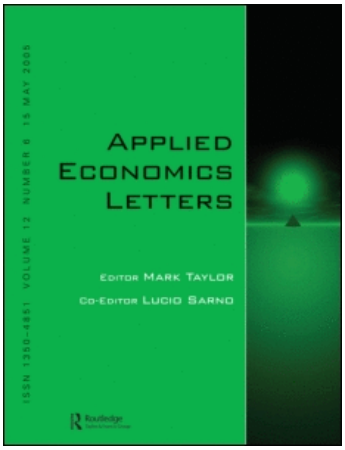

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Effects of employee training on the performance of North-American firms

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This article analyses the impact of employee training on the performance, measured in terms of Tobin's Q and total returns to shareholders, of North-American firms, by using a survey of senior executives in human capital management carried out in 2000. The results indicate that higher training can have a positive effect on firm performance through factors such as employee satisfaction and customer loyalty. Overall, it is found that higher levels of training are associated with significant benefits which can increase firm value.

I. INTRODUCTION

It is well known that the first step to successful human capital management is to acquire the human capital necessary to support the business plan. This requires that the firm has employees with the necessary skills and motivation to perform an efficient job. In this context, there are two options that the firm can adopt: either to hire employees who already have the necessary skills and motivation, or to provide the training necessary to help employees, either new or current, to develop these skills.

Both theoretical and empirical work in human resources management reveal that hiring the right employees improves firm performance (for example, Schmidt *et al*., 1986; Terpstra and Rozell, 1993). On the other hand, the empirical evidence on the effects of training on such a performance is mixed. Thus, while Bartel (1994) found that inefficient manufacturing firms which introduce formal training programmes catch up to their peers' average productivity, Black and Lynch (1995, 1996) failed to find a significant effect on productivity from training more workers.

Against this background, the objective of this article is to analyse the impact of employee training on the performance of North-American firms. To that end, a hypothesis was formulated on the effect of increased employee training on firm performance, measured both by Tobin's Q and by total returns to shareholders. This hypothesis is then tested on the basis of a survey carried out in 2000 to senior executives in human capital management who work in 405 publicity traded North-American firms in the COMPUSTAT database.

II. METHODOLOGY

Respondents in the database were senior executives in human capital management. The survey questionnaire was carried out to 405 publicly traded firms in the COMPUSTAT database, that is to say, to 370 US firms and 35 Canadian firms. Table 1 shows the percentile classification of revenues, market value and number of employees (Wyatt, 2000).

With respect to the indicators of firm performance, this article has selected two standard measures, namely Tobin's Q and total returns to shareholders (TRS). Tobin's Q is the ratio of the firm's market value of its tangible assets, measured at their current replacement cost and the value the firm creates through its business operations above the cost of replacing its physical and financial assets. Although Tobin's Q and TRS are related, the second includes both tangible assets and intellectual capital, while Tobin's Q is only the relative value of the firm's intellectual capital. In other words, Tobin's Q measures the reduction in the firm's intellectual capital, while TRS accurately captures the

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Table 1. *Characteristics of survey respondents*

	Revenues (US$ millions)	Market Value (US$ millions)	Employees (thousands)
75th percentile	1187	1505	6.70
50th percentile	319	383	2.23
25th percentile	112	146	0.56

change in the value of the firm, but does not capture this reduction in intellectual capital.

While the specific objective of this article is to analyse the impact of employee training on firm performance, it is nevertheless well known that this performance also depends on a number of other human capital factors that can be grouped into the four following drivers: recruiting excellence, collegial and flexible workplace, communications integrity and clear rewards and accountability (Table 2). In these circumstances, and with the aim of not introducing a bias into the empirical results, the effects of all these variables have been collectively estimated, although in what follows one limits oneself to the earlier-mentioned impact of employee training on firm performance.

III. EMPIRICAL RESULTS

Table 3 shows the expected percentage change in both Tobin's Q and TRS from increasing the answer to each question in the survey by one standard deviation. One first identifies a strong positive correlation between both indicators; more specifically, the former is approximately 0.82% of the latter. It is also found that maintaining training programmes even in times of less favourable economic conditions is associated with a decrease in Tobin's Q (0.84%). Similarly, one can observe that providing employees with access to training to move to higher levels within the firm is associated with a decrease in Tobin's Q (1.54%). These results can be associated with the fact that the responses to the survey were given during a period of financial difficulty, as reflected in the tendency to reduce training budgets as a relatively easy way to cut expenses in periods of slack demand. Another possible explanation is that while firms offer more training, they may be doing so in an inadequate manner either because they train in the wrong areas, such as fields that are not directly related to the employee's job, or because they do not follow-up on the training to insure good results. A third explanation is that training does not benefit firms because of their relatively high turnover. Finally, one finds much lower economically significant effects from either providing employees with training so as to be more productive in their current position, or from evaluating managers in part on achieving training goals.

