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Managerial role in personnel development in times of technological change

Key position of skill enhancement in the development of the company

With the background of technological development (Dosi, 1982) as well as organizational, economic and social change, the quick diffusion of technical and organizational change (Hilbert and Sperling, 1993, p. 28) gains increasing significance for the competitiveness of small and medium-sized companies (Drucker 1986, p. 65; von Hippel, 1988).

This situation is marked by rising product diversification and increased special requests from customers as a result of the smaller batch sizes, shorter delivery times, newer and increased quality demands, ever shorter amortization periods of the purchased technical equipment with limited capital of the companies, discontinuity of technological development and increasing personnel costs.

The lack of qualified technical personnel, the lack of acceptance by involved persons, as well as insufficient job-organizational conditions are, as shown by empirical research, the significant factors which prevent or hinder innovation (Staudt 1986, p.605; 1990, p. 76). From the perspective of innovation management the necessary competences cannot be reduced to so-called key qualifications. Of greater relevance are the professional up-to-date skills, as well as subsidiary and organizational skills and capabilities. Innovational hindrances are not only skill deficiencies in the areas of research and development, but in particular in the area of the production as well as in the sales and service area (Gelshorn *et al.*, 1991). Also, against the background of the rising information flood and the decreasing period of knowledge validity, the updating and the cleansing of know-how stocks increases in relevance.

Through the missing skills and ability potentials a time-lag is created. As shown in Figure 1, insufficient or missing qualification potentials cause the available technology not to be used until the point in time T (2). However, already at the time T (1) costs in connection with the use of technical equipment are incurred. These are, for instance, depreciation costs, repair and maintenance costs and as well as storage costs.

The following activities require time: revelation of future technological developments; converting the technical requirements into curricular units; the determination of qualification deficits, selection of correct participants and qualifying measures; and the acquiring of the new skills and qualifications as well as their implementation and use.

If costs are to be reduced and competitive advantages are to be utilized, it is necessary to overcome the aforementioned time-lag. One strategy is the timely creation of new competences and the exploitation of existing qualification potentials (see Figure 2). If the professional skill potentials are already existent, then the entry into the new technological generation can take place directly and without greater time lag (Hilbert and Sperling, 1993, p. 34).

The personnel, with their professional skills and competences, act not only on limiting the development of the company, but also at the same time set the potential for future development. Hence they also have initiating impact.

Need for integration of personnel, organizational and technological development

The new technologies, such as for example the microelectronics as well as the information and communication techniques, in contrast to the conventional technology, create an organizational freedom of conduct. This is because the functional link between "man-man systems" and "man-machine systems" can hereby be timely and spacially decoupled (Staudt, 1988, p. 178). The thesis of the technological determinism proves in this connection as erroneous (Hilbert and Sperling, 1993, p. 31; Lutz, 1987, p. 40).

Since the new technologies increase the decoupling potential between information and material flow and personnel, the physical constraints progressively lose significance. Beyond this, the remaining physical constraints can be partially overcome by professional competences.

The use of technological and economic potentials depends on personnel, or rather on their skills and on the respective

organizational rules. As a result of the increased decoupling potential and the simultaneous reduction of the physical constraints, the organizational configuration is becoming the foremost problem of skilled workers and senior management. In this case it is that of the management of further training.

Here it is necessary to co-ordinate personnel and organizational development on the one hand and the technical development on the other. If this integration does not succeed, then personnel or rather their insufficient skills and the non-matched organizational structures will advance to become an innovational hindrance. Innovational achievements can only come through, if sustained by professional skills as well as being technically feasible, socially desired and economically expedient (see Figure 3). Integrative innovational concepts, which offer solutions to and closely encompass the technological problems (in terms of adaptation and diffusion), as well as the respective organizational and qualificational problems are necessary (Dosi, 1988; Nelson, 1994a, 1994b).

