When the Early Bird Catches the Worm: Timing and the Impact of Training in Retail

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Abstract:

We econometrically evaluate the performance effects of a six month e-learning programme in a large retail chain with monthly data on organizational level sales revenue, for four years using panel regressions. Members of initiating cohorts show positive performance effects during training and, dependent on the estimated specification, after training, which is not the case for succeeding participants. We conclude that offering training on voluntary basis leads participants with the highest expected idiosyncratic gains and the highest talent to self-select into early participation. As performance effects already unfold during training, our findings put forward the importance of continuous training with close coaching unlike single training incidences.

Key Words: Evaluation, Company Training, Continuous Learning, Continuous Vocational Training, e-Learning
JEL Classification: C31, C33, J24, M53

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Introduction

For various reasons, investments in skills are becoming more varied in terms of formalization, job-relatedness, as well as the time and place of training. Continuous vocational training - or lifelong learning - is becoming more important for individual careers, firm competitiveness, and macroeconomic performance alike. In the US, UK and France, continuous vocational training in the form of e-learning has become a well established component of vocational training programmes (OECD 2001, CrossKnowledge 2012), which offer the flexibility to adjust to the employees' individual needs in time scheduling, place and retentiveness. With increasing frequency, formal trainings are accompanied by or supplemented with informal training forms that offer a prompt possibility to convert training content into regular working hours in a known atmosphere and at relatively low costs (European Commission 2008). Despite the importance and high expenditures on company training, the literature on effects of work related training, especially of the more recent training forms, is still rare and inconclusive.

When studying the performance effects of work related training, common empirical methods rest upon the assumption of random selection into training programs to calculate true training effects. In actual fact, however, it is clear that companies neither opt for nor aim to fulfil the necessary econometric assumptions but simply offer a set of training programmes to each employee who then decides upon participation as well as topic and timing himself. As certain employees benefit more from training than others, they may take this knowledge into account when deciding on training enrolment. As a result, training effects may vary with regard to this private decision on timing but, until now, could not be investigated because of missing information and data. However, studying the timing of enrolment could offer various insights into the heterogeneous benefit structures at work.

A second issue when studying training effects is related to the most fundamental question of how training basically works. The principles of training effects certainly vary with the offered training format. In formal trainings, productivity is commonly found to be lower during training periods. Reasons for this can be twofold and attributed to the fact that, firstly, working hours are reduced when workers spend time in the classroom rather than the workplace and, secondly, training costs simply decrease returns (Aragón-Sánchez, Barba-Aragón and Sanz-Valle 2003, Dearden, Reed and Van Reenen 2006). Based on the same reasons, an increase in returns can only be expected with a timely lag (Aragón-Sánchez Barba-Aragón and Sanz-Valle 2003, Dearden, Reed and Van Reenen 2006). This sequence of training effects, however, most likely differs with the more and more prevalent forms of continuous vocational training,

where training is performed outside of the classroom and right at one's place of work. When training lasts over a longer period, its productivity effects may unfold at yet unknown points in time. As most empirical studies restrict their analysis to rather short-termed training programmes lasting not more than several weeks, the timing and progress of a training's productivity effects has rarely been studied.

Our data set has several key features that render our data particularly suitable for a detailed econometric analysis of the question on who benefits from company training, how and when. We have data from one company with more than 500 stores offering a nearly identical product portfolio to all customers. We have a precise objective performance measure (sales revenue) and managers are observed over four consecutive years with monthly performance data. Therefore, training effects of the branch manager as a key employee are measured on the organizational level rather than the firm or the individual level. In addition, the panel data set has a quasi-experimental structure as not all managers take part in the training programme at the same point in time.

Because training is offered on a voluntary basis, weekly time investments in the 6 month training programme are low (about 10 hours during leisure time), and the performance measure is independent from the direct costs of training, we are able to provide a detailed analysis of the transfer and sustainability of training. Following the particular implementation of the training program we will be able to study those enrolling early into training in more detail, assessing whether training on a voluntary basis can reveal heterogeneity in the performance effects.

In the next section we describe the company with its training program in more detail and further discuss the potential effects of training on firm performance. Section 3 describes several features of our data. The empirical strategy is explained in section 4 and results are presented in section 5. Section 6 concludes.

Training in Retail

The puzzling question in the empirical firm-training literature is how to reconcile the contradicting positions of finding either no or positive training effects. In line with Bartel (1989) and Black and Lynch (1996), Barret and O'Connell (2001) find no productivity effect for firm-"specific" training content. Many training incidences serve the purpose of adjusting to a new job or retraining which suggests that training is rather aiming at preserving productivity than augmenting it (Fahr, Hinerasky and Simons 2014). This might be particularly true if workers' skills have to keep up with the machinery's technological progress as is typically found in manufacturing. With this in mind, we consider retail a good environment to study

the returns to training, as adaption to new technologies are, except for electronics retailers, of minor importance. Still, several studies in different industries show a positive and significant impact of training. These are, among others, Bishop (1990), Holzer et al. (1993), Bartel (1995), Delaney and Huselid (1996), Barron, Berger and Black (1999), Dearden, Reed and Van Reenen (2006), Liu and Batt (2007), and Morrow, Jarret and Rupinsky (1997). The latter, evaluating a pharmaceutical company's training programmes with a case study framework similar to ours, find technical and sales training to have a higher impact than managerial training.[1] Many of these studies use cross-sectional data which do not control for unobservable time-invariant characteristics of trainees or allow for an application of models that control for non-random selection. Several studies have shown that econometric methods may provide false estimates compared to experimental data, especially when selection effects are present (LaLonde 1986, Ashenfelter and Card 1985, Dehejia and Wahba 1999, Caliendo and Hujer 2006). We therefore estimate and account for a pre-training mark up among the training group, if present.

As mentioned in the introduction, the time structure of training effects is rather unexplored. Lower productivity of employees during training relies in parts on the way how training is offered. Training forms usually studied are temporary off-the-job training spells (Bartel 1995, Dearden, Reed and Van Reenen 2000, and Zwick 2006). Naturally, productivity increases, due to higher human capital acquired in off-the-job training, can only unfold after finishing the training. In our case, however, e-learning training is supplemental to regular working hours for a period of 6 months. Accordingly, we might be able to observe the impact of training even during the training phase. Furthermore, participants receive regular online support from varying supervisors, when discussing different topics that the programme has covered in previous weeks. Support is given in chat rooms where an almost natural communication can take place. The psychological literature defines this form of coaching as a process to increase performance levels by encouragement and motivation (Burdett 1998, Evered and Selman 1989, Ellinger and Bostrom 1999). Coaching behaviour is found to be positively associated with individual performance by Ellinger, Ellinger and Keller (2003) and Agarwal, Angst and Mangi (2009). Coaching as a form of managerial support can, hence, improve participants' work performance even in the short-term by its direct stimulation.

