

Costs and Structures of In-plant Further and Continuing Training in the Federal Republic of Germany*

R. WEIß

Institut der deutschen Wirtschaft, Köln, Gustav-Heinemann Ufer 84-88, 5000 Köln 51, Germany

To invest in new technologies without investing in the staff's know-how at the same time, means to waste valuable resources. Thus further training has turned out to be of crucial importance with regard to innovations. In a survey of 1505 companies, the Institut der deutschen Wirtschaft has investigated the role of further training in private trade and industry. The results reveal that 9 out of 10 firms pursue further training of some kind or another. Apart from the 'classic' training courses, the organized learning-on-the-job and information courses have gained ground considerably. Participation in further training measures is not restricted to a small circle of members of staff any more. Rather, as can be inferred from the latest trend estimate, the further training quota amounts to 81 participants per 100 employees/workers. This leads to the conclusion that private companies are by far the most important further training bodies in the Federal Republic of Germany. In order to qualify their staff, they spent DM 26.7 thousand millions on further training in 1987.

AT THE beginning of the 1970s, an expert committee chaired by Professor Edding [1] worked on the subject of the costs and means of financing of extra-curricular vocational training. This committee presented, for the very first time, a representative research study of the expenses of vocational and further training. In the following years, a number of cost studies and estimations were produced in order to try to assess the changes that had been taking place since the publication of the Edding study in 1972. The fact, however, that these studies lacked a representative data base, resulted in an increasing uncertainty as to the actual costs of in-firm further training. Because of this uncertainty, some critics alleged that the range of further training offered and performed by companies was far too narrow and limited.

In this connexion, the Confederation of German Employers' Associations (die Bundesvereinigung der Deutschen Arbeitgeberverbände), the Federation of German Industries (der Bundesverband der Deutschen Industrie), and the Federation of German Chambers of Industry and Commerce (der Deutsche Industrie- und Handelstag) commissioned the *Institut der deutschen Wirtschaft* in 1988 to carry out a study on the 'costs and structures of in-plant further training'. On a representative data base, this study was to ascertain actual figures as to the quantity and quality of in-firm further training in West Germany [2].

THE SIGNIFICANT RESULTS OF THE STUDY

1505 companies altogether—this number amounts to a support rate of 59.1%—took part in the interviews which were to provide the original research data for the analysis. This is a favourable response, which was ensured because of the active support of the Chambers of Industry and Commerce and the Chambers of Crafts as well as employees' associations with regard to planning and implementing the survey.

The companies interviewed employ 2.3 million wage and salary earners (apprentices are not included). Thus the results are derived from about 14% of all employees and workers in the private sector (agricultural and professional workers are not included). In spite of this high amount of workers and employees, the emphasis lies on small and medium sized firms: 59.6% have less than 100 per employees/workers, 73.3% have less than 500.

THE VARIETY OF DIFFERENT TYPES OF FURTHER AND CONTINUING TRAINING

In-plant further training is characterized by the fact that a wide variety of training courses and training programmes are available. Organized learning is not only carried out in courses and seminars outside the job, but the training-off-the-job is increasingly supplemented by organized learning effected on the job itself.

Therefore, the assessment of the expenses and structures of in-firm further training has to take the

* Paper accepted 29 October 1990.

following basic types and forms of in-firm further training into consideration:

- learning on the job
(organized training on the job, instructions on the job supplied by colleagues or superiors, coaching, programmed instruction, quality circles)
- training courses
(seminars, courses of instruction, correspondence courses)
- information courses
(specialist lectures, conferences, specialist fairs, exchange of ideas and experiences)
- retraining according to the Federal Vocational Training Law

The survey confirms that this approach is correct: 47.9% of the persons or firms interviewed consider training-on-the-job to be as important as training courses, while 48.1% grade it as more important or even as essentially more important.

THE MOTIVES FOR FURTHER TRAINING

92.1% percent of the companies interviewed provide internal or external further training for their staff. The firms attached to the Chambers of Industry and Commerce reach 92.4% (hereby slightly overtopping the rate), the craft business comes to 91.4% (slightly below the rate).

Whereas almost all large sized plants pursue further training of some kind or another, the share of small sized firms with less than 10 employees/workers amounts to 69.6%.