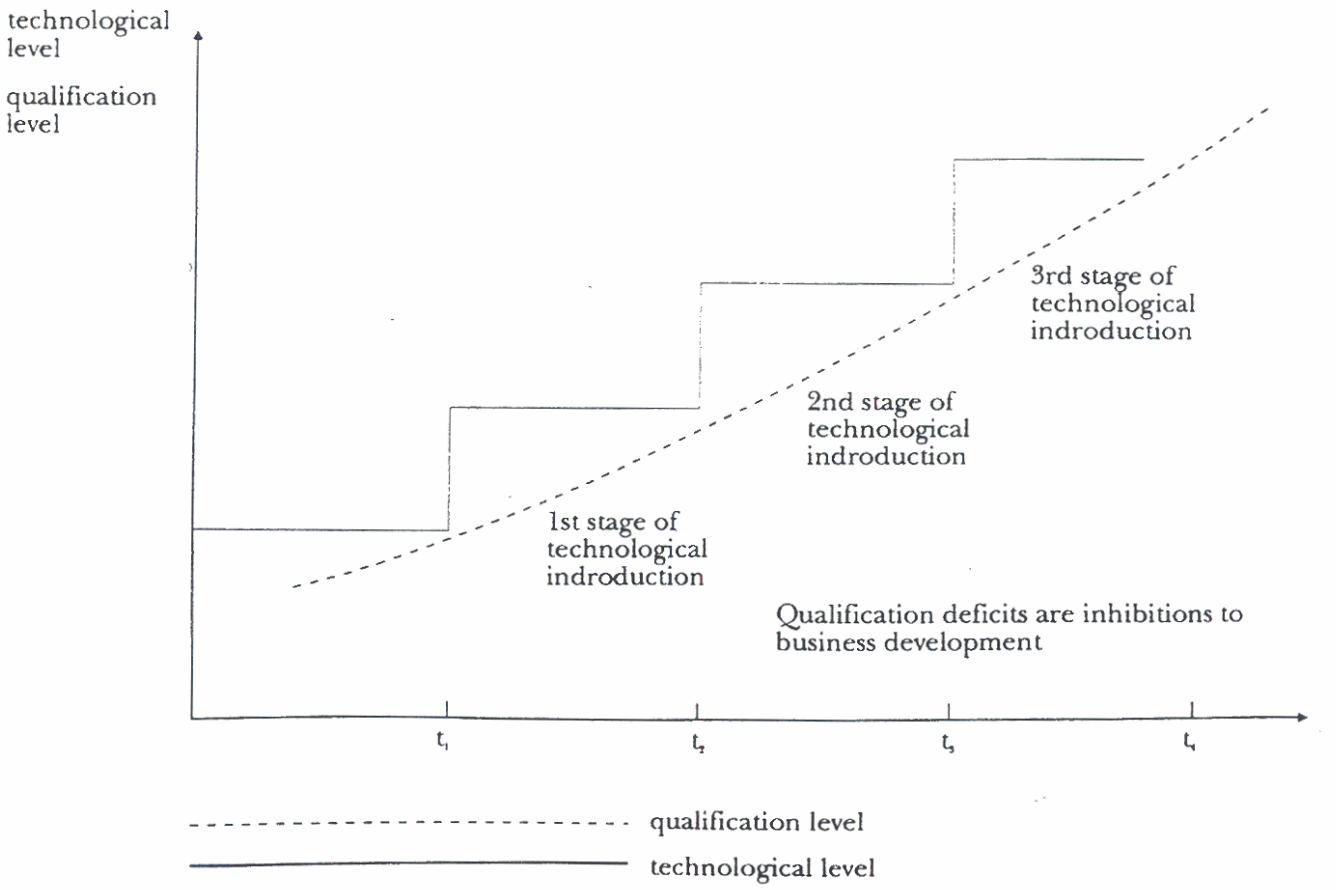
For the enterprise the question arises as to how far it is possible to develop their personnel and their organization in such a way that these non-imitable factors will form the potential reason for long-term competitive advantages (see also Amit and Schoemaker (1993), Conner (1991), Grant (1991) who consider the resource-based view).