Only very few studies investigated the sustainability of training, despite its relevance in keeping the productivity of the workforce (Salas et al. 2012). The reason is again that only very few studies can measure productivity effects months or even years after the investment has occurred. One example is

[1] There is also a large amount of literature which looks at wage returns to company training. Loewenstein and Spletzer (1998) give an overview for the U.S. and Pischke (2001) for Germany, an excellent survey of the literature is provided by Bassanini et al. (2006).

Zwick (2005) who reported productivity effects lasting several years after the training incidence. Zwick (2005) finds a long-lasting increase in productivity for formal external training forms even two years after training. Formal internal training, participation at seminars and talks, however, have no lasting positive impact, some training forms even exhibit a negative long-term effect on productivity (Zwick 2005). We too will provide a detailed analysis of the long-lasting productivity effects after training using a monthly decomposition.

The retail company under investigation sells products to private customers in the lower and middle price segment in an industry with tough price competition. After merging with a similar sized competitor, the company reassessed its market positioning away from a former focus on low prices to a stronger orientation towards quality and service. The training programme was introduced in 2005, as part of this change in the marketing strategy, and was especially designed for store managers, who are directly responsible for the customer contact.[2] The major aim of the programme was to teach store managers business and marketing-related knowledge, which they in turn should communicate to their employees and thereby improve the company's public image. While offering a wide range of different products, the product portfolio is very similar across all 500 stores. Built as an e-learning tool with text, films, and audio tutorials, the programme covers topics such as time management, purchasing, sales, organization, leadership, marketing, law, and managerial-economics. For a period of 6 months, participants spend an average of 10 hours per week on studying and preparing courses supplemental to their regular work load. Initial training participation was voluntary. Admission to training was based on a first come, first served strategy. However, there has been an understanding that all store managers are eventually expected to participate in the training course. Within the observation period from October 2005 until December 2007, we can observe 10 training courses starting in different intervals. Each course officially ends with a final exam consisting of a written and an oral test, held by the Chamber of Commerce and Industry (CCI), and is rewarded upon passing with a CCI-certificate. The written test covers all learning material quizzing 120 multiple choice questions. In the oral test, participants are faced with different day-to-day issues, e.g. complaining customers or a low sales volume, and have to deliver problem solving suggestions and their recommended course of action in front of an examination board. 99 percent of all participants have passed the exam obtaining a grade of 4(D) or better, though few needed a second try. Within the first

[2] The information in this section originates from personal conversation between the authors and the head of human resource development as well as personal conversation between one of the authors and various company representatives during a 2-week stay in the company's headquarters.

three years (2005 to 2007), 165 store managers took part in groups between 20 and 32 participants (∅ 26.1). Within the observation period, a total of 10 groups started the 6-months programme in October 2005, March, June, September and November 2006, and February, March, April, September and October 2007. Finishing the course is rewarded with a monthly pay raise of 100 Euro, those who passed with distinction (grades A and B), were on top of that refunded the entire training costs of about 240 Euro. Regular compensation schemes are identical for each store manager and consist of a simple base pay with no additional bonus plans. Only managers of franchise stores operate on their own expense and thus may directly profit from higher revenues. Unfortunately, franchise store managers who took part in training amount to only 25 cases (1102 observations), so that a separate analysis among this incentivized group cannot educe representative results.

Data

The data for this study is taken from the company's personnel records and financial data for the time between January 2004 and December 2007. 340 out of 500 subsidiaries were managed by one supervisor during the entire 4-year period and were therefore selected for observation. Among these, 165 store managers took part in the training programme while 175 store managers did not. The average training participant (non-participant) is 42 (45) years old, has 3.3 (3.3) full-time employees, approximately 10.6 (11.6) years of company experience, and is leading a store that has existed for 13.3 (13.2) years. Even though participation is not being determined randomly, both groups are strikingly similar and only significantly differ in very few characteristics, which we will examine further when discussing the determinants of training. Testing the a-priori differences in their pre-training sales revenues also shows no significant difference between non-participants and participants-to-be. Each store can be categorized into one of three different sales level categories, which depend on size, location, and regional purchasing power. As an objective productivity measure, relative monthly sales revenues are observed for each store in all 48 months. This results in a total sample of 16,320 observations. Additional information for each store is available on the number of employees and their respective hours of work, the manager's age and tenure, the age of the store, a dummy indicating whether the store is a franchise store, as well as numerous time-invariant characteristics that further describe the store environment. Note that certain information such as age, tenure, and the number of full-time employees was not available for franchise stores. An overview of our control variables as well as descriptive statistics can be seen in Table 1.