The main reasons for further training are, above all, to improve the employees' qualifications with regard to new techniques and to meet the requirements for skilled personnel. On the other hand, there are two decisive reasons why some companies dispense with further training. Some claim that there is no demand because the employees/workers are already sufficiently qualified. Some point out that they are not in a position to provide further training, either internal or external, because of the loss of the work time involved and release problems. Especially small sized firms assert that, from an organizational point of view, they have great difficulties in coping with periods of absence, not to mention release from work due to participating in further training. It is a notable that firms seldom abstain from further training because of the costs involved or because of an (alleged) lack of interest on the part of the staff.

PLANNING AND ORGANIZING FURTHER TRAINING

In small sized firms the principals or owners themselves assume responsibility for planning and organizing further training, whereas in medium sized companies the responsibility is shifted to the

personnel department and to the respective special departments.

Only large sized plants with more than 1000 employees/workers set up specialized vocational and advanced training departments. As a consequence, only about one fifth of the companies employ staff that are occupied with and specialize in further training on a full-time basis. In most companies, all further training tasks, administrative as well as instructive ones, are performed by members of staff who only engage in further training when required. On the whole, at least 1.4% cent of the employees are occupied with planning and executing further training.

In companies with special further training departments, further training is mainly controlled on a de-centralized level. The training departments are usually responsible for didactic planning, organization, and performance of training measures and programmes, but the individual departments and respective superiors reserve the right to decide when and what sort of further training programmes are necessary and which employees are to take part in them. In this way, it is possible to effect a demand-oriented control of further training.

In two thirds of the firms, the need for further training is assessed on a short-term basis. In addition, every other company pursues a long-range demand planning, taking into account both the specific in-plant requirements and the actual qualification standard.

The larger a firm is, the more planning instruments it uses and the more time it gives to planning. Lack of time and heavy load of work are generally regarded as the most acute problems concerning the development and advancement of further training. Therefore, a further reduction in working hours would necessarily result in a serious drawback as to the extension of further training.

THE VOLUME OF FURTHER TRAINING

In the companies included in the study, the present survey assessed 1.2 million further training participants and 40.5 million hours of further training participation for 1987. With reference to the 2.3 million employees/workers assessed in the sample, this amounts to a participation quota of 53.4 participants per 100 employees (see Table 1). If one presumes average rates for those plants that pursue further training, but were not able to give any information on it, the participation quota comes to 91.0 participants per 100 employees.

This means, further and advanced training is not restricted to a small circle of members of staff any more, but it includes large parts of the labour force.

With 96.2 per cent of all training activities, further training clearly centres around training measures induced by internal demand. Apart from these demand-oriented measures, further training is partly also carried out due to legal requirements

Table 1. In-firm further training offers and performances

Forms of further training	Participants (%)	Per 100 employees/ workers (original data still to be weighted)	Hours of participation	
			%	Per employee/worker (original data still to be weighted)
Further training due to in-plant demand				
— learning on the job	15.5	8.3	24.2	4.3
— training courses	71.2	38.0	63.9	11.4
— information courses	11.4	6.1	6.8	1.2
— retraining courses	0.2	0.1	3.1	0.5
Further training due to legal provisions (courses on safety and health on the job and accident prevention not included)	1.7	2.0	2.0	0.3
Total	100.0	53.4	100.0	17.7

and regulations. These are instructions as to safety and health at work, works council courses, educational leave. Although, in a particular case, these courses may be quite important, they generally play a comparatively minor role.

In the field of further training induced by in-plant requirements, training courses are of the greatest importance. They amount to 71.2% of all participants and 63.9% of all participation hours, followed by learning on the job with 15.5% of all participants and 24.2% of all participation hours, and, as far as quantity is concerned, by information courses and retraining programmes (see Table 1).

Training and information courses mainly take a short time, the average duration of training courses is 30.1 hours, and of information courses 19.9 hours. In contrast, the training-on-the-job measures clearly last much longer, with an average duration of 51.9 hours. As expected, the retraining courses have the larger time volume with a duration of 745.2 hours.

The highest further training intensity was not in large sized companies but in small sized firms. The average time volume in firms with 10 to 19 employees/workers amounts to 88.1 hours per employee; in firms with more than 1000 employees, however, it only comes to 15.8 hours per employee. As a consequence, it is also the craft business—in general based on small sized firms—that has a considerable further training intensity. Here, the average time volume of 43.9 hours per employee and per year is more than twice as high as the average volume of all firms assessed.