A large number of small and mid-sized businesses, made wary by experience, have come to realize that the qualification potential of their skilled labour and of their management is becoming a vitally important competitive factor (Teece *et al.*, 1992). Especially those firms which operate successfully in the market and which therefore provide further training with a view to achieving two main objectives[1]:

1 adaptation of their employee's qualification profile to altered requirements;
2 revelation of existing qualification potentials to use these in the sense of a potential-oriented development of the company (Staudt *et al.*, 1993a).

However, the stance on further training taken by many business owners often resembles that adopted towards the payment of taxes: impossible as it may be to avoid such expenditure, it is nevertheless thought desirable to

Figure 1
Reactive adaptation of the qualification level



keep it to a minimum. Thus, even if small and mid-sized businesses do resort to further training, there remains some uncertainty as to whether the efforts undertaken to improve qualifications are sufficient to cope with structural change, to resolve problems of adjustment and create innovative potential. Furthermore it is not clear how the management of further training can be made more effective and efficient.

The managerial task (or rather that of the senior management) of building up corresponding interdisciplinary and intervocational competence potentials (Dosi and Teece, 1993) as well as using and developing these, concerns the whole development of the company. The management of further training can, therefore, not be reduced to the question of which training is correct.

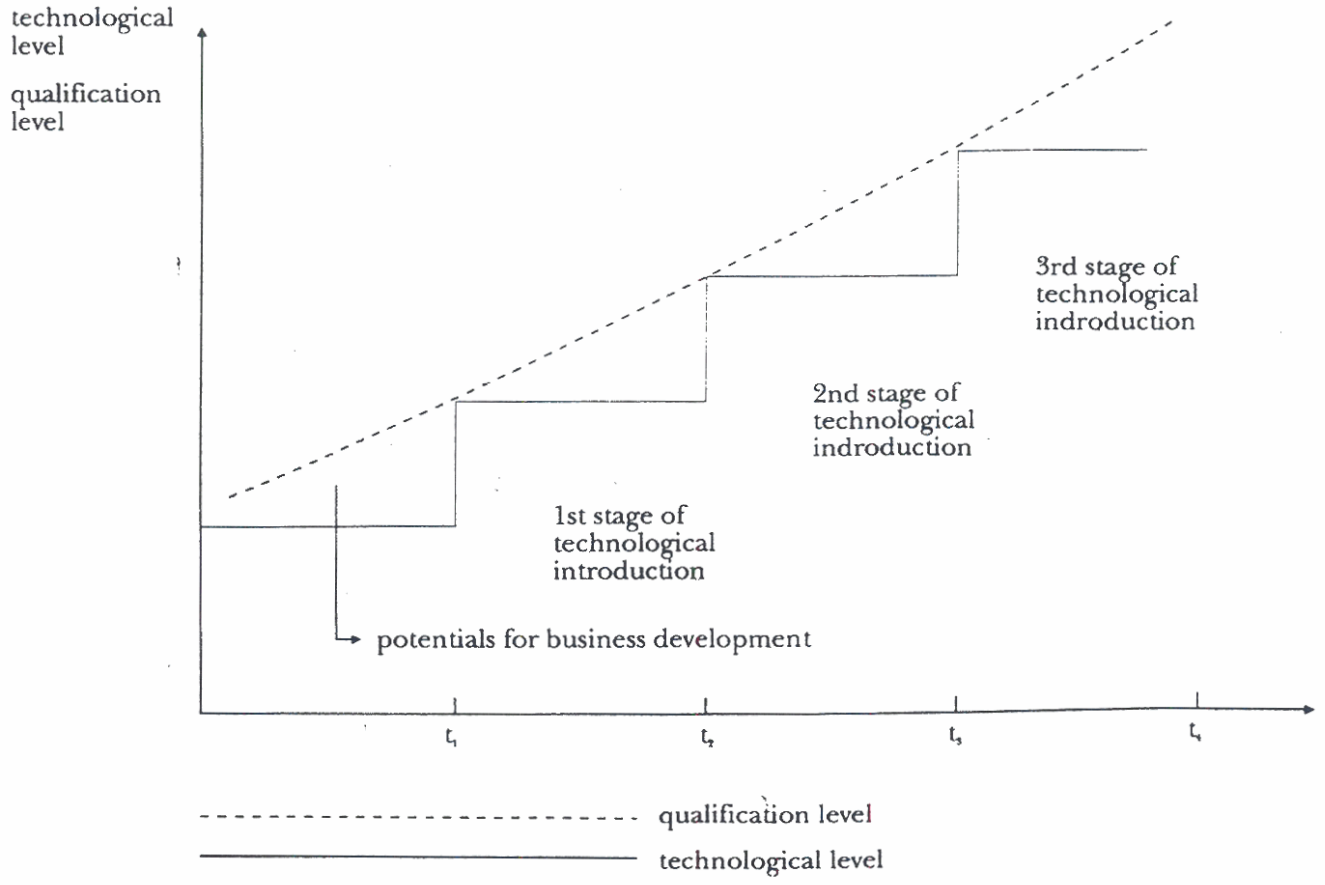
Restraints of the management of further training