Table 1: Descriptive Statistics

	(1) Full Sample			(2) Training Participation					(3) Training Participation: Yes		
				No	*Yes*				*Early*	*Late*	
	Total	**N**	**Clusters**				**N**	**Clusters**			
Individual time-variant Variables											
Age	**43.18**	13056	272	44.76	41.73	***	6816	142	41.42	42.05	
Tenure	**11.06**	13008	271	11.62	10.55		6768	141	9.59	11.59	*
Age Store	**13.26**	16320	340	13.24	13.27		7920	165	13.21	13.33	
Franchise (yes=1)	**21%**	15936	332	27%	14%	***	7680	160	11%	18%	
Store – specific time-invariant Variables											
Sales Growth	**2%**	12240	340	1%	2%	**	5940	165	2%	3%	
Sales Revenue	**145.84**	16320	340	144.06	147.73	*	7920	165	147.27	148.18	
Full time equivalents	**3.26**	10356	221	3.25	3.28		5292	114	3.4	3.13	*
Store Environment:											
Shopping Center	**39%**	16320	340	37%	42%		7920	165	37%	47%	
Downtown	**18%**	16320	340	17%	19%		7920	165	28%	11%	***
Stand Alone	**43%**	16320	340	46%	39%		7920	165	35%	42%	
Store Environment Detail:											
1a-Location	**7%**	16320	340	7%	8%		7920	165	9%	7%	
1b-Location	**11%**	16320	340	10%	12%		7920	165	20%	4%	***
< 10 tsqm floor space & discount	**16%**	16320	340	14%	17%		7920	165	15%	19%	
< 10 tsqm floor space & market	**5%**	16320	340	3%	6%		7920	165	5%	7%	
> 10 tsqm floor space & discount	**9%**	16320	340	9%	10%		7920	165	11%	10%	
> 10 tsqm floor space & market	**9%**	16320	340	10%	8%		7920	165	6%	11%	
Weak commerce	**24%**	16320	340	24%	23%		7920	165	20%	27%	
Strong commerce	**19%**	16320	340	22%	16%		6816	142	16%	16%	
Sales Revenue Category:											
Small	**71%**	13056	272	70%	71%		6816	142	66%	77%	
Medium	**20%**	13056	272	17%	23%		6816	142	25%	20%	
Large	**10%**	13056	272	13%	6%	*	7920	165	10%	3%	*
Region:											
West Germany (yes=1)	**61%**	16320	340	57%	67%	*	7920	165	73%	60%	*
Federal State:											
Baden-Württemberg	**19%**	16320	340	15%	22%		7920	165	23%	20%	
Bayern	**15%**	16320	340	11%	20%	**	7920	165	20%	20%	
Berlin	**3%**	16320	340	3%	4%		7920	165	2%	5%	
Brandenburg	**6%**	16320	340	5%	7%		7920	165	6%	8%	
Bremen	**1%**	16320	340	1%	1%		7920	165	0%	1%	
Hamburg	**1%**	16320	340	1%	0%		7920	165	0%	0%	
Hessen	**4%**	16320	340	5%	2%		7920	165	4%	1%	
Mecklenburg-Vorpommern	**4%**	16320	340	8%	1%	***	7920	165	0%	1%	
Niedersachsen	**4%**	16320	340	6%	3%		7920	165	2%	4%	
Nordrhein-Westfalen	**11%**	16320	340	10%	12%		7920	165	15%	10%	
Rheinland-Pfalz	**5%**	16320	340	4%	5%		7920	165	7%	4%	
Saarland	**1%**	16320	340	3%	0%	**	7920	165	0%	0%	
Sachsen	**11%**	16320	340	12%	11%		7920	165	10%	12%	
Sachsen-Anhalt	**7%**	16320	340	9%	5%		7920	165	5%	6%	
Schleswig-Holstein	**1%**	16320	340	1%	1%		7920	165	2%	0%	
Thüringen	**6%**	16320	340	7%	5%		7920	165	4%	7%	
Size of Town:											
Provincial Town < 20,000 inhabitants	**52%**	16320	340	51%	54%		7920	165	48%	60%	
Middle Town 20,000 - 100,000 inhabitants	**28%**	16320	340	26%	29%		7920	165	34%	24%	
Major City > 100,000 inhabitants	**20%**	16320	340	23%	17%		7920	165	18%	16%	
Branch Management:											

Line Manager	**94%**	13056	272	90%	98%	***	6816	142	97%	99%
Deputy Manager	**0%**	13056	272	0%	1%		6816	142	1%	0%
Executive Employee	**6%**	13056	272	10%	1%	***	6816	142	1%	1%
Regional Executive Manager:										
Dummy for each of 3 Executive Managers		16320	340				7920	165		
District:										
Dummy for each of 23 districts		16320	340				7920	165		

Note: *** p<0.01, ** p<0.05, * p<0.1, Wald test statistic for equal means, N corresponds to the number of observations, Clusters on store level correspond to the number of independent observations. Store managers report to one of three executive managers.

We measure training participation with two dummy variables: in Training and after Training. *In Training* takes the value 1 if the respective store manager has taken part in training in the month under consideration and *after Training* takes the value 1 for all months after the respective store manager has finished the programme.

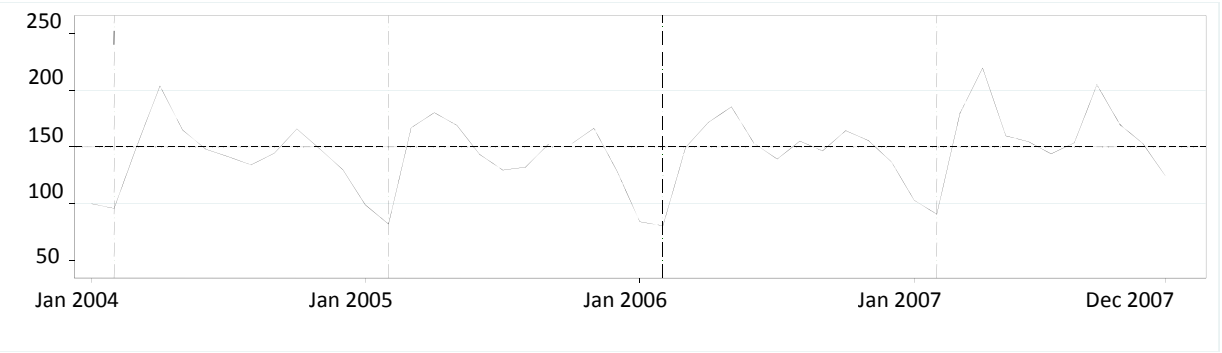
A store manager's productivity is measured by his respective store's sales revenue $y_{i,t}$ in month t for store i. Due to privacy restrictions, monthly sales are normalized by dividing a store's current sales revenue by its sales revenue in January 2004. The normalized sales y for store i in January 2004, hence, equals $y_{i,Jan2004}$ =100 and normalized sales y for outlet i in month t:

$$y_{i,t} = \left(Sales_{i,t} \,/\, Sales_{i,Jan2004} \right) * 100 \qquad (1)$$

Figure 1 provides an overview of the company's overall normalized sales revenue pattern and shows that seasonal effects in the business are very strong. Spring and autumn are peak seasons with average sales revenues of around 170 percent of the January 2004 sales levels. Sales during summer and winter regularly decrease following the same pattern each year. Demand in the market is typically steady and fluctuates only in dependence of changing weather conditions in spring and autumn. As all stores are equally affected by that, there are reasonable grounds for presuming that individual trends are unlikely to exist. While the overall sales level is stable at around 150 percent for the years 2004, 2005 and 2006, it has increased substantially in 2007 (see Figure 1). To account for these patterns and to eliminate any seasonal effects, we model the seasonal structure by including dummies for each month and year as suggested by Hanssens, Parsons and Schultz (2003). Still, as usually a concern in time series, autocorrelation of the error term may be present and a reason for inefficient estimates. We test for first order serial correlation (AR(1)) in the idiosyncratic errors using Wooldridge's (2002) test for panel data and account for autocorrelation by adopting the most common approach of clustering standard errors on

the individual/store level (Angrist and Pischke 2009).[3]

Figure 1: Normalized Company Sales Revenue for 2004 – 2008



Note: Normalized sales revenue is calculated as the average of all shop sales revenues. Sales revenue reaches its low each February as labelled by vertical lines.

