

***Determinants of Training in SME Enterprises
in Northern Ireland***

By

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Abstract

This study looks at SME spending on training in Northern Ireland. We include a range of human resource management functions, as well as workforce characteristics, the external environment, size, and the impact of changes in ownership status as important determinants of training expenditure in SME's. Particular attention is also paid as to the importance of whether the enterprise is family owned and/or managed. Generally, our results show that HR functions do generally matter; however, workforce characteristics (other than shiftworking), ownership characteristics and external factors, and even to some extent size, were much less important than expected. What our results do show is that whether the firm is family-owned/managed is a major factor in determining training budgets in SME's in Northern Ireland.

Keywords: Family-owned business HRM training SME's

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1. Introduction

While there has been widespread consideration of the role of SME's in terms of their innovative and job creation capabilities, there has been much less attention paid to the acquisition of human capital. In general issues associated with HRM, and in particular training, have been largely assumed to be the domain of larger companies that have the resources to pay for such factors. HRM practices and associated organisational practices such as TQM and the introduction of new technology, are often studied using case studies of larger (often multinational) enterprises or using datasets that are significantly biased towards larger firms. Thus much less is known about which factors effect SME spending on training, and still less on the link between such training and subsequent organisational performance.

We limit ourselves here to an initial consideration of what determines how much SME's in Northern Ireland spend on training, with the principle aim being to see if such factors that typically are included when looking at larger firms spending carry over to smaller enterprises. We therefore look at the strength of the link between a range of HRM functions and training, as well as whether workforce characteristics, the external environment, size, and the impact of changes in ownership status are important determinants of training expenditure in SME's. An important sub-theme is our expectation that one particular ownership characteristic (whether the enterprise is family owned and/or managed) will be important, given previous research that has shown that family-operated firms often have different HRM practices and indeed different commitments to training (cf. Reid and Adams, 2001; Reid et. al., 2001).

The approach taken is based on estimating a multivariate regression model, given the linkages among many of the explanatory variables used to determine training expenditure. That is, we are interested in being able to measure the impact of

(say) size on training having controlled for a range of other factors, which might otherwise be correlated with size themselves. This should help to provide us with a richer set of insights into the factors that at the margin are most responsible for training with SME's.

The paper proceeds as follows: in the next section there is a short review of some relevant previous work on training (and especially training in SME's). We then discuss the data we use in section 3, while section 4 presents the results from our regression model. Finally, there is a summary and a conclusion, highlighting where we believe future work would be beneficial in this area.

2. Modelling the Determinants of Work-Related Training

Most of the literature on training is at the individual, micro-level whereby the usual approach is to determine who receives training (and how much) by linking to the costs of such training against the potential returns. In contrast, we consider training at the level of the firm, but most of the factors that relate to who receives training will also determine how much is spent by the firm. Training is presumed to enhance an employee's productivity and reduce their probability of quitting (as increased wages and other benefits accrue from increased productivity).¹ But since training is costly, employees are screened to ensure that it is concentrated on those from whom there will be the maximum overall increase in productivity for a sufficiently long period of time.

This screening is linked to various factors that at the firm level we usually cannot observe, for example personal characteristics such as age (since the period

¹ It is important to note at the outset that training can be firm-specific or more generic, and this difference is important. However, we have no data on the type of training provided and therefore we shall generally ignore this distinction, while recognising it is potentially relevant.

over which the investment can be amortised is shorter for older workers); formal qualifications (which proxy cognitive skills and ability, suggesting that training those with certain levels of qualifications will yield higher returns at lower cost since general education and training are likely to be complementary activities); skills currently possessed (often proxied by socio-economic status); gender and ethnic origin (given the real or imagined link between these factors and productivity); family circumstances (marital status and the presence of children of different age groups might be linked to the perceived commitment of individuals - in particular, women - to the organisation); and tenure with the present company (*ceteris paribus*, the longer the length of employment with the organisation, the greater the stock of firm-specific human capital, and the lower the risk of turnover). Other characteristics are likely to be important, such as whether the individual is a member of a trade union. Union members are less likely to quit as membership of a trade union usually brings benefits which are realised through longer job tenure (Elias, 1994). Unions are also more likely to press for higher levels of training for their members, because of the (pecuniary) benefits that such training brings (see Booth and Chatterji, 1997).