The management of a company's future training can be described as consisting of four stages ("identifying training needs", "preparing and undertaking skill enhancement", "enabling transfer of learning" and "monitoring that training was effective"). The management of small and medium-sized companies does not always organize the process of further training management absolutely deliberately and systematically. In many cases *ad hoc* decisions are made. Moreover, individual stages are not faced with equal intensity. For example, many personnel managers regard the monitoring of training effectiveness as having been completed by asking the people involved the question: "did you achieve anything by participating in the training?"

Through the distinction between the individual phases, the operational practice of future training management is taken into consideration, in order to develop this gradually in the sense of the concept of the comparative improvement techniques (Kröll, 1989a). By this procedure the practical relevance of the following stimuli and instruments will be ensured.

The structuring of future training management into the individual phase is not meant to represent an ideal reference for success, which in practice has to be obeyed dogmatically. Thus it is, for example, obvious that proper control measures should be

Figure 2
Timely build up and use of qualification potentials



implemented in good time and process oriented and not at the end of the future training.

As a result of case studies in small and mid-sized companies, it was found expedient not to regard the management of future training as a routine job. This point of view offers both a problem-centred and practice-oriented grasp of the further training situation in small and mid-sized businesses, as well as a differentiated classification of personal and physical restraints. Furthermore, this point of view enables the pinpointing of the consequences of these impediments, with reference to measures for building up and using internal knowledge and know-how (Staudt *et al.*, 1991a).

Since the restraints are decisive characteristics of the current situation in the management of further training, making this a non-routine job, these will be pointed out in detail here.