As each store's performance measure in the base month is automatically set to 100, we can no longer identify variation between stores as stemming from their operational result. To overcome the reference dependence of the performance measure $y_{i,t}$ allowing for a comparison of the impact of training between store managers, we use the growth rate of sales as the preferred performance measure. Given (1) we can take logs and write

$$\ln\ (y_{i,t}) = \ln\ (Sales_{i,t}) - \ln\ (Sales_{i,Jan2004}) + \ln(100). \tag{2}$$

As sales revenue in the base month (January 2004) is normalized and set to 100, we deduct the pre-year values and receive the growth rate of sales as the difference between the logarithm of sales in the present month t and the same month in the previous year $t-12$, which is more conveniently expressed in equation (3). As we can see, the growth rate is independent of the base month.

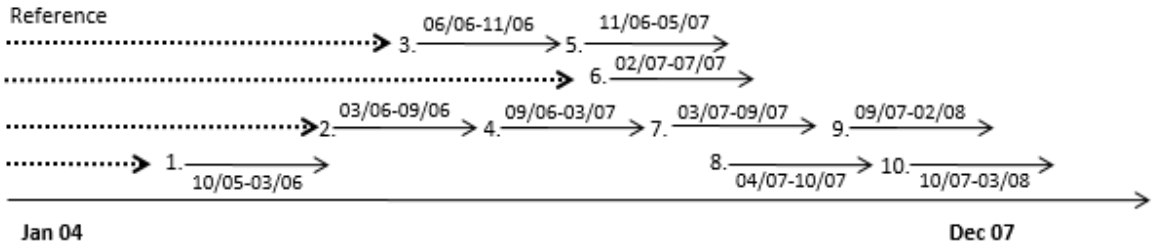
$$\ln\ (\frac{y_{i,t}}{y_{i,t-12}}) = \ln\ (\frac{Sales_{i,t}}{Sales_{i,t-12}}) \tag{3}$$

The store managers in the present case sell a very specific range of products in the lower and middle price segment and, due to the nature of the product, only attract customers in a comparatively narrow local area. By the use of training, store managers might be able to increase the efficiency of doing business in

[3]Drukker (2003) using Monte Carlo simulations showed good size and power properties of Wooldridge's test in samples of reasonable size for all common estimation procedures.

the local store or to attract a wider customer group with more widespread marketing campaigns. Thus, the optimal impact of training, measured by the variation in sales at store level, lies in higher sales levels up to market saturation.[4] Due to natural limits in product demand in the local area, it is unlikely to expect a long-term growth in sales as an impact of training. As the first training cohort finishes the program in September 2006, the longest observed time spell after participation amounts to 15 months in our data set (see Figure 2). We are confident that this time spell is too short to hit the market saturation in the local market.

Figure 2: Training cohorts and time structure



Note: Start and end dates are provided in the format month/year.

Another issue, which has to be considered, is strategic decision making of when managers decide to take part in the training programme. A store manager, for example, who foresees a lower sales period, e.g. due to construction close to or in front of his shop, might choose to take part in the programme during this period on account of lower daily work volume that comes with a reduced amount of occasional customers. Lower sales revenue during the training and construction period would then be mistaken for a negative training effect. On the other hand, managers who foresee the busy seasons of spring and autumn may choose their timing of training accordingly, to be best prepared for these additional sales opportunities. Then our model could pick up on the increased sales that the manager foresaw, but which is not due to the training received. Given strategic timing decisions of managers, we should a) find higher participation rates before busy seasons and b) compressed sales during training and upwardly biased coefficients after training, if training phases coincide with busy seasons. Consider, however, that trainings

[4]Of course there are other intended training outcomes like lower turnover rates of store managers and store employees or increasing customer satisfaction which all can lead to higher sales rates, which manifest in the long run and therefore are outside our observation period.

are set up, once enough managers have registered to complement a course, so that individual strategic decisions may be impeded by an insufficient amount of enrolled participants. Yet, if enough managers follow the same strategic calculus and form a cohort, the programme may be set up at the date planned. Looking at the timely allocation of trainings in Figure 2, we find no systematic pattern of starting months of training. χ^2 tests show that the observed distribution of starting months does not differ from a uniform distribution across all months. Using sales growth instead of sales revenue as the dependent variable in our models enables us to further rule out seasonal influences on our outcome variable which could come along with strategic assessment on when to take part in training.

Empirical Strategy

In our empirical analysis we account for selection into training by taking the specific nature of our data into account. The latter induces using the growth rate of sales as the dependent variable in all our specifications. We will achieve identification of the effect of the store managers' training on store performance by using a difference-in-difference approach. Basically, we estimate the following equation, whereby $X_{i,t}^{'}$ contains a vector of time-varying and $Z_i^{'}$ a vector of time-invariant control variables and $D_{i,t}$ is a vector including two dummies, a dummy identifying the 6-month training spells and a dummy identifying after training observations:

$$y_{i,t} = \alpha_i + \lambda_t + \rho D_{i,t} + \beta_1 X_{i,t}^{'} + \beta_2 Z_i^{'} + \varepsilon_{i,t} \quad (4)$$

α_i is the individual-level effect and $\varepsilon_{i,t}$ is the idiosyncratic error. In a first specification we will not account for a separate individual-level effect and estimate equation (4) by OLS. We then remove the individual effect by estimating a fixed-effects model. We account for serial correlation by clustering all standard errors at the individual level which should lead to efficient estimates given the number of clusters in our sample (see Angrist and Pischke 2009, Section 8.2.2 for an extensive discussion of this issue). Because Figure 1 suggests a seasonal time structure, λ_t is reflected by including dummies for each month and year in our regression.

A primary concern in a panel-data setting may be differences in the underlying trend even in the absence of training. To check for robustness we account for individual time trends by taking 12 month-differences for the left-hand and right hand side variables and including an individual-specific time trend which leads to

$$\Delta y_{i,t} = \gamma_i + \Delta\lambda_t + \rho\Delta D_{i,t} + \beta_1 \Delta X'_{i,t} + \Delta\varepsilon_{i,t}. \quad (5)$$

Equation (5) is estimated by OLS and by fixed effects rendering the latter to a random growth model (Wooldridge 2002, Chapter 11.7.1). While our approach accounts for selection into training on time-invariant characteristics as well as individual-specific time trends, one might still worry about estimates being biased by selection on the benefits of training. Selection based on idiosyncratic gains might well be present as the company observed chose not to implement random assignment. Even though each manager is asked to participate in training in the long run and the company therefore could easily assign managers to training groups randomly, the chosen strategy was not to dictate timing but to initiate a self-paced choice. This enables us to approach a comparison of the returns of different training cohorts in the first place. To check robustness further, we will estimate all the aforementioned equations only in the subgroup of training participants. In an extension to equations (4) and (5), we split the treatment variable to differentiate in training and after training spells between early and late training cohorts and estimate several interaction models, such as one for franchise stores as these face an entirely different compensation structure.