At the firm level, we have aggregate characteristics that relate to the composition of the workforce (e.g., percentage casual/temporary; fixed term; homebased; shiftworkers; or on an annual hours contract), rather than individual level characteristics. But we know that aggregate and individual factors are related² and that a more skilled, educated, qualified, and longer tenured workforce are more likely to be 'core' workers rather than peripheral, and therefore we expect composition

² It is interesting to note that Jacobs, Lukens and Useem (1996) attempted to rank the relative importance of organisational factors *vis á vis* individual and job characteristics in U.S. companies. They concluded their study by noting "... the relatively powerful importance of establishment and job factors in structuring opportunities to receive worksite training and the relatively modest importance of individual factors..." (p. 174).

effects like a large proportion of casual/temporary and fixed term employment to be negatively related to firm-level spending on training (whereas shiftworkers and homebased workers are often more skilled and occupy more flexible jobs).

Moreover, personal characteristics are also linked to the characteristics of the job itself. For instance, full-time workers are more likely to receive training than part-time workers, reflecting both the period over which the investment is realised and the type of job that is involved. Similarly, individuals with permanent as opposed to temporary contracts are likely to be seen as a lower risk with respect to training. Other factors which may be relevant proxies of the type of employment involved in a firm include whether the job involves flexible working hours (perhaps mirroring a more flexible and higher skilled job), and whether the employee works from home some or all of the time (again linked to flexibility and skills).

The extent to which a firm operates with a range of (sophisticated) HRM functions might also be expected to relate to how much training takes place. Whereas it has been argued that large organisations tend to use HRM to introduce informality and flexibility into the workplace, smaller firms use it to introduce more formalised policies and procedures into their more informal cultures (Bacon et. al., 1996). Taking this a stage further, and assuming that there is a link between HRM functions (including training) and firm performance, Pfeffer (1998) suggests that the impact on performance is more pronounced when complementary groups (or “bundles”) of HR practices are used together. Indeed, this may be more appealing for smaller firms who possess less ability to utilise scale economies in HRM, and thus use this as a means to formalise rather than introduce informality and flexibility. Thus, we might expect that smaller firms that adopt more HR practices (e.g., the existence of a HR department,

specific formal HR policies, and appraisal systems) are also more likely to spend more on training.

The ownership characteristics of the firm are also likely to be relevant. Whether the firm is family owned or managed is likely to be important, given previous studies that find that family-owned businesses are likely to have different HR practices (Reid, et. al, 1999; Reid and Adams, 2001; Reid et. al., 2001). Also firms that experience organisational changes (such as takeovers or mergers, or relocation) may have different commitments to training, either because they are attempting to grow and become more profitable (thus acquisition of another firm and/or merger is likely to be positively related to training) or because the opposite is the case and thus being taken-over is likely to be negatively related to training expenditures.

External factors are important in determining how much is spent on training at the firm-level. Others have cited the importance of factors such as whether the organisation is part of the private sector, since public sector firms are more likely to engage in training when the risk of poaching by rivals is much lower and where fluctuations in demand are lower. With reference to demand pressures, the industrial classification of the establishment is also likely to be an important indicator of overall training provision. Firms operating in growing (as opposed to declining) markets presumably will be engaged in investing in human capital through training, as will firms facing increases in demand for their own products and services.

Lastly, firm size is likely to be important. Even within the small firm sector, larger establishments tend to have greater costs of monitoring employees, inducing them to provide more training to improve productivity and to lower turnover (Oi,

1983).³ In addition, larger firms tend to operate in more stable markets, often with longer time horizons, and with stronger internal employment markets, which means lower risks associated with returns from training. Consequently, it is likely that "...less educated and potentially stable workers will have greater training opportunities in large firms relative to small firms" (Holtmann and Idson, 1991, p. 340). The portfolio model developed by Holtmann and Idson, *op. cit.*, formally shows that there is a "...greater relative willingness on the part of larger employers to assume a greater degree of risk when allocating their resources for on-the-job training" (p. 347). This means we need to control for employer size effects, when modelling the determinants of training, and where possible both in terms of the size of the workforce and the value of the firm's turnover.

Most all of the factors listed above are included in the data we use to consider what determines training in SME's in Northern Ireland. Thus, we now turn to a consideration of the survey information upon which our study is based.

3. Data and Initial Findings

We use the information collected in a survey of SME's in Northern Ireland carried out in 2000 by the HRM Research Group within the Faculty of Business and Management at the University of Ulster. The survey was designed to complement and extend the CRANET survey on International Strategic Human Resource Management, which was sent to larger companies at the same time as the present data were collected.

The sample frame used was based on the population of all companies operating in Northern Ireland employing between 20 and 100 employees. The survey comprised 47 fixed and multiple-choice answers divided into six sections examining

³ Indeed, larger firms faced with higher monitoring costs will generally pay higher wages to lower turnover, and higher wages also reflect higher human capital (which is of course positively related to

CEO characteristics, company characteristics, HRM policy, staffing practices, employee development and family employment practices. Some 212 usable replies were received which we believe are a representative sample of SME's operating in Northern Ireland employing between 20 - 100 employees. More details and the results of previous work can be found in Reid and Adams (2001).

