giving less priority to some growth strategies can be seen as a result of learning activity in the same way as giving more priority. Finally, changing priorities between growth strategies can be seen as an indication of learning, even when the number of priorities remains the same. Following this reasoning the learning associated with strategic orientation was calculated as the sum of the *absolute* changes in priority across the nine strategy items.

Independent variable

The independent variable is GTM participation. Cases where managers participated in the GTM program were coded 1 whereas cases in the control group were coded 0.

Control variables

A number of control variables were employed to control for the effects of industry, firm and manager characteristics. Holding manufacturing (%) as reference category, four industry dummies were included: construction (%), transportation (%), private business services (%), and public business services (%). At the firm level we control for firm age, and for firm size measured by number of employees. At the manager level controls are included for gender and age. Also, we control for managerial background, working hours, management experience, and level of education. For managerial background, two dummies are included:

founder of the firm (%) and Investor in the firm (%). "Hired as manager" (%) is used as reference category. Weekly working hours are divided into three categories: less than 50 hours, 50-59 hours, and 60 hours or more." Less than 50 hours" (%) is used as reference category. Management experience is similarly divided into three categories: less than 5 years, 5-10 year, and more than 10 years. "Less than 5 years" is reference category. Finally, for level of education, three dummies are used: post-secondary education (higher education, 1-2 years, %), first tertiary education (higher education 3-4 years, %), and second tertiary education (higher education 5 years or more). In the reference category we join the following categories: unskilled, primary, and upper secondary education.

Matching

One of the central problems in comparing a treatment and a control group is the problem of selection bias (Rosenbaum and Rubin, 1983). This problem occurs when behavioral and performance differences between the treatment and control group are caused by differences in the characteristics of the groups rather than by the treatment itself. In case of the GTM program, the enrollment bias has previously been analyzed. Here we, based on observations from the 366 GTM participants and the 292 respondents in the control group found that younger managers, managers with higher education, managers with less management experience, and managers who had an ownership interest in the firm, were more likely to be enrolled in the GTM program. Opposite, managers with longer weekly working hours were less likely to be enrolled. Looking at the differences between participants and the control group, restricting us to the 66 participants in the treatment and the 54 managers in control group, which we consider for this this study (Table 1), we can see a somewhat similar pattern. The participant group in general consists of managers from older and larger firms. Also, participants in the participant group tend to be younger, with higher levels of education, and being more likely to have founded the firm. These observations strengthens the suspicion of a selection bias, i.e. that some managers will be systematically more likely to select to the GTM program than others.

To deal with this potential selection bias, propensity score matching techniques can be used in which managers in the treatment group (participant group) are matched to managers in a control group, which bears similar characteristics (Rosenbaum and Rubin 1983). In practice the matching is done based on propensity scores derived from either logit or probit regressions of the potential confounders on the treatment vs non-treatment.

A central challenge to the use of propensity score matching is that the dimensions on which firms and managers can be matched are often limited to those available in public databases. Because the interest is in assessing the learning impact from managers' participation in a growth oriented training program, it is essential that the matching criteria adequately represents the main mechanisms driving potential selection bias in the recruitment of managers as well as managers' self-selection into such programs (Kerr et al. 2014; Bager et al. 2015). The merging of individual-level data from the questionnaire surveys with the firm level registry data is an important aspect in meeting this challenge.

Several matching algorithms are available to perform the propensity score matching. For this study, propensity score matching was performed based on a R-extension to SPSS v23 (Thoemmes 2012). This platform enables three matching algorithms: Nearest Neighbor Matching (NN), Full Matching, and Optimal

Matching. To find a proper match between the treatment and the control group, we pursued a series of matching runs with varying caliper for the NN and the Optimal matching algorithms. Also, for NN, we varied the match ratio from1:1 to 1:2 and 1:3 (how many cases in the control group that each case in the treatment group is matched with), and we ran each test both with and without allowance for replacement.

These matching procedures can only be performed with data sets containing no missing variables in any variable for all of the cases (Thoemmes 2012). This contributes to explain why the data set had to be reduced to 66 managers in the GTM group and 54 managers in the control group.

Our goal is to estimate the learning effects from participation in the GTM program on managers' perceived management competencies and their strategic orientation. In program evaluation terms, we are here interested in the average treatment effect (ATT). The treatment is here GTM program participation. To do so, we adopted the differences-in-differences (DID) method together with propensity score matching. ATT is here calculated based on OLS regressions on the differences in differences of management competences and the differences in differences of the absolutes of strategic orientation, based on samples of matched groups resulting from the propensity score matching procedures.