Empirical Results

The probit regression in Table 2 shows the variables which lead managers to select into the training programme. We find tenure to have a positive impact on training participation with a turning point after 14.17 years with the company. Various *Store Location* and *Store Environment* variables also prompt managers to rather sign up for training. More importantly, we find store managers with positive sales development prior training to have a 7% higher chance in taking part in the programme. Inferring that mostly time-invariant characteristics like store location and regional management have a determining effect on training participation. We will use this information to perform extending analysis of training effects among these subgroups in the following. Given the fact that the training programme lasts 6 months and participation does not prevent those enrolled in the programme to follow their regular job, we control with *in Training* for time periods during training participation and *after Training* for time periods after training. Controlling for a detailed list of individual and store specific variables, we find no during training effect but even a highly significant after training effect of reduced sales growth by 2.5 percent (Table 3). This significant negative after training effect remains stable after removing the individual-level effect by

Table 2: Determinants of Training Participation

	Probit Regression on Training Participation	
Exogenous Variables		
Sales Growth	0.0714**	(0.0302)
Sales Revenue	0.0010***	(0.0001)
Full time equivalents	-0.0072	(0.0055)
Age	0.0001	(0.0050)
Age sq	-0.0001	(0.0001)
Tenure	0.0171***	(0.0028)
Tenure sq	-0.0006***	(0.0001)
Age Store	-0.0055	(0.0052)
Age Store sq	0.0006***	(0.0002)
Franchise store	0.0346	(0.0401)
South Germany	0.0515	(0.0483)
West Germany	0.1364**	(0.0545)
North Germany	-0.0559	(0.0414)
Town 20,000-100,00 inhabitants	0.0161	(0.0119)
Major City >100,000 inhabitants	0.0137	(0.0140)
Sales Revenue Category 1-2 million €	0.0268**	(0.0124)
Sales Revenue Category >2 million €	-0.0165	(0.0186)
1a Store Location	-0.0768***	(0.0172)
Location Shopping Center	0.0953***	(0.0154)
Location Downtown	0.1603***	(0.0230)
Weak commerce	-0.0035	(0.0140)
Manager is deputy manager	0.2972***	(0.0935)
Manager is executive employee	-0.1640***	(0.0101)
Regional executive manager 1	-0.1123***	(0.0193)
Regional executive manager 2	-0.0948**	(0.0413)
Observations	**7668**	
Pseudo. R-squared	0.0913	

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients can be interpreted as marginal effects. References are East Germany, Medium Sized Cities, Sales Revenue Category under 1 million Euro, 1b Store Location, Greenfield Location, Strong commerce, Line Manager, and Regional executive manager 3.

estimating the fixed effects model in Specification 2. Hence, considering a randomly chosen store manager, training does not yet provide an effect during training and is even accompanied by a surprisingly negative effect after the training period. Yet, these effects attenuate once estimating the treatment effects in an equation that controls for differences in the underlying sales trend even in the absence of training by taking 12-month-differences (Specifications 3 and 4). The data at hand offer a more profound possibility to evaluate training effects. In particular, we figure those who expect the highest gains from training to participate first. This assumption is supported by the variation in final grades between course cohorts as can be seen from Table A1 in the appendix.[5]

[5] A detailed analysis of final grades and their impact on productivity is given in Hinerasky, Fahr and Sliwka (2012).

Table 3: Training Effects on Sales Growth

			Differenced equation	
	(1)	(2)	(3)	(4)
Sales Growth	**OLS**	**FE**	**OLS**	**FE**
In Training	0.0032	-0.0016	0.0043	0.0153
	(0.01)	(0.01)	(0.01)	(0.02)
After Training	-0.0247***	-0.0294**	-0.0152	0.0045
	(0.01)	(0.01)	(0.01)	(0.02)
Months Dummies	Yes	Yes		
Year 2007	0.1092***	[a]	0.0427***	
	(0.01)		(0.01)	
Year 2006	0.0331***	-0.0222***	[a]	
	(0.01)	(0.00)		
Age	0.0012	0.0010		
	(0.00)	(0.01)		
Age sq	-0.0000	-0.0001		
	(0.00)	(0.00)		
Tenure	0.0004	-0.0042		
	(0.00)	(0.01)		
Tenure sq	-0.0001	0.0002		
	(0.00)	(0.00)		
Full time equivalents	0.0089***	0.0024	-0.0005	-0.0011
	(0.00)	(0.00)	(0.01)	(0.01)
Age Store	-0.0113***	0.0493***		
	(0.00)	(0.01)		
Age Store sq	0.0003**	0.0002		
	(0.00)	(0.00)		
Franchise	0.0163	0.0341	0.0374*	-0.0008
	(0.02)	(0.03)	(0.02)	(0.02)
Constant	-0.0068	-0.5434*	0.0267***	0.0441***
	(0.08)	(0.29)	(0.01)	(0.00)
Observations/Groups	**7668**	**7668/214**	**5124**	**5124/215**
Adj. R-squared	0.13	0.11	0.01	0.00

Note: Robust Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Specifications (3) & (4) use the 12-month difference of each training variable (In Training, After Training) and time-variant variables (Full time Equivalents and Franchise Store). In OLS regressions we explicitly control for the store environment by including 2 dummies for towns from 20,000-100,000 inhabitants or major cities with >100,000 inhabitants (Reference medium sized cities); 1 dummy for 1a store location (Reference 1b store location); 3 dummies for <10k sqm&retail, >10k sqm&retail, >10k sqm&discount (Reference <10k sqm&discount); 1 dummy for weak commerce (Reference: strong commerce), 2 dummies for shopping center, downtown (Reference: Greenfield location); 2 dummies for Manager is Deputy manager or Executive employee (Reference: Manager), 2 regional executive manager dummies, 22 district dummies, 15 federal state dummies, West Germany dummy, 2 dummies for sales revenue category. [a] the variable was omitted due to collinearity.

The average overall grades seem to be slightly better in the first half of the cohorts compared to the second half. Using Mann Whitney U-Test statistics, we tested various breakdowns of the cohorts with respect to grades which support splitting the sample after group 5. We therefore split the first half (groups 1-5) from the second half (groups 6-10) to see if their respective training results differ. A probit regression on early versus late participation also shows that both groups differ in numerous variables, especially in the value of their store and locational characteristics (Table 4). For an even more detailed analysis of the timing decision we also conducted an Ordered Logit Regression with the inversed cohort number as the variable of interest to predict cohort selection and received qualitatively similar results.