Table 1 around here

Table 1 provides information on the extent to which SME's were engaged in training; nearly two-thirds of small firms spent nothing or very little while only around 10 per cent spent more than 5 per cent (of their annual labour cost bill) on formally training employees.

In Table 2, we have sub-divided the variables in the dataset (that we expect to be related to training activities) on the basis of those firms that spend 0 – 2% on training *vis a vis* those that spent 2 per cent or more. The average value for each variable is reported (for each sub-group), as well as the standard deviation and a *t*-test⁴ of whether there was any significant difference between the mean values for the two sub-groups. Thus, Table 2 gives an initial indication of whether there was a difference (e.g., in HRM functions) between those that spent very little and those that spent more on training in SME's in Northern Ireland.

Table 2 around here

With respect to HRM functions, statistically significant differences between firms that spent little and those spending larger amounts have the expected outcomes: firms spending more where more likely to have a personnel/HRM department

training).

⁴ Note, a negative *t*-value indicates that those firms that spent more on training had a larger mean value for the variable in question. Also, we recognise that a *t*-test is not necessarily the preferred test statistic when a variable is dichotomous (e.g. whether there was a personnel/HRM dept/manager), rather than

/manager (56 against 42 per cent); operate a training and development policy; have a personnel/HRM management plan; put training as the major HRM issues in next 5 years; operate a management, clerical and manual staff appraisal system; use appraisal to determine training needs; and systematically analyse employee training needs.

The only workforce characteristic that was significantly different between the two sub-groups of firms (when considering how much was spent on training) related to the percentage of the workforce operating in shifts. As expected, those firms with more shiftworkers spent more on training.

With respect to ownership characteristics, we were able to confirm the earlier results presented in Reid and Adams (2001) that family owned/managed firms were less likely to commit to larger training budgets, while firms that had acquired another organisation within the last 3 years were more likely to spend more on training (although the difference in mean values across the two sub-groups considered is statistically significant at only the 10 per cent level on a one-sided *t*-test).

Surprisingly, size appeared not to matter in terms of what firms spent on training; we could find no statistically significant differences in size characteristics across the two sub-groups considered. More encouragingly, we did find that firms operating in growing markets and/or experiencing increases in the demand for their products or services, did spend more on training. There was little difference across broad industrial sectors, and while public sector firms were more likely to spend proportionately more on training the effect was statistically insignificant.

continuous (e.g., % of the workforce employed in personnel/HRM activities). We have experimented with other test statistics (e.g., non-parametric statistics) and generally find similar results.

4. Regression Model of the Determinants SME Training

Many of the variables included in Table 2 will be highly correlated with each other; moreover, it is only after we control for certain attributes (e.g. size) that we might expect to find a relationship between a particular characteristic and spending on training. We are also particularly interested in analysing our data on the basis of whether the firm is family owned or not, since we wish to investigate how important such a difference is in determining training.

Thus, to encompass all the multivariate complexities in the data we have estimated a regression model with the amount spent on training as the dependent variable.⁵ The independent variables included initially all those listed in Table 2, together with a second set of variables comprising all those listed in Table 2 multiplied by a dummy variable that took on the value of 1 if the firm was family owned/managed. That is, we include a set of composite dummies that effectively allow the impact of the variables listed in Table 2 to be different for family owned businesses.

We estimated the full model and then used stepwise regression to reduce the model down to its parsimonious form. Thus, any non-significant variables were removed from the model and a test of the null hypothesis that all insignificant variables have parameter estimates jointly equal to zero (statistically) was accepted at the final stage of our analysis. Thus, our final model encompasses the data without the need to include a set of variables that are effectively rejected by the model.

Table 3 around here.

⁵ As Table 1 shows, we only have information on this variable broken-down into 5 categories. Thus we recognise that given this form of the dependent variable an ordered probit regression model may be superior to the OLS model we use. In fact, we also estimated the ordered probit model as a check on our results and found they were sufficiently similar to warrant presentation of the OLS results without any major concerns over the statistical approach taken.

The results obtained are reported in Table 3. We shall concentrate our discussion on the final column that reports the elasticity of training expenditures with respect to each variable included in the model. With respect to HRM functions, SME's in Northern Ireland that have a personnel/HRM management plan, a management appraisal system, or systematically analyse employee training needs spend between 26 – 36 per cent more on training. Thus, training and other HRM functions do seem to be 'bundled together' as suggested by Pfeffer.