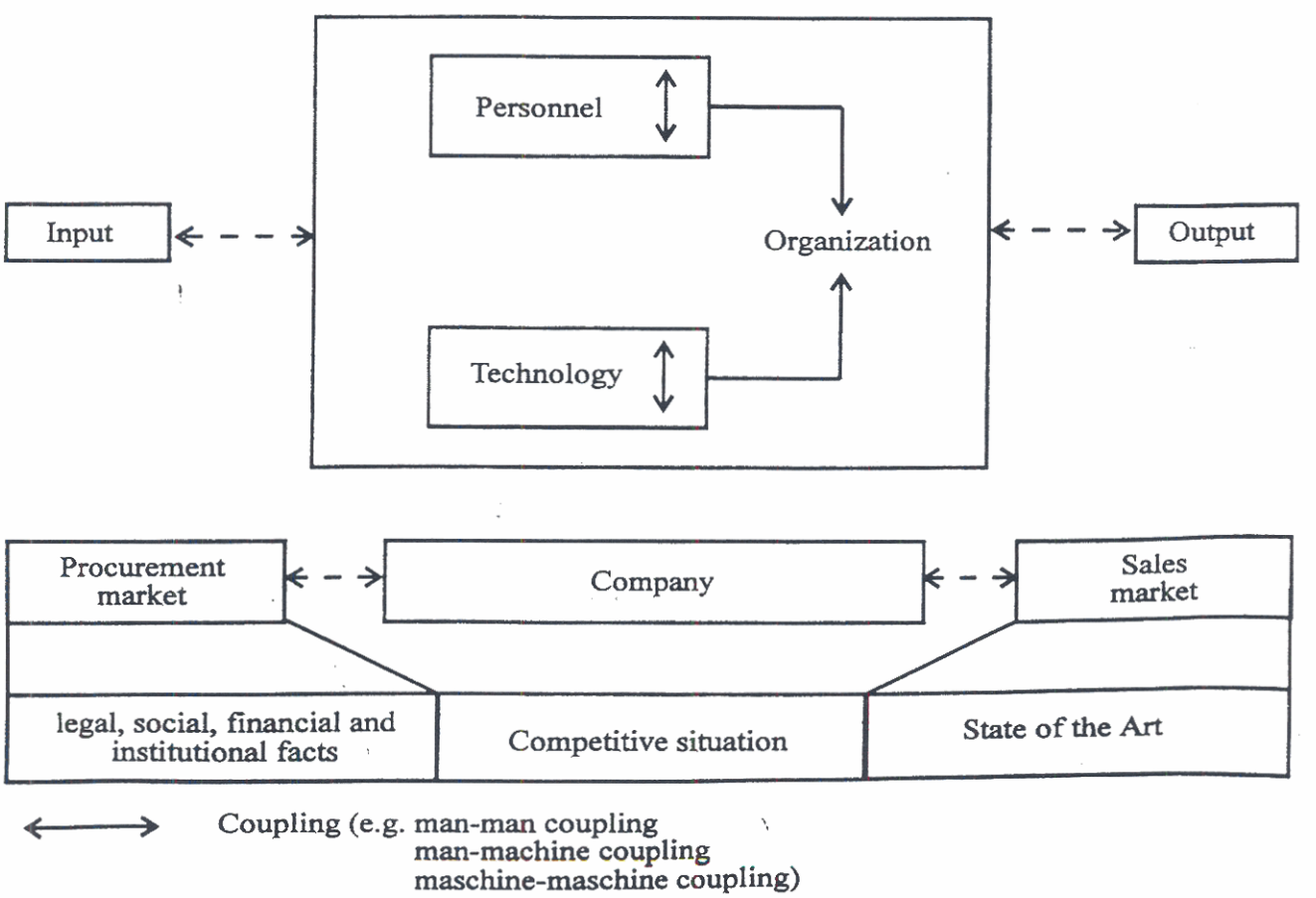
First phase: identifying training needs

Especially when small and mid-sized companies have high orderbook levels, further training is often regarded as being merely a voluntary and costly service to employees.

Only rarely does management perceive a link between corporate goals and qualification requirements, a link which would allow inferences to be drawn on future training needs (Staudt *et al.*, 1993b). The result is that future training activities in a company are often initiated at random or under tremendous problems and time pressure. An attempt at compensating the lack of necessary competences through the rushed and early implementation of new technologies, leads to the disruption of work processes, additional costs, a reduction of quality and thereby customer dissatisfaction.