Analyses and Results

Descriptive statistics

Tables 1, 2a and 2b present the descriptive statistics for the variables included in the study. For an initial assessment of differences between firms in the treatment and the control group, we performed chi-square and t-tests for all of the independent and dependent variables. As indicated by the results in Table 1, founders, younger managers, and managers from younger firms from these analyses seem more likely to have enrolled in the GTM program. Opposite, hired managers, managers with no higher education, and managers from the construction industry are less likely to have enrolled. These results are suggestive that there is a potential for selection bias in the dataset, and that these variables are likely confounders.

We notice from Table 1 that both the mean management competence learning and the mean strategic orientation learning are significantly higher for the treated firm than for the control group. Tables 2a and 2b give more valuable information about these differences. Seemingly, management competences are perceived as considerably lower in the GTM group compared to the control group at the time before treatment, i.e. at the beginning of the GTM program (Table 2a). This difference between the GTM group and the control group for perceived management competences is significant (t-test, $p<0.001$). Importantly, the differences in differences, i.e. the indicator of management competence learning is also significantly different (test, $p<0.001$) and in favor of the GTM group. This result suggests that learning of management competences has been higher in the GTM group.

The inferences that can be made from the results in Table 2b are somewhat different from those of Table 2a. The pre- and post-intervention means of strategic orientation are here expressions of the average number of strategic initiatives that managers prioritize for the development of their firms. The means are indicative that managers in the GTM group give priority to fewer initiatives than managers in the control group, both at the

time of start and at the end of the GTM program. Both differences are significant (t-test, p<0.001). Also, we see that there is a decrease in the number of prioritized strategic initiatives for both the GTM and the control group. This difference is significant for the control group (t-test, p<.01) and marginally significant for the GTM group (t-test, p<.10, two-sided). This can be seen as an indication that managers in both groups have narrowed their strategic focus over the time. Importantly, however, these averages do not tell us the whole story of the dynamics that may have occurred in the changes of priorities given to the palette of strategic initiatives. As such, managers with an initial priority to initiatives A, B, C and D may change so that priority is later given to initiatives E, F, G, and H. While this is a major change, it will go unnoticed when simply analyzing changes in means. Such dynamic, however, is captured when looking at the sum of changes in prioritized initiatives. Based on the sum of changed priorities, the differences-in-differences analysis (t-test) in Table 2b suggest that there have been significant more changes in the strategic priorities, i.e. more strategic orientation learning, among the managers in the GTM group.

A limitation in the interpretation of the results from Tables 2a and 2b is that the tests here do not account for the counterfactual. In other words, they do not test for the difference between how well participants would have performed if had they not participated in the GTM program. Even while we selected the control group to be similar to the GTM group, the results from Tables 2a and 2b are still vulnerable to potential selection biases; i.e. the control group being different than the treatment group. To overcome this problem, we need to reconstruct the non-observed outcomes; the counterfactuals. This is the idea behind propensity score matching: to construct the counterfactuals by adjusting for the distribution between treatment and control group.

First step in performing the propensity score matching is to choose potential confounder variables to include in the propensity score. The covariates included in the matching procedure are expected to influence both the propensity to participate in the GTM program, the management competence learning, and the strategic orientation learning outcome from participation. Results from logistic regression of potential confounders (we here use all independent variables) on program participation (not shown here) show that several of the covariates (manager age, background as investor, number of employees, and also belonging to the construction industry) significantly affects program participation propensity. This can be interpreted as a first indication of differences between the GTM and the Control group, and hence that some selection bias is at play.

Next step is to calculate the propensity score across the participant and the control group, and to ensure that the covariates are balanced across the two groups. The results from running the three matching algorithms Nearest Neighbor Matching, Full Matching, and Optimal Matching on various combinations of caliper values, different strategies for discarding units outside of common support, matching with and without withdrawal, and different matching ratios, suggest two properly balanced matchings. Both balanced matches results from the NN algorithm without withdrawal. First match (model 1) is achieved using a .20 caliper value, a 1:1 matching and no allowance for discarding units outside of common support. This matching results in 34 matched pairs. L1 values before (.985) and after (.971) suggest an improvement in balance from the matching (Iacus et al. 2011), and no covariate exhibit a large imbalance (abs std. Mean diff > .25). The second match (model 2) is similarly based on a 1:1 matching. This matching takes a somewhat larger caliper

value of .35, but then allows for discarding units outside of common support resulting in 36 matched pairs. L1 values before (.985) and after (.972) again suggest an improvement in balance from the matching. Other matches did either not show any improvement in balance or had several covariates with large imbalances.