Learning-on-the-job is the decisive factor with regard to these differences. In small sized companies, it plays a clearly predominant role, whereas in large sized plants training courses are of central importance.

These results reveal that the persons interviewed in small sized firms were in a better position to make statements about their further training activities on the job than the persons interviewed in large sized companies. Therefore, the data ascertained in

the survey can only partly reflect the actual volume of job-oriented further training in large sized firms.

However, even if one solely takes the training courses into consideration, the high further training intensity of the small sized firms becomes evident: 15.8 hours per employee in firms with less than 9 employees compared with 11.6 hours per employee in firms with more than 1000 employees. These results refute the frequently presented argument that small sized companies hardly pursue further training. The data suggest that the firm size is obviously not a decisive element as to the volume of further training. Instead, the quantity of skilled personnel, the extent of technical innovations, the product range, the competitive situation, and the corporate identity and culture seem to be much more important.

The same tendencies can be inferred from the structure of business lines and economic activities. The following branches have the highest further training intensity as far as training courses are concerned: insurance and finance, transport and communication, mining, electricity and water, and the industrial market. In wholesale and retail trade, construction and craft, however, the emphasis lies on learning-on-the-job and on information courses.

THE STRUCTURE OF FURTHER TRAINING

The survey confirms anew that internal further training is predominant. 85.8% take part in internal training courses, and 74.2% in internal information courses. Especially the small and medium sized firms co-operate with external further training organizations. In the companies with less than 100 employees, the share of external training courses amounts to 49.0%.

The companies prefer to co-operate with employers' associations, professional associations, chambers, other companies (e.g. suppliers' instructions), and with independent private bodies. These

institutions with their close attachment to economy and industry obviously correspond best to the further training needs of companies, since they are primarily selected according to quality considerations. These are content and variety of training courses, the lecturer's competence, previous experiences, reputation and target group orientation of the education programmes.

In-plant further training is mostly effected within working hours. 90.6% of all hours of training courses and 86.5% of all hours of information courses take place within working time. Thus the cost assessment has to take the respective continuing wage costs (indirect costs) into account.

The choice of subjects shows that the main motive for further training is to qualify the staff for new techniques (see Table 2). In this field, the most significant qualifications are electronic data processing (commercial use), sales training, business administration and economics, technical instruction. As to their future quantitative scope, these topics may be expected to retain their pre-dominance. The persons interviewed also believe that, notwithstanding, the following topics will gain more importance in the future: management and co-operation (i.e. the relationship between executives and their subordinates), product knowledge, safety at work, ecology and environmental protection. These subjects indicate that a gradual shift towards non-technical fields is on its way.

Since in-plant further training is demand-oriented, participation varies according to the employees' grouping and status. As far as the data base allowed an insight into the participation structure, a preponderance of the salaried/white collar

employees over the industrial/blue collar workers was noticeable. Commercial employees and executives profit most from further training. They not only take part in training measures more frequently but also attend a wide range of advanced educational courses. Unskilled and semi-skilled workers, on the other hand, comparatively seldom take part in training and information courses. They tend to concentrate on job-oriented tuition such as vocational adjustment/familiarization and instruction and on retraining programmes. Furthermore, female members of staff and employees/workers older than 50 are neglected in in-firm further training measures.

THE COSTS OF FURTHER TRAINING

42.6% of the companies interviewed declared that they assessed their further training costs in separate cost centres, at least 'partly'. Those firms that found themselves unable to specify their training costs because their accounting procedures do not provide extra cost centres estimated their expenses. In those cases in which no costs could be inferred, either assessed or estimated, the average cost data, based on the results of the particular trade, were registered.

Yet, it was not possible to obtain a complete assessment of all costs incurred. Whereas it was much easier for small sized companies to provide the necessary data, the representatives of large sized plants often were not in a position to supply data material, notably as far as learning-on-the-job and information courses were concerned. Therefore, the costs ascertained in the study have to be evaluated on a minimum level of the actual cost volume, especially since the evaluation was carried out in accordance with the lower-of-cost-principle.

The evaluation arrives at average total costs of DM 1771 per employee (see Table 3). This figure consists of the costs of training courses amounting to DM 1056, the costs of information courses totalling DM 186, and the costs of training-on-the-job averaging DM 379. The costs of training personnel, both employed on a full-time and on a part-time basis, run up to DM 121 per employee. Other costs amount to DM 29, including financial means contributed by a 'third party', for example other companies, the Public Employment Service or the state. On the whole, however, the volume of these subsidies is extremely small, because only 0.2% of the expenses are re-financed with the help of allowances.