Table 2. *Complete list of exogenous variables*

Recruiting excellence
Professional new hires are well-equipped to perform their duties
Recruiting efforts are designed to support the business plan
Firm has a reputation among new applicants as a desirable place to work
Hourly new hires are well-equipped to perform their duties
Easy to find applicants with the skills the firm needs
New applicants interview with a number of individuals
Lower annual turnover rate for recently hired college graduates
Formal recruiting strategy for filling critical positions
Managers evaluated in part on success in achieving training goals
Employees have access to training for current position
Have formal policy of hiring internal candidates
Percentage of workforce with tenure of at least two years
Training programmes maintained in less favourable conditions
Employees have access to training for higher positions within the firm
Percentage of professional positions filled internally
Collegial and flexible workplace
Firm flexible in work hours and arrangements
Firm culture encourages teamwork and cooperation
Perquisites do not vary with position and job level
Employees are more satisfied at this firm than at others
Employees are on a first name basis with top management
Titles are not intentionally designed to designate authority
Firm emphasizes employment security
Physical office space does not vary with position
Primary role of managers is to coach and mentor employees
Communications integrity
Employees have easy access to technologies for communication across the firm
Employees have input in hiring decisions
Employees give direct feedback to senior management
Firm shares financial information with employees
Employees have input in how the work gets done
Firm shares business plans and goals with employees
Employees understand how their job effects customers
Clear rewards and accountability
Percentage of employees eligible for stock plan programmes
Firm terminates employees who continue to perform unacceptably
Firm does a good job helping poor performers improve
Top performers get significantly more pay than average performers
Firm positions its pay above the market
Pay is used to engage employees in improving business performance
Pay is linked to firm's business strategy
Role of performance appraisals – set pay
Percentage of employees participating in profit sharing plans based on overall firm success
Firm does a good job of promoting the most competent
People skills are important to leadership position
Percentage of employees participating in profit sharing plans based on operating unit's success
Employees have input in evaluating their peers

Table 3. *Expected percentage change from increasing the answer to each question*

	Tobin's Q (%)	TRS (%)
Training programmes maintained in less favourable conditions	−0.84	−1.02
Employees have access to training for higher positions within the firm	−1.54	−1.86
Managers evaluated in part on success in achieving training goals	0.08	0.10
Employees have access to training for current position	−0.15	−0.18

Table 4. *Indicators of firm performance*

Variable	High training firms	Low training firms
Tobin's Q	1.74	2.26
Three yrs. TRS	60%	46%
Five yrs. TRS	95%	74%
Percentage of hightech firms	6%	20%
Size (assets in US$ millions)	788	233
R&D expenses as percentage of sales	5%	13%
SG&A expenses as percentage of sales	18%	30%
Percentage of employees under collective bargaining agreements	18%	6%
Percentage of employees who are exempts	38%	49%
Percentage of employees who are college graduates	36%	47%

Table 5. *Benefits from additional training*

Variable	High training firms	Low training firms
Voluntary turnover	13%	23%
Involuntary turnover	4%	11%
Average score–desirable place to work	4.21	3.65
Percentage reporting high employee satisfaction	70%	37%
Percentage reporting high customer loyalty	59%	47%

Despite these first results, one also shows that there are substantial positive effects associated with higher levels of training. Thus, as one can see from Table 4, firms that report providing the most training have, on average, lower Tobin's Q than those which report providing the least. However, this difference is not caused by low training firms outperforming their high training counterparts in shareholder value creation as measured by three and five years TRS. In fact, low training firms have earned higher cumulative shareholder returns over this period.

Part of the difference in the Tobin's Q between high and low training firms is caused by differences in industry characteristics. In this regards, one can observe that those firms which tend to report high levels of training are less likely to be in hightech industries and spend less money on R&D. This research indicates that hightech firms and high R&D firms tend to have higher Tobin's Q's. In addition, one finds that high training firms are significantly larger and spend more money on selling, general and administrative (SG&A) expenses. These are both factors which are positively associated with higher Tobin's Q. Furthermore, the employee demographics are also different in these firms. Firms with higher training levels tend to be more unionized and to have a lower percentage of employees who are college graduates or exempts.

Finally, in Table 5 one can see the benefits of additional training. First, note that high training firms report lower levels of both voluntary and involuntary turnover than do their low training counterparts. There seems to be a virtuous cycle between increased training and reduced turnover. Thus, firms which experience lower turnover are more willing to make investments in training to help employees acquire more firm specific human capital. This human capital makes the firm more reluctant to lay off employees and the employee less likely to leave voluntarily, thereby increasing the rewards to the firm from offering more training. The evidence also indicates that firms which do more training have a better reputation among new applicants as a desirable place to work, indicating that training programmes can be a valuable tool to help the firm attract human capital. Finally, one can also note that high training firms are able to translate higher employee satisfaction and lower turnover into higher customer loyalty.

By way of conclusion, when analysing the impact of employee training on the performance of North-American firms, it was found that higher levels of training are indeed associated with significant benefits which can increase firm performance.

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