Table 4: Determinants of Early Training Participation

	Probit Regression on Early Training Participation	
Exogenous Variables		
Sales Growth	0.2033***	(0.0515)
Sales Revenue	0.0008***	(0.0002)
Full time equivalents	0.0027	(0.0102)
Age	-0.0328***	(0.0093)
Age sq	0.0003***	(0.0001)
Tenure	0.0296***	(0.0049)
Tenure sq	-0.0012***	(0.0002)
Age Store	-0.0360***	(0.0095)
Age Store sq	0.0019***	(0.0004)
Franchise store	0.0269	(0.0752)
South Germany	-0.1876***	(0.0691)
West Germany	-0.0849	(0.0775)
North Germany	-0.2032***	(0.0534)
Town 20,000-100,00 inhabitants	-0.0035	(0.0205)
Major City >100,000 inhabitants	0.1110***	(0.0290)
Sales Revenue Category 1-2 million €	0.0619***	(0.0221)
Sales Revenue Category >2 million €	-0.0132	(0.0336)
1a Store Location	-0.2128***	(0.0251)
Location Shopping Center	0.1253***	(0.0264)
Location Downtown	0.3570***	(0.0352)
Weak commerce	0.0177	(0.0258)
Manager is deputy manager	0.0518	(0.0965)
Manager is executive employee	0.2419**	(0.1015)
Regional executive manager 1	-0.0894**	(0.0362)
Regional executive manager 2	-0.3090***	(0.0628)
Observations	**3888**	
Pseudo. R-squared	0.0738	

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients can be interpreted as marginal effects. References are East Germany, Medium Sized Cities, Sales Revenue Category under 1 million Euro, 1b Store Location, Greenfield Location, Strong commerce, Line Manager, and Regional executive manager 3.

Distinguishing between early and late participation we find early participants to have a significant positive during training effect of 2.6 % and of highly significant 4.4 % controlling for individual fixed effects in Specification (2) of Table 5.[6] Both results are robust when accounting for possible differences in the underlying sales trends. However, the positive sales development during the training phase is not permanent but diminishes to pre-training levels once training is completed. For later participants in cohorts 6-10, on the other hand, there is none or even a negative training effect which not only remains

[6] For a full specification one would include dummies for early and late periods, as well as separate dummies for in Training and after Training periods. However, as early and late participation is only defined for training participants, it cannot be specified separate of training participation. We omit the dummies *in Training* and *after Training* as this would cover the training's time horizon twice, which inflates standard errors and entails a more inefficient estimation.

Table 5: Training Effects on Sales Growth by Early and Late Participation

	Early and Late Participation			
			Differenced equation	
	(1)	(2)	(3)	(4)
Sales Growth	**OLS**	**FE**	**OLS**	**FE**
Early in Training	0.0262**	0.0438***	0.0702***	0.1035***
	(0.01)	(0.01)	(0.02)	(0.02)
Early after Training	-0.0126	0.0058	0.0086	0.0695***
	(0.01)	(0.01)	(0.01)	(0.02)
Late in Training	-0.0092	-0.0276**	-0.0394**	-0.0347*
	(0.01)	(0.01)	(0.02)	(0.02)
Late after Training	-0.0540***	-0.0778***	-0.0806***	-0.0841***
	(0.01)	(0.01)	(0.02)	(0.02)
Months Dummies	Yes	Yes		
Year 2007	0.1105***	[a]	0.0557***	
	(0.01)		(0.01)	
Year 2006	0.0304***	-0.0274***	[a]	
	(0.01)	(0.00)		
Age	0.0017	0.0011		
	(0.00)	(0.01)		
Age sq	-0.0000	-0.0001		
	(0.00)	(0.00)		
Tenure	-0.0000	-0.0066		
	(0.00)	(0.01)		
Tenure sq	-0.0000	0.0003		
	(0.00)	(0.00)		
Full time equivalents	0.0089***	0.0039	0.0005	-0.0009
	(0.00)	(0.01)	(0.01)	(0.01)
Age Store	-0.0102***	0.0501***		
	(0.00)	(0.01)		
Age Store sq	0.0003**	0.0001		
	(0.00)	(0.00)		
Franchise	0.0172	0.0426	0.0375*	-0.0081
	(0.02)	(0.03)	(0.02)	(0.02)
Constant	-0.0177	-0.5454*	0.0195***	0.0380***
	(0.08)	(0.28)	(0.01)	(0.00)
Observations/Groups	**7668**	**7668/214**	**5124**	**5124/215**
Adj. R-squared	0.13	0.11	0.01	0.01

Note: Robust Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Specifications (7) & (8) use the 12-month difference of each training variable (Early in/after Training, Late in/after Training) and time-variant variables (Full time Equivalents and Franchise Store). In OLS regressions we explicitly control for the store environment by including 2 dummies for towns from 20,000-100,000 inhabitants or major cities with >100,000 inhabitants (Reference medium sized cities); 1 dummy for 1a store location (Reference 1b store location); 3 dummies for <10k sqm&retail, >10k sqm&retail, >10k sqm&discount (Reference <10k sqm&discount); 1 dummy for weak commerce (Reference: strong commerce), 2 dummies for shopping center, downtown (Reference: Greenfield location); 2 dummies for Manager is Deputy manager or Executive employee (Reference: Manager), 2 regional executive manager dummies, 22 district dummies, 15 federal state dummies, West Germany dummy, 2 dummies for sales revenue category. [a] the variable was omitted due to collinearity.

but even increases in after training periods. It can therefore not be interpreted as simple decreased productivity during the training period followed by delayed pay-offs as found by Bassi et al (2001). The difference between *Late in training* and *Late after training* effects is highly significant on the 1 % level in Specification (2) and on the 5 % (resp. 2 %) level in Specifications (3) and (4). However, the negative after training effect in late cohorts has to be interpreted carefully because of the availability of only few after training periods.

As early participants as such differ from the full sample in a consistent significant positive training effect while being trained, the driving forces of early training participation are therefore the participants' expected idiosyncratic gains of the training programme. Fixed effects estimates account for the latter as long as they are time invariant. Our results indicate that during training effects are positive, yet measured imprecisely, as early-takers are a selected, more talented subgroup among which the training has a significantly sales-boosting effect.