This does not mean that future training intensity in small businesses is of the lowest level. The investigations of Weiß (1990, p. 118) and Kailer (1991, p. 82) rather showed a u-shaped distribution. In mid-sized companies less is invested for each employee than in small and large-scale companies (Weiß and Kailer came to these results in independent studies). Measured in hours per employee

Figure 3
Starting points for innovations



and the future training duration, small companies achieved far better results than large-scale companies (Weiß, 1990, p. 120).

Nevertheless, operational future training (especially in small and mid-sized companies) aims primarily at short-term, reactive removal of competence deficiencies. There is a lack of strategic training.

The fact that employees are not sufficiently involved in determining future training needs, is a further hindrance.

Second phase: preparing skill enhancement

In the preparatory phase, participants are chosen and decisions as to the employed forms[2] of further training and venues[3] are made. The necessary information and co-ordination processes (Kröll, 1994; 1995), are, however, regarded as secondary compared with the day-to-day running of the business. This is bound to have an effect on the ensuing stages of the future training process. Furthermore, a consequence of this is that the "wrong" employees participate in the training provided. In addition the full spectrum of training forms is hardly utilized in small and mid-sized companies.

Also, since the necessary transparence of the external future training market does not exist, management tends to fall back exclusively on the training courses offered by familiar external bodies, such as chambers of commerce or manufacturers. This constitutes a serious disadvantage to the individual enterprise for two reasons:

1 a requirement-oriented choice of training activities is impossible with regard to both course content and the target groups involved;
2 the training provided is only partially adequate, since it is not specifically tailored to the needs of small and mid-sized companies.

Furthermore, managerial staff in small and mid-sized companies frequently assume that if they themselves participate in qualifying measures, then this will be sufficient for building-up the company's competence potentials. As far as further training for their employees is concerned, they adopt a rather defensive position. They especially see the danger of losing qualified employees (whose qualification they financed or helped finance) to competitors. Furthermore, they fear additional salary demands of their employees and envision disruptions in operational processes as a result of the absence of employees during further training measures.

At the same time, management criticizes the lack of employee motivation for participating in further training measures. The literature explains this lack of motivation as being the result of learning habits, limited promotion prospects in small and mid-sized companies, as well as the conditions under which the further training takes place (e.g. evening and weekend courses).

Third phase: undertaking skill enhancement

After the requisite preparations for further training have been completed, small businesses are invariably confronted with the same problem: despite the limited number of employees available during the training period, it is imperative that corporate activities be maintained with the least possible disruption.

The prime objective of management being market penetration and order handling rather than the arrangement of further training, conflicting requirements may rapidly create tension. If operational bottlenecks occur, then the smooth running of business is viewed as a more important goal than ensuring that further training is undertaken. On-the-job forms of training are especially prone to disturbances. The intended training process is then modified or aborted (reduction of learning goals, interruption or abortion of course participation, shortening of course duration, etc.), with the result that a fruitful acquisition of new knowledge and competences can no longer be guaranteed (Kröll, 1989a).

Fourth phase: enabling transfer of learning

It is in the interest of both management and participants in training courses, not merely to acquire qualifications but also to utilize them in the operational environment. In small and medium-sized companies an interesting discrepancy can be detected: management demands that future training be profitable and have a positive impact on day-to-day affairs. However, they often fail to see that they can make an important contribution, by themselves, for example providing configurational and organizational freedom of conduct (Kröll, 1989b), which is the necessary prerequisite for enabling successful transfer of competences. Management and employees often think that participation in further training measures in itself is sufficient to warrant the desired adjustment or employment of competences.

In addition, the necessary co-ordination between the trainee, the respective personnel manager and the body offering the further training (in view of the participant- and company-specific utilization of acquired competences) does not take place. The transfer of

know-how is virtually left to chance. Furthermore, the period between acquisition and use of the competences is in many cases too long, with the result that the trainee has forgotten the acquired abilities and capabilities.

Failure to apply qualifications usefully, the reticence of colleagues and superiors and constraints imposed by working against deadlines also have a demotivating effect. To employees it may thus seem to be a more sensible approach to maintain the old routines and to ignore newly acquired qualifications.