The analysis of the individual business lines reveals the following cost structures:

- The firms connected with the Chambers of Industry and Commerce bear costs of DM 1793 per employee, the firms attached to the Chamber of Craft have costs of DM 1516 per employee. In comparison with the previous surveys, the craft business has

Table 2. The topics of in-plant further training

Topics	Training courses in per cent of the companies
Electronic data processing in the commercial area	62.7
Sales training	52.1
Commercial and business administration subjects	48.4
Technics—in-plant use	48.2
Management methods with regard to staff handling	45.4
Technics—theoretical special knowledge	45.1
Electronic data processing in the technical field	44.9
Regulations on safety and health on the job/accident prevention	44.8
Management training and management techniques	41.6
Product knowledge and applicability know-how	38.9
Rhetoric	28.9
Law/taxes	27.8
Foreign languages	26.0
Environmental protection	24.1
Theories of vocational and professional education	21.4
Sciences/mathematics	12.3
Social and economic politics	8.6

Table 3. The cost structure of further training

Types of costs	Costs per employee/ worker in DM	Total costs in 1.000 millions DM
Costs of training personnel	121	2.1
Costs of training courses	1056	12.5
Costs of information courses	186	4.1
Costs of learning on the job	379	7.3
Other costs	29	0.7
Total costs	1771	26.7

considerably gained ground as to the volume and the expenses of further training. The main reason for this extension is the fact that, for the very first time, learning-on-the-job has been included. In the 'classic' area of training courses, however, the clash between industry and craft is still existent.

— The survey has found out that the following business lines have further training costs which are high above average: finance and insurance with DM 4266, transport and communications with DM 2468, wholesale and retail trade with DM 2061. In commodity production, on the other hand, the further training costs are below average at DM 1511.

— The highest costs per employee were registered in the small sized firms. Whereas in companies with up to 9 employees the average further training costs amount to DM 4219, they do not exceed DM 1069 in firms with 300 to 399 employees, and DM 1789 in companies with more than 1000 employees. However, it has to be taken into consideration that in the large sized plants a part of the cost could not be stated, because the persons interviewed had to refrain from giving a realistic estimation.

Besides the direct costs, the indirect costs of continuing wage payment are of crucial importance, since they make up to 60.1% of the total costs. As to learning-on-the-job, they come up to 92.3%. This is due to the fact that—apart from some minor asset costs—the learning-on-the-job costs were registered with the costs of continuing wage payment. These results accord with previous cost surveys that reached similar conclusions as to the weight of indirect costs.

Training and information courses are the most cost-intensive forms of further training, as with DM 66 per lesson the costs are distinctly above average. In contrast, learning-on-the-job is comparatively cost-effective, amounting to DM 27 per participation lesson. The reason is that hardly any asset costs are incurred here, while simultaneously productive results are achieved. As, according to experience, learning-on-the-job is distinguished by successful learning performances, in terms of cost-benefit-considerations this training form is to be given precedence.

THE RESULTS OF THE TREND EXTRAPOLATION

Following the extrapolation model developed by the Federal Statistics Office, the survey figured out a volume of 13.8 million participants and 577 million participation hours for trade and industry. This corresponds to a further training quota of 81 participants per 100 employees and of 33.8 training hours per employee. Training courses come up to 5.4 million participants or 32 participants per 100 employees.

These numbers clearly show that the West German companies have made a considerable contribution to the development and extension of further training. They are by far the most significant provider of vocational further training. And the boom in further training is still going on—and certainly will be on its upswing for some time. 4 out of 5 enterprises expect an increasing or even an extremely increasing demand for further training. 19.2% reckon with a constant in-firm demand, but only 0.8% believe that the demand will decrease.

According to the latest trend estimate, private enterprise invested DM 26.7 thousand millions in further training in 1987. This is equivalent to 3.0% of the gross wage and salary sum. For comparison: In the same year, the public expenses for institutions of higher education, including those for the university hospitals, amounted to DM 24.7 thousand millions.

In view of the large number of assessment and evaluation problems, these trend estimate results have to be regarded as an order of magnitude rather than an exact quantification. They indicate the minimum level of the actual volume.