Table 3 shows the difference in the standardized biases before and after the two matching procedures. These are calculated as the difference in the means of the GTM and the control group divided by the standard deviation in the GTM group. These differences are thus measures of the reductions in bias for the individual covariates with respect to the two matching procedures. Reading the results in Table 3, most of the values are positive, which signifies that the matching procedures provide a better balance between the GTM and the control group. However, we also take notice that for Model 1, we should be aware of an increased imbalance with respect to gender and highest level of education. For Model 2, the analysis suggests an increased imbalance with respect to gender, highest level of education, and work hours. In general, however, and considering all covariates, the results suggest an increased balance from the two matching procedures.

Next we consider the OLS regressions on the two learning variables. We here mean centered the two dependent variables relative to managers' belonging to industry groups. This was done in order to reduce problems of multicollinearity. From the results in Table 4, we notice that when adding the dummy for GTM participation in Models 1b and 2b, regressing on management competence learning and strategic orientation learning, we significantly add to the explanatory power of the models. We also notice that the explanatory power of Model 1 with the sample based on the first propensity score matching procedure in general has higher R-squares than Model 2 with the sample based on the second propensity score matching procedure. The positive and significant coefficients of the GTM participation variable are suggestive of a positive learning effect from GTM program both with regard to lifting the level of management competences and with regard to facilitating changes in strategic orientations.

Because the propensity score matching method involves a loss of unmatched cases, we have to address the generalizability issues. One method is here to use inverse probability weighting to the probability score using all available data for a robustness test (Hirano and Imbens, 2001; Hirano et al. 2003). Accordingly, cases from the GTM group, are assigned weighted by the inverse of the propensity score (i.e. the probability of being in the treated group). And, cases from the control group are weighted by the inverse of (1 minus the propensity score) (i.e. the probability of not being in the treated group). The results from these analyses support the results reported from the regressions shown in Table 4. The enhancing impacts of GTM participation on managerial learning and strategic orientation are here positive and significant at the $p<.001$ level of significance.

Finally, to control for multicollinearity, we measured the variance inflation factor (VIF). The highest VIF in the analyses is 4.7, but most variables have VIF values below 2.5. This is well below the threshold of 10 suggested by Hair et al. (2006) for when multi-collinearity will be considered as high.

Discussion

In this paper we set out to assess managers' learning from participation in a training program for growth oriented SMEs. Doing this, our contributions locate in to the growing literature on entrepreneurial learning and specifically the literature on the role of formal training programs for management learning. The promise of SME training programs to facilitate growth by lifting managers' competence levels and reducing their cognitive barriers for growth has fueled this field (Marshall et al. 1995) and made formal training programs a popular instrument in the implementation of national and regional policies to support growth.

The assessment of learning and added growth potential from SME training programs are, however, challenging on several accounts. A central challenge to program evaluation is to account for the counterfactual. This is the concern whether or not managers acquire more learning from their program participation than they would have done without participation. This issue is particularly relevant for studies of the impact of management training programs because much management learning takes place through action and direct management experiences, i.e. outside the context of formal training activities (Leitch and Harrison 2008; Cope and Watts 2000). In other words, managers expectedly learn, also when they do not participate in formal training programs. For that reason, a strong methodological design is needed in studies of the impact of SME training programs (Storey and Westhead 1994). We here followed recent studies of additionality from policy interventions (Autio et al. 2015; Söderblom et al. 2015) in setting up a longitudinal study design, including a control group, and utilizing propensity score matching techniques to reduce selection biases from managers' self-selection into formal SME training programs (Kerr et al. 2014).