As to workforce characteristics, doubling the percentage of the workforce that is temporary/casual in family-owned businesses would have resulted in a 12.9 per cent increase in spending on training. This effect was not felt in non-family run firms. Doubling the percentage of shiftworkers in SME's would have increased training expenditures by some 21.4 per cent, although in family-owned businesses the increase would have been only 5.3 per cent (i.e. 21.4 minus 16.1).

Thus, in terms of the impact of workforce characteristics on training, family run businesses did not have the same (or indeed the expected) impact as did non-family run firms, although the results in Table 3 suggest that (*ceteris paribus*⁶) family-owned/managed businesses spent nearly 49 per cent more on training than did other firms. This result is in direct contrast with what was obtained using the univariate *t*-test reported in Table 2, although it is important to note that the full impact of family-owned/managed businesses on training need to take account of all the impacts involving this variable (not just the *cet. par.* result just discussed⁷).

Firms taken-over in the previous 3 year period spent 7.1 per cent less on training, while doubling the number of full-time equivalent male workers would have

⁶ That is, having controlled for all other impacts represented by the other variables in the model.

⁷ Specifically, we shall see that larger family-owned firms are much less likely to spend significantly more on training.

reduced training expenditures by some 75 per cent. However, the impact of size in terms of turnover shows that for all firms only those producing some £100-999 thousand in output (as opposed to those producing less and those producing £1-5 million or £5+ million – the other categories covered in the survey) spent less on training; in general the relationship between turnover and training was U-shaped. Interestingly, large family-owned businesses (with £1-5 million turnover) spent some 22 per cent less on training (*vis a vis* large non-family owned firms), although those operating in growing markets spent some 18 per cent more (*vis a vis* family and non-family owned firms operating in declining or stagnant markets).

Lastly, family-owned/managed firms in ‘other manufacturing’ and the service sector spent some 25 – 26 per cent less on training. Thus, in general, while the characteristic ‘family-owned/managed’ resulted in overall larger amounts spent on training, there were some sub-sets of family-owned firms (those with more shiftworkers, larger, and in certain industrial sectors) where the extra spending was more muted.

5. Summary and Conclusions

This study provides an initial consideration of what determines how much SME’s in Northern Ireland spend on training, We considered the importance of a range of HRM functions, as well as whether workforce characteristics, the external environment, size, and the impact of changes in ownership status as important determinants of training expenditure in SME’s. In particular, special attention was paid as to the importance of the characteristic of whether the enterprise is family owned and/or managed.

Generally, our results show that HR functions do generally matter in SME's with regard to how much is spent on training; however, workforce characteristics (other than shiftworking), ownership characteristics and external factors, and even to some extent size, were much less important than expected. What our results do show is that whether the firm is family-owned/managed is a major factor in determining training budgets in SME's in Northern Ireland. This is an area that consequently warrants more research, both through case study and further survey-based analyses.

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Table 1: SME spending on training in Northern Ireland, 2000

Percentage of annual labour cost bill spent on training	Frequency	Percent	Cumulative Percent
0-2%	133	62.7	62.7
2-3%	27	12.7	75.5
3-4%	18	8.5	84.0
4-5%	13	6.1	90.1
>5%	21	9.9	100.0
Total	212	100.0	

Table 2: Description of variables sub-divided by whether organisation spends anything on training: SME's in Northern Ireland in 2000