The following sums were assessed for the different types of further training:

— further training personnel	2.1	thousand million
— training courses	12.5	" "
— information courses	4.1	" "
— learning-on-the-job	7.3	" "
— other costs	0.7	" "

If one compares the various cost studies so far executed, a constant and rapid upward tendency becomes evident. At the beginning of the 1970s, the Edding study arrived at a figure of DM 2.1 thousand millions. The Institute of German

Economy assessed about DM 8 thousand millions for 1980, and Malcher [3] (Federal Association of German Employers) estimated a value of DM 14.6 thousand millions for 1985. Even if one takes into consideration that the previous surveys did not

include the costs of learning-on-the-job, a distinct increase is evident.

Translation—Marina Richter-Dappen.

REFERENCES

1. Sachverständigenkommission Kosten und Finanzierung der beruflichen Bildung (Hrsg.): *Kosten und Finanzierung der außerschulischen beruflichen Bildung* (Abschlußbericht), Bielefeld (1974).
2. R. Weiß, *Die 26-Milliarden-Investition—Kosten und Strukturen betrieblicher Weiterbildung*. Berichte zur Bildungspolitik 1990 des Instituts der deutschen Wirtschaft, hrsg. von Uwe Göbel und Winfried Schlaffke, Köln (1990).
3. W. Malcher, Neue Hochrechnung: Fast 15 Milliarden DM. In: *Der Arbeitgeber*, Nr. 18/39, Köln (1987), S. 654-657.

...the Federal Statistics Office, the survey found out a volume of 1.2 million participants and 2.1 million participation hours for trade and industry. This corresponds to a further training quota of 8.4 participants per 100 employees and of 33.8 training hours per employee. Training courses cost 1.2 million participants or 2.1 million participation hours. These figures clearly show that the West German companies have made a considerable contribution to the development and extension of further training. They are by far the most significant provider of vocational further training. And the boom in further training is still going on—and certainly will be on its upward for some time. A out of 2 companies expect an increase of even an extremely increasing demand for further training. 19.2% reckon with a constant in demand, but only 0.8% believe that the demand will decrease.

According to the latest trend estimate, private enterprises invested DM 26.7 thousand millions in further training in 1987. This is equivalent to 3.0% of the gross wage and salary sum. For comparison, in the same year, the public expenses for institutions of higher education, including those for university hospitals, amounted to DM 24.3 thousand millions.

In view of the large number of enterprises and evaluation problems, these trend estimate results have to be regarded as an order of magnitude rather than an exact quantification. They indicate the minimum level of the actual volume.

The following sums were assessed for the different types of further training:

Technical field	2.1 thousand million
Management	1.2
Information courses	1.1
Learning-on-the-job	7.3
Other costs	0.7

If one compares the various cost studies so far executed, a constant and rapid upward tendency becomes evident. At the beginning of the 1970s the leading study arrived at a figure of DM 1.1 thousand millions. The Institute of German

...has been included in the classic areas of training courses, however, the clash between industry and craft is still existent. In fact, the survey has found out that the following business lines have further training costs which are much above average: finance and transport with DM 1,000, transport and telecommunications with DM 468, wholesale and retail trade with DM 304, in contrast to the other hand, the further training costs are below average at DM 121.

The highest costs per employee were found in the small sized firms, whereas in the large firms the costs are lower. The average further training costs amount to DM 121, they do not exceed DM 100 in firms with 10 to 99 employees, and DM 129 in companies with more than 100 employees. However, it has to be taken into consideration that in the same sized plants a part of the cost could not be stated, because the persons interviewed had to refrain from giving a precise estimation.

The Institute of German Economics has estimated that the average cost of further training is 3.0% of the gross wage and salary sum. This is equivalent to 3.0% of the gross wage and salary sum. For comparison, in the same year, the public expenses for institutions of higher education, including those for university hospitals, amounted to DM 24.3 thousand millions.

In view of the large number of enterprises and evaluation problems, these trend estimate results have to be regarded as an order of magnitude rather than an exact quantification. They indicate the minimum level of the actual volume.

The following sums were assessed for the different types of further training:

Technical field	2.1 thousand million
Management	1.2
Information courses	1.1
Learning-on-the-job	7.3
Other costs	0.7

If one compares the various cost studies so far executed, a constant and rapid upward tendency becomes evident. At the beginning of the 1970s the leading study arrived at a figure of DM 1.1 thousand millions. The Institute of German