This, what we call, "early bird effect" might be overestimated by the fact that we are comparing trained sales managers with managers who might not yet even consider a participation in training. Referring to a more similar comparison group, we estimate our model again among only treated individuals and receive identical results in each Specification. Results are given in Table A2 in the appendix. In a further robustness check we include leads for treatment status to test if our result is an artefact of different underlying trends in treatment and reference groups and to make sure that our findings are not driven by mere selection into treatment. In Table 6 we control for the same variables as above but include 3-month-leads for training. Considering the comparison of treated with untreated sales managers, there is no significant difference in sales growth, 3 months prior to training participation. The early vs. late comparison shows that early participants at best display some sort of Ashenfelter dip (Ashenfelter 1978) before training, but weakly significant at the 10 % level or not significant when taking manager fixed effects into account. Training effects remain robust to our previous specifications accentuating that early participants are not selected based on higher pre-programme outcomes, but rather more on their ability to transfer and use training content in their everyday work. Surprisingly, late participants display significant positive pre-training sales revenues, which drop right at the beginning of the programme. This form of increased productivity before or during exposure to treatment followed by a slump to even below the pre-training revenue level is commonly interpreted as Hawthorne effect (Roethlisberger and Dickson 1949, Levitt and List 2009), but is surprisingly only found for late participants who seem to be well motivated ahead of training but then cannot benefit from actual participation. This observation also suggests that the underperformance of late participants cannot be attributed to the company's objective of having all managers go through the training programme thereby pressuring some managers into participation who would rather refuse.

Given the rich information provided by this company dataset, we performed various extensions to the above models, extensively investigating the training's mechanisms. We test whether (i) short-term training effects are rather prevalent in small stores, (ii) large training effects are more difficult to achieve

Table 6: Additional Robustness including leads for treatment status

			Early and Late Participation	
	(1)	(2)	(3)	(4)
Sales Growth	**OLS**	**FE**	**OLS**	**FE**
3-month Lead	0.0123	0.0076		
	(0.01)	(0.01)		
In Training	0.0044	0.0002		
	(0.01)	(0.01)		
After Training	-0.0232***	-0.0271**		
	(0.01)	(0.01)		
3-month Lead Early			-0.0262*	-0.0098
			(0.01)	(0.01)
Early in Training			0.0258**	0.0423***
			(0.01)	(0.01)
Early after Training			-0.0111	0.0055
			(0.01)	(0.01)
3-month Lead Late			0.0439***	0.0282*
			(0.01)	(0.01)
Late in Training			-0.0056	-0.0224*
			(0.01)	(0.01)
Late after Training			-0.0507***	-0.0723***
			(0.01)	(0.01)
Constant	-0.0097	-0.5322*	-0.0153	-0.5197*
	(0.08)	(0.29)	(0.08)	(0.28)
Observations/Groups	**7668**	**7668/214**	**7668**	**7668/214**
Adj. R-squared	0.13	0.11	0.13	0.11

Note: Robust Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

in large stores, (iii) there are differences in training effects based on a store's Sales Revenue Category and (iv) there are differences in training effects based on a store's locational factors, but find no systematic effects. As stores are run by different management forms, i.e. by a manager, a deputy manager or an executive employee, we further argue that training effects might differ by the leading manager's role in the company. With 720 but only 15 independent observations for executive employees (48 to 1 for deputy managers respectively) results have to be interpreted carefully. However, even though executive employees typically earn less and hold store management only for a predetermined time, they even seem to be better able to implement training content into regular workday during the training phase than regular managers. This effect again attenuates once treatment is completed (Table A3 in the appendix).

As previously mentioned, well performing training participants are rewarded by a refund of the entire training costs. An even higher motivation to not only perform well during training but to constantly make use of the learnt content should be seen among franchise store managers as they are entitled to fully skim off higher profits when implemented training elements generate increased sales revenue. Again, with 25 independent observations of franchise store managers that took part in training during the observation period, results can only be given suggestively. One would expect franchise store managers to keep up higher sales levels after training, provided they had already accomplished to increase sales levels

during the training period. However, they differ from the full sample at best in the fact that after training sales growth is not negative but also not significantly different from pre-training sales growth (Specifications (1) and (2) in Table A4). Comparing early and late franchise training participants, we find training effects of much higher magnitude which seem to be persistent, in control of individual differences, at least among early participants. Results, however, might well be floated by the small number of independent observations.

Conclusion

The institutional environment of the company and the training programme provided a neat framework to investigate performance effects of training. While it is beyond the scope of the paper to analyse the transmission of training, we were able to study productivity effects of training during and after participation which are not confounded by work time reductions or direct expenses for training. In contrast to the predominant stream of literature, we find significant negative performance effects subsequent to training participation. We explored the puzzling negative impact of training by investigating whether this result might be due to the heterogeneity of training participants. Surprisingly, once restricting the sample to participants who volunteered as early-participants we observe a statistically and economically considerable impact of training on productivity during training periods. We conclude that early-takers form a subgroup among which training has its most prevalent effects. Later participants, on the other hand, respond to training with a negative during training as well as after training sales growth. This result might be due to the fact that all managers are asked to take part in the long run. Lower motivation or the feeling of being forced, however, can be ruled out when detecting positive rather than negative sales development 3 months prior to training. This implies for the provision of training that with a first-come, first-served strategy those with the highest talent and the highest prospects of success will self-select into early-participation. Asking all managers to participate, however, can have the opposing effect as even those managers have to invest time and energy, for whom the training or its form might not be suited. Eventually, the type of training studied in the present paper is a 6 month e-learning programme where participants study in the evening hours while working full-time. We found that any performance effects of training unfold rather during than after training. These however, cannot be interpreted as human capital effects, since no persistent human capital has been built up. In case it had, knowledge was not used or permanently transferred into regular work days. Training increases sales levels

through mechanisms that are not covered by human capital theory, as human capital would not vanish as quickly. As a result, our findings indicate the importance of providing training in the form of continuous training rather than crash courses. Training content and presented strategies are transferred because participants are confronted with addressed topics every day and reminded by regular communication with their chat group mentors. This calls for finding new ways to make company training part of the everyday work life rather than condensing the learning contents in few training incidences. By that our study complements the literature which study how training content is transferred into the workplace.

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Appendix

Table A1: Mean Final Grades by Cohort

Cohort	Mean Grade	Str. Error	[95% Conf. Interval]	
1	2.17	0.0284	2.11	2.22
2	2.22	0.0267	2.17	2.27
3	2.60	0.0303	2.54	2.66
4	2.46	0.0536	2.36	2.57
5	2.47	0.0249	2.42	2.52
6	2.69	0.0210	2.65	2.73
7	2.44	0.0179	2.40	2.47
8	2.64	0.0336	2.57	2.70
9	2.39	0.0213	2.35	2.43
10	2.81	0.0318	2.75	2.87

Note: Grades are given on a standardized basis: 100-92 Points Grade 1(A); <92-81 Points Grade 2(B); <81-67 Points Grade 3(C); <67-50 Points Grade 4(C); <50-30 Points Grade 5(E); <30-0 Points Grade 6(F).