Fifth phase: monitoring that training was effective

As with all immaterial investments (company further training can be regarded as such), the problem of identification, allocation and demarcation of the costs for further training on one hand and the success or rather use on the other hand, arises.

Since no definite success criteria for the assessment of training exist, the various assessors (the trainee him/herself, the tutor or the trainee's direct superior) judge differently. This means that the successful completion of a training course does not necessarily imply success for the company.

Only 38 per cent of the companies which were questioned by Kailer, recorded the costs and carried out evaluations of the further training measures (Kailer, 1991, p. 129); other studies arrive at the same results, e.g. Weiß (1990, p. 90). In addition, the existing instruments for recording future training costs, which are proposed in textbooks, prove to be deficient and unfit to control future training. For example, how far do costs for training venues, travelling expenses, hotel and feeding, which are included in the cost calculations, allow inference to be made about the strategic meaning of the future training measure for the company's development? Also, the indirect costs caused by future training are neglected.

Convincing processes, with the aid of which the use of further training for company development can be shown, cannot be found in literature. Evaluation methods for operational training are based primarily on educational criteria. These, however, are hardly suitable to determine the use of future training from the business management standpoint. There is, therefore, a deficit of easy-to-use instruments, with the help of which could be checked, whether and how far certain further training activities contribute to successful company development.

Finally, it is suggested that organizational structures of small and mid-sized companies, as well as the key position held by management and senior staff (as empirical results show), have decisive effects on all phases of training management. On the one hand they demarcate the configurational freedom of the organizational embedding of further training and its results. On the other hand they hinder and inhibit the advantageous use of existing competence potentials, from the viewpoint of company development and also from the viewpoint of the employees (Staudt *et al.*, 1991a).

Organizational structures in small and mid-sized companies

Since the constraints that hinder both the management of further training at senior managerial level and the operational process of future training, as well as the potentials that promote this process, all depend on the respective organizational structures and the role interpretations of management, it is necessary to take a closer look at these factors. It is dependent on the respective role interpretations of management in small and mid-sized companies, which tasks they will be confronted with in view of future training management and how these tasks can be realized in a most effective and efficient way. In other words, the problem is to work out how far the concrete tasks of further training management vary with different role interpretations.

A definite organizational structure which proves optimal for all small and mid-sized companies does not exist (Kotthoff and Reindl, 1990). Organizational rules determine the spacial, timely and functional coupling between man-man systems and man-machine systems. To describe organizational structures, especially those of small and mid-sized companies as unsatisfactory on the basis of a priori criteria proves to be a problem (Hilbert and Sperling, 1993, p. 18). This is valid even then if such criteria are derived from scientifically acknowledged theories.

The appropriate design of organizational structures depends on competence potentials of personnel, the company's range of products and services, the state of technical development, customer requests and the competitive situation. Operational practice shows whether an organizational structure is suitable to warrant the survival of the company. This does not mean that organizational structures of small and mid-sized companies cannot be improved to reduce the order processing time or costs and to increase the product quality and the flexibility in view of customer demands.

Generally, small and mid-sized companies can be characterized by the following organizational features (Herpich *et al.*, 1990, p. 24; Hilbert and Sperling, 1993; Kotthoff and Reindl, 1990; Kröll, 1989b, p. 112; Meier, 1991):

- a low degree of formalization (e.g. job descriptions or organizational diagrams are not used);
- special jobs or departments that occupy themselves solely with research and development, strategic planning or market research are not existent;
- a low level of operational division (company owner – master craftsman – worker – apprentice);
- a tendency towards individual and series fabrication instead of large-scale manufacturing (a low number of routine operations and rather complex and differing tasks);
- more or less centralized decision-making structures (i.e. management has a dominating position).