A second challenge is with regard to the operationalization and the measurement of the learning construct. A common approach is here to assess learning in terms of changes in performance, for example increased growth. This bears the assumptions that learning is always translated into action which is more qualified and more effective. It also presumes that the returns from the more effective actions/behaviors are visible at the time of the assessment. In particular the last assumption is challenging when assessing the impact of training programs for growth. Because managerial and strategic reorientations towards increased growth are costly to implement and often take considerable time to come into effect, there is a high uncertainty about when the growth-effect should be assessed. In the time period right after participation in a growth program, managers' plans for growth may not yet have been fully developed, and they may not even have been put into action. Moreover, the implementation phase may be characterized by increased costs as firms struggle with both internal and external sources of inertia (Hannan and Freeman 1984). For that reason, assessments of the growth impact too early may lead to misleading negatively biased results. On the other hand, waiting too long with the assessment may make it increasingly difficult to isolate the growth effects that can be specifically ascribed to the growth training program (Storey 2002, Dahlquist et al. 2001).

An alternative approach is to assess learning as increased ranges of potential for actions (Huber, 1991). Noticeably, from this conceptualization learning does not necessarily lead to improved performance. As put by Huber (1991:89) "*Entities can incorrectly learn, and they can correctly learn that which is incorrect*". Thus, some reorientations that results from training programs may not lead to changes in actions, and some reorientations, which are put in play, may be the result of incorrect learning or learning of what is incorrect. Such reorientations are less likely to be beneficial for growth. In this way, assessing learning as changed

insights and awareness, i.e. reorientations, may lead to overly optimistic interpretations of growth potentials from training programs.

In this study we pursued the later approach in conceptualizing program-learning effects as managers' reorientations with regard to management competences and strategic priorities. In this way we contribute the literature on the learning content of training programs (Jones et al. 2013). Our results suggest a reorientation of perceived management competences that is larger in the group of program participants than in the control group. In other words, the GTM participants have improved their perceived competences more than they would have done if they had not participated. However, this result should be interpreted with a note of caution. For some reason, the perceived competences were significantly lower for the GTM participants than for the control group managers at the outset of the study. One explanation could be that perceived management competences works as a confounder, i.e. that some kind of selection bias is going on in which managers with lower perceived competences self-select to the training program. In that case, our results may be overly optimistic on the learning impact from the training program. A second explanation is that the participation in the GTM program, and the fact that their competences might come under scrutiny during program participation, have lead managers to deflate their self-evaluations of their competencies. Noticeable, the mean of the perceived competences of managers in the GTM program have during program participation increased to a similar level as for managers in the control group, but it does not exceed it at the time of program termination.

With regard to strategic reorientation, the results are more clear-cut. Managers in the GTM group focused on fewer strategic growth dimensions compared to control group managers both at the time of program start and program end. Managers in GTM as well as in the control group on average decreased the number of prioritized growth dimensions over the study period. Importantly, however, the reorientation measured by the average number of shifts in the priorities given to the individual growth dimensions was significantly higher for the managers in the GTM group. We see this as a clear indication that the GTM program has accommodated reflections among the participating managers on their growth strategy, and that these reflections have transferred into a strategic reorientation with respect to the growth of their firm. This reorientation is more comprehensive than would it have been if they had not participated in the GTM training program.

The patterns found and described above are well in line with previous findings that lifting competences of SME managers increase their orientations towards growth (Levie and Autio, 2013). The results also confirm that formal SME training programs may take an important role in lifting these competencies and directing SME managers' orientation towards growth (Marshall et al. 1995). In particular, the results from this study stress the potential of formal training programs to trigger managers' reflections on their current growth strategies. Seemingly the knowledge input from training programs has the potential to increase participant managers' awareness of and insights into potential growth opportunities. In the light that GTM participants' perceived competencies did not excess perceived competences for managers in the control group, we are less certain about the ability of training programs to improve managerial competences. It is possible, that learning of managerial competences is better learned through direct experiences than through formal training.

On the other hand, formal training activities may be better suited for learning strategy. Several arguments may support this interpretation. At first, experimenting with strategy in real life may be a risky and costly endeavor. Making inappropriate strategic moves may threaten the survival of the firm. Experimenting with firm strategy in the classroom conducting experiments, developing scenarios, and making simulations are much less risky and much less costly. Secondly, when located in practice, many SME managers are caught up with day to day decisions on business operations. This leaves them with little time and space to consider more long term strategic issues. Temporarily removing themselves from the daily operations of the firm, managers may find such time and space at a formal training program. Following this reasoning, more additionally and more growth potential may derive from formal SME training programs that have a particular focus on the strategic management of firms.