Table A2: Training Effects on Sales Growth only Treated Individuals

	Training Participation				Early and Late Participation			
			Differenced Equation				Differenced Equation	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sales Growth	**OLS**	**FE**	**OLS**	**FE**	**OLS**	**FE**	**OLS**	**FE**
In Training	-0.0055	-0.0053	0.0062	0.0152				
	(0.01)	(0.01)	(0.02)	(0.02)				
After Training	-0.0350**	-0.0354**	-0.0124	0.0048				
	(0.01)	(0.02)	(0.02)	(0.02)				
Early in Training					0.0280**	0.0440***	0.0744***	0.1034***
					(0.01)	(0.01)	(0.02)	(0.02)
Early after Training					-0.0179	-0.0001	0.0084	0.0698***
					(0.01)	(0.01)	(0.02)	(0.02)
Late in Training					-0.0237*	-0.0345**	-0.0439**	-0.0346*
					(0.01)	(0.01)	(0.02)	(0.02)
Late after Training					-0.0669***	-0.0838***	-0.0848***	-0.0842***
					(0.02)	(0.02)	(0.02)	(0.02)
Months Dummies	Yes	Yes			Yes	Yes		
Year 2007	0.1188***	[a]	0.0366***		0.1205***	[a]	0.0651***	
	(0.01)		(0.01)		(0.01)		(0.02)	
Year 2006	0.0393***	-0.0215***	[a]		0.0317***	-0.0327***	[a]	
	(0.01)	(0.01)			(0.01)	(0.01)		
Age	0.0077	-0.0001			0.0100	0.0001		
	(0.01)	(0.02)			(0.01)	(0.02)		
Age sq	-0.0001	0.0000			-0.0001	0.0000		
	(0.00)	(0.00)			(0.00)	(0.00)		
Tenure	-0.0029	-0.0057			-0.0044	-0.0105		
	(0.00)	(0.01)			(0.00)	(0.01)		
Tenure sq	0.0001	0.0001			0.0002	0.0002		
	(0.00)	(0.00)			(0.00)	(0.00)		
Full time equivalents	0.0061	-0.0005	-0.0025	-0.0035	0.0074	0.0029	0.0000	-0.0031
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Age Store	-0.0132***	0.0506***			-0.0094**	0.0528***		
	(0.00)	(0.01)			(0.00)	(0.01)		
Age Store sq	0.0004**	0.0003			0.0003	0.0002		
	(0.00)	(0.00)			(0.00)	(0.00)		
Franchise	0.0398	0.0007	0.0266	-0.0157	0.0437	0.0121	0.0278	-0.0258
	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)
Constant	-0.2055	-0.6001	0.0284***	0.0402***	-0.2564	-0.6164	0.0144	0.0281***
	(0.16)	(0.45)	(0.01)	(0.01)	(0.17)	(0.44)	(0.01)	(0.01)
Observations/Groups	**3888**	**3888/109**	**2604**	**2604/110**	**3888**	**3888/109**	**2604**	**2604/110**
R-squared	0.14	0.11	0.00	0.00	0.15	0.12	0.02	0.02
Adj. R-squared	0.13	0.10	0.00	-0.00	0.13	0.11	0.02	0.01

Note: Robust Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Specifications (3) & (4), (7) & (8) use the 12-month difference of each training variable (In Training, After Training, Early in/after Training, Late in/after Training) and time-variant variables (Full time Equivalents and Franchise Store). In OLS regressions we explicitly control for the store environment by including 2 dummies for towns from 20,000-100,000 inhabitants or major cities with >100,000 inhabitants (Reference medium sized cities); 1 dummy for 1a store location (Reference 1b store location); 3 dummies for <10k sqm&retail, >10k sqm&retail, >10k sqm&discount (Reference <10k sqm&discount); 1 dummy for weak commerce (Reference: strong commerce), 2 dummies for shopping center, downtown (Reference: Greenfield location); 2 dummies for Manager is Supervising manager or Supervising employee (Reference: Manager), 2 regional executive manager dummies, 22 district dummies, 15 federal state dummies, West Germany dummy, 2 dummies for sales revenue category. [a] the variable was omitted due to collinearity.

Table A3: Training Effects on Sales Growth with respect to Store Management

	(1)	(2)
Sales Growth	**OLS**	**FE**
In Training	0.0013	-0.0023
	(0.01)	(0.01)
After Training	-0.0242***	-0.0275**
	(0.01)	(0.01)
In Training*Executive Employee	0.1382***	0.0637***
	(0.03)	(0.01)
After Training*Executive Employee	-0.0290	-0.0994***
	(0.03)	(0.02)
In Training*Deputy Manager	0.0211**	0.0258**
	(0.01)	(0.01)
After Training*Deputy Manager	-0.0628***	-0.0585***
	(0.01)	(0.02)
Deputy Manager	0.0429*	
	(0.02)	
Executive Employee	-0.0296	
	(0.02)	
Constant	-0.0020	-0.4992*
	(0.08)	(0.29)
Observations/ Groups	**7668/214**	**7668/214**
Adj. R-squared	0.13	0.11

Note: Robust Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1, controlled for a list of variables given in Table A2

Table A4: Training Effects on Sales Growth with respect to Franchise Stores

			Early and Late Participation	
	(1)	**(2)**	**(3)**	**(4)**
Sales Growth	**OLS**	**FE**	**OLS**	**FE**
In Training	0.0013	-0.0028	0.0013	-0.0028
	(0.01)	(0.01)	(0.01)	(0.01)
After Training	-0.0250***	-0.0294**	-0.0250***	-0.0295**
	(0.01)	(0.01)	(0.01)	(0.01)
In Training*Franchise	0.1500**	0.1050		
	(0.07)	(0.09)		
After Training*Franchise	0.0256	0.0048		
	(0.02)	(0.02)		
Early in Training*Franchise			0.2744***	0.3160***
			(0.02)	(0.01)
Early after Training*Franchise			-0.0040	0.0361***
			(0.02)	(0.01)
Late in Training*Franchise			0.1003***	0.0112
			(0.03)	(0.02)
Late after Training*Franchise			0.0747***	-0.0178
			(0.03)	(0.02)
Franchise	0.0037	0.0229	0.0037	0.0353
	(0.02)	(0.03)	(0.02)	(0.03)
Constant	-0.0087	-0.5454*	-0.0089	-0.5531*
	(0.08)	(0.29)	(0.08)	(0.29)
Observations/Groups	**7668/214**	**7668/214**	**7668/214**	**7668/214**
Adj. R-squared	0.13	0.11	0.13	0.11

Note: Robust Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1, controlled for a list of variables given in Table A2