Informal organizational rules have greater weight than those rules of the formally fixed and documented form. The "fuzzy" organizational rules, e.g. the missing job descriptions or job casting plans, make a flexible reaction to respective customer wishes and demands possible.

Innovative small and mid-sized companies are especially dependent on external information if they want to keep in touch with the state of the art in terms of technology, market and sales potentials, since they do not have special departments for these.

The aforementioned characteristics of the organizational structures of small businesses, especially the low level of operational division, demonstrate that the aspects of operational or procedural organization are of greater importance than those of the structural organization.

Many of the organizational rules and communication structures have grown and developed with time. The form they take depends on the respective evolutionary phase of the company, i.e. whether an organization is in the foundation phase, the growth phase or the restructuring phase (Türk, 1989, p. 24; p. 60).

Role interpretation of management

On the basis of respective managerial role interpretations and their effects on the management of future training, it is possible (as shown by the results of a number of empirical case studies carried out in the scope of a project in which the the author took part) to differentiate between the following three organizational patterns:

1 the "practitioner";
2 the "guide"; and
3 the "strategist".

The research results were arrived at in the context of more than 30 case studies in the form of partially standardized interviews and company training courses. These results were further evaluated and consolidated, by way of group discussion procedures, in work groups consisting of the managers of small and mid-sized businesses, further training experts as well as (business, technology and innovation) consultants. Based on the BUNGE-Project's differentiation between empirical and conceptional tests, the design of the research project had the character of the latter form (Bunge, 1973, p. 31). In the scope of the research project, the interdependent relationships between operational skill enhancement and organizational structures were examined. Here the focus was on innovative small and mid-sized companies.

The organizational patterns show the role interpretation of management of small and mid-sized businesses as well as their involvement in the flow of information and material. Each of these role interpretations can be justified on the basis of the respective market situation, the managerial competence of the commercial branch (Hilbert and Sperling, 1993, p. 19) and the market segment in which the company operates. A priori, none of these role interpretations proves superior to another.

The different role interpretations can be described by the following criteria:

- Which tasks are carried out by senior and executive management of small and mid-sized companies, based on a differentiation between strategic, dispositive and operative levels on one hand and differentiating between the phases of process organization, contract acquisition, operational planning, operating, control and testing as well as follow-up tasks on the other?
- Depending on the role interpretation, how are these persons involved in the flow of information?
- How are duties allocated to management and employees, considering forms of delegation and instructional authorities?
- How do the respective role interpretations affect the task perception, in view of the different phases of further training management?

Organizational pattern of the "practitioner"

Task perception and involvement in the information-flow

In the sense of a technocratic understanding of strategic planning (Mag, 1995, p. 46), the "practitioner" does not strategically plan his/her contract acquisition. He/she reacts to customer demands and requests. If the

opportunity arises, he/she will purse his/her (long term) goals and, for example, enter into a new area of business.

The "practitioner" him/herself, takes an active part in day-to-day business operations. An example here would be the owner of a software company, who himself, writes and develops software. Another example would be the owner of a painting business, who himself, still paints and renovates. The authority of a "practitioner" is based on his professional competence.

All relevant information for operational procedures run via management. The paths which information takes are short. The organizational process of the creation of goods and services, from the time orders are taken down to the quality controls, are determined by the manager. He/she has the sole decision making and instruction authority. The necessary coordination takes place through personal instruction and not through plans (Kieser and Kubicek, 1983, p. 122). Thereby co-ordination is based (more or less) on reaction to unexpected events, rather than on anticipation.

Reference to the task of further training management

The "practitioner" has professional competence and the know-how to carry out operative tasks. He/she would like to still have a firm grip on the execution of orders in the future. Not least for this reason, he/she will qualify him/herself further, especially in professional areas e.g. by visiting trade fairs or reading technical literature. In this, his/her interests focus on professional up-to-date competences.

Since he/she and his/her employees work together closely, he/she knows their competences and also their competence deficiencies. Because