Of course the learning output in terms of managerial and strategic reorientations may be highly specific to the GTM program and do not generalize to all formal SME training programs. SME training programs differ with respect to their form, content and surrounding context. Particular to GTM program is the relatively long duration and the combination of initial face-to-face consulting, obligatory training seminars, network facilitation and subsidized follow up services tailored to the needs of the each participant and firm. It is plausible that training programs with different contents, other forms, and located in other contexts, such as for example developing or emerging economies (McKenzie and Woodruff 2013) may add differently to managers' competences and strategic orientations.

Another limitation to this study is that we cannot yet tell whether the identified learning additionality from the GTM program in terms of increased strategic reorientation also leads to an enhanced growth capability of the participating firms. It will be interesting to see whether those managers who expressed the most changes in strategic priorities are also those managers that will be most capable of generating growth in their companies. Future studies may give us this answer in the case of the GTM program. In general however, there is a need for more longitudinal studies that follow the different steps in the learning process encompassing training intervention, learning and change of orientations, transfer of changed orientations into changed behaviors, and the impact of changed behavior on performance.

Finally, although we had privileged access to data from the GTM program, and although the study design from an early point included a control group, there are still some limitations from the data collection. A large proportion of the GTM participants did not complete either the start- or the end-survey. Also, a large proportion of managers in the control group, who completed the start survey, did not complete the final survey. While analyses show that this non-response was random with respect to observable firm level characteristics, we cannot test whether the non-response has introduced unobserved heterogeneity with respect to individual-level characteristics. Despite these limitations, the control group set-up and the matching techniques in this study affords a robust analysis of the impact of formal SME training programs on managerial competences and strategic orientations towards growth.

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Tables

Table 1 Descriptives, dependent and independent variables, pre-intervention

Variables		GTM particiants N=66 Mean	St.dev.	Managers in the control group N=54 Mean	St.dev
Management competence learning		2,7385*** ɪ	3,128	-,3148	3,107
Strategic orientation learning		5,3077*** ɪɪ	2,397	2,9259	2,532
Manager age		44,8636*	8,387	48,6111	8,349
Firm age		15,8030*	11,054	19,5000	5,602
Firm employees		15,67	13,283	12,13	9,030
		% within group		% within group	
Gender	Male	81,8		83,3	
	Female	18,2		16,7	
Managerial role	Hired manager	9,1*		24,1	
	Investor	27,3		37,0	
	Founder	63,6**		38,9	
Management experience	Less than 5 years	13,6		11,1	
	5-10 years	24,2		14,8	
	More than 10 years	62,1		74,1	
Education level	No higher education	15,2*		33,3	
	Higher education 1-2 years	18,2		13,0	
	Higher education 3-4 years	34,8		24,1	
	Higher education 5 years or more	31,8		29,6	
Work hours a week	Less than 50	45,5		42,6	
	More than 50	54,5		57,4	
Industry	Manufacturing	15,2		5,6	
	Trade and transportation	22,7		33,3	
	Construction	4,5*		16,7	
	Priv business services	48,5		37,0	
	Publ business services	9,1		7,4	

ɪ N=65, ɪɪ N=39

Chi-square and t-test significance levels: *** p<0.001; ** p<0.01; * p<0.05

Table 2a Descriptives, Management Competences

	Pre-intervention GTM	Control	Post-intervention GTM	Control	Dif-In-Dif

	(N=66)	(N=54)	(N=66)	(N=54)	
Mean	20,22	23,33	22,95	23,02	3,05***
Std. dev.	2,83	3,38	2,49	2,67	
S.E.					,57

Significance level: *** $p<0.001$; ** $p<0.01$; * $p<0.05$

Table 2b Descriptives, Strategic Orientation

	Pre-intervention		Post-intervention		
	GTM	Control	GTM	Control	Dif-in-dif
	(N=65)	(N=54)	(N=66)	(N=54)	(abs. dif)
Mean	4,44	6,98	3,53	6,40	2.38***
Std. dev.	2,68	1,43	1,53	1,72	
S.E.					,52