	Organisation spends on training ^c	Mean	Std. Deviation	t-test of difference
<u>HRM functions</u>				
Is there a personnel/HRM dept/manager? ^a	No	0.42	0.50	-1.92
	Yes	0.56	0.50	
% of workforce employed in personnel/HRM	No	2.35	2.12	0.65
	Yes	2.16	1.91	
Organisation has training & development policy	No	0.70	0.46	-4.27
	Yes	0.94	0.25	
Organisation has personnel/HRM management plan	No	0.15	0.36	-6.87
	Yes	0.56	0.50	
Training is the major issue for HRM in next 5 years	No	0.32	0.47	-1.69
	Yes	0.43	0.50	
Have a management appraisal system	No	0.38	0.49	-6.35
	Yes	0.80	0.40	
Have a clerical appraisal system	No	0.32	0.47	-6.51
	Yes	0.75	0.44	
Have a manual staff appraisal system	No	0.38	0.49	-3.80
	Yes	0.65	0.48	
Appraisal system used to determine individual training needs	No	0.49	0.50	-5.32
	Yes	0.84	0.37	
Systematically analyse employee training needs	No	0.47	0.50	-6.42
	Yes	0.87	0.33	
Negotiate with TU's	No	0.19	0.39	0.67
	Yes	0.15	0.36	
<u>Workforce characteristics</u>				
Percentage of workforce temporary/casual ^b	No	0.64	0.88	-1.43
	Yes	0.82	0.94	
Percentage of workforce fixed term ^b	No	1.01	1.36	1.34
	Yes	0.76	1.20	
Percentage of workforce homebased ^b	No	0.02	0.15	-1.32
	Yes	0.06	0.29	
Percentage of workforce shiftworkers ^b	No	0.57	1.13	-1.95
	Yes	0.90	1.29	
Percentage of workforce on annual hours contract ^b	No	0.64	1.21	-0.41
	Yes	0.71	1.26	
<u>Ownership characteristics</u>				
Organisation is family owned/managed	No	0.65	0.48	2.32
	Yes	0.49	0.50	
Acquired another organisation in last 3 years	No	0.12	0.33	-1.52
	Yes	0.20	0.40	
Taken-over in last 3 years	No	0.10	0.30	0.93
	Yes	0.06	0.25	
Merged in last 3 years	No	0.03	0.17	-0.71
	Yes	0.05	0.22	
Relocated in last 3 years	No	0.14	0.35	0.01
	Yes	0.14	0.35	
<u>Size</u>				
No. of male FTE workers employed	No	28	16	1.21

	Yes	25	15	
No. of female FTE workers employed	No	18	16	-1.42
	Yes	21	12	
Under £100k turnover	No	0.01	0.09	0.77
	Yes	0.00	0.00	
£100-999k turnover	No	0.17	0.38	-0.54
	Yes	0.20	0.40	
£1-5m turnover	No	0.63	0.48	0.53
	Yes	0.59	0.49	
<i>External factors</i>				
Market is growing	No	0.41	0.49	-1.96
	Yes	0.54	0.50	
Market is declining	No	0.14	0.35	1.16
	Yes	0.09	0.29	
Increased competition in last 3 years	No	0.80	0.40	0.21
	Yes	0.78	0.41	
Decreased competition in last 3 years	No	0.02	0.15	1.34
	Yes	0.00	0.00	
Increased demand for output in last 3 years	No	0.49	0.50	-1.68
	Yes	0.61	0.49	
Decreased demand for product in last 3 years	No	0.17	0.38	2.30
	Yes	0.06	0.25	
Agricultural sector	No	0.04	0.19	-0.45
	Yes	0.05	0.22	
Chemicals	No	0.02	0.15	-0.13
	Yes	0.03	0.16	
Engineering	No	0.08	0.28	-0.46
	Yes	0.10	0.30	
Other manufacturing	No	0.29	0.45	1.13
	Yes	0.22	0.41	
Service sector	No	0.50	0.50	0.21
	Yes	0.48	0.50	
Public sector	No	0.07	0.25	-1.17
	Yes	0.11	0.32	

^a Mean values are proportions where characteristic is true unless otherwise stated.

^b Based on 0=none; 1=1-10%; 2=11-20%; 3=>20%.

^c No=0-1%; Yes=1+% of annual labour cost bill spent on training

Table 3: Regression Model of Determinants of Spending on Training: SME's in Northern Ireland in 2000

	β	Std. Error	t-value	Elasticity ^a (%)
Constant	0.80	0.26	3.13	-
Organisation has personnel/HRM management plan	0.76	0.18	4.30	26.2
Have a management appraisal system	0.58	0.18	3.25	31.7
Systematically analyse employee training needs	0.51	0.17	2.94	35.8
Percentage of workforce temporary/casual \times Family-owned	0.30	0.12	2.61	12.9
Percentage of workforce shiftworkers	0.27	0.10	2.79	21.4
Percentage of workforce shiftworkers \times Family-owned	-0.38	0.13	-2.86	-16.1
Organisation is family owned/managed	0.72	0.35	2.04	48.7
Taken-over in last 3 years	-0.72	0.28	-2.56	-7.1
No. of male FTE	-0.02	0.01	-4.37	-75.1
£100-999k turnover	-0.73	0.26	-2.85	-15.3
£1-5m turnover \times Family-owned	-0.50	0.24	-2.04	-21.8
Market is growing \times Family-owned	0.60	0.21	2.93	18.4
Other manufacturing \times Family-owned	-1.04	0.30	-3.47	-24.0
Service sector \times Family-owned	-0.81	0.29	-2.78	-26.1

^a $100 \times (\partial y / \partial x)(\bar{x} / \bar{y}) = 100 \times \hat{\beta}(\bar{x} / \bar{y})$. Note, mean of dependent variable (y) is 0.88.