Significance level: *** $p<0.001$; ** $p<0.01$; * $p<0.05$

Table 3 Comparison of bias without and with matching

		Model 1			Model 2		
	Matching	Std. mean diff	Bias (%)	Reduction in bias (%)	Std. mean diff	Bias (%)	Reduction in bias (%)
AGE_Manager	Unmatched	,449	44,68	74,15	,449	44,68	63,55
	Matched	-,081	-11,55		,047	-16,29	
Gender	Unmatched	-,040	-3,90	-94,97	-,040	-3,90	-237,98
	Matched	0,000	-7,60		0,000	13,18	
Background_Investor	Unmatched	,200	21,76	72,13	,200	21,76	21,38
	Matched	-,241	6,06		0,000	17,11	
Background_Founder	Unmatched	-,503	-51,05	88,63	-,503	-51,05	89,27
	Matched	,060	5,81		-,226	-5,48	
ManagementExperience5_10	Unmatched	-,263	-21,83	17,61	-,263	-21,83	-0,99
	Matched	,082	-17,99		-,077	22,05	
ManagementExperience10lus	Unmatched	,270	24,45	73,14	,270	24,45	51,37
	Matched	-,133	6,57		-,063	-11,89	
Education_higher_1_2_Years	Unmatched	-,154	-13,43	33,03	-,154	-13,43	35,10
	Matched	0,000	-8,99		0,000	8,72	
Education_higher_3_4_Years	Unmatched	-,250	-22,44	46,86	-,250	-22,44	74,11

	Matched	0,000	11,93		-,129	5,81	
Education_higher_5_Years_plus	Unmatched	-,047	-4,66	-36,38	-,047	-4,66	-22,29
	Matched	-,064	-6,36		,121	-5,70	
WorkHours	Unmatched	,057	5,70	100,00	,057	5,70	-94,80
	Matched	,118	0,00		-,111	11,11	
FirmAge	Unmatched	,660	33,44	92,74	,660	33,44	61,31
	Matched	-,189	2,43		,243	-12,94	
AntalansatteCVRnr	Unmatched	-,392	-26,63	81,54	-,392	-26,63	82,79
	Matched	-,248	4,92		-,151	4,58	
TradeAndTransportation	Unmatched	,223	25,12	100,00	,223	25,12	53,73
	Matched	-,185	0,00		-,058	11,62	
Construction	Unmatched	,322	57,75	78,68	,322	57,75	79,29
	Matched	,156	-12,31		-,148	11,96	
PrivateBussServices	Unmatched	-,235	-22,73	74,51	-,235	-22,73	27,26
	Matched	,060	5,80		,114	-16,54	
PublicBussServices	Unmatched	-,064	-5,81	100,00	-,064	-5,81	-49,96
	Matched	0,000	0,00		,105	8,72	

Table 4 Regression results – unstandardized coefficients

Variables	Management competence learning (N=72)				Strategic orientation learning (N=38)			
	Model 1a	Model 1b	Model 2a	Model 2b	Model 1a	Model 1b	Model 2a	Model 2b
GTM or control group		2,074**		2,412**		2,298*		2,282*
Manager age	-,081	-,097+	-,144*	-,140*	-,118	-,088	-,097	-,090
Gender	1,440	1,701+	1,909+	1,644	-,794	-,497	-2,532+	-2,403+
Investor	3,387**	3,084**	2,007	1,604	-,389	,066	,353	,419
Founder	2,947**	2,880**	1,701	1,689	,493	,480	,328	,911
Management exp 5-10 years	-2,614+	-2,232	-,694	-1,166	1,435	1,694	-,417	-2,058
Management exp 10 years plus	,048	,253	,266	,159	3,714+	3,005+	,525	-,552
Higher education 1-2 years	-4,275**	-4,237**	-1,484	-1,801	,659	1,387	-,513	-1,148
Higher education 3-4 years	-2,760*	-2,992**	-1,995	-2,172+	,238	-,140	,680	,801
Higher education 5 years +	-3,114**	-3,047**	-2,304+	-2,307*	2,489+	1,904	2,192+	1,743
Workhours a week	-,914	-1,090	-1,593+	-1,697*	,200	-,064	-,143	-,204
Firm age	-,007	-,001	-,015	-,001	,048	,018	,014	,012
Number of employees	-,025	-,018	,042	,041	,015	,009	,026	,003
(Constant)	4,615	4,170	7,186	6,015	,449	-,845	3,064	2,844
R-Square	,323	,413	,232	,349	,231	,378	,234	,370
F-change		8,354**		10,505**		5,668*		5,651**

Significance levels: *** $p<0.001$; ** $p<0.01$; * $p<0.05$; + $p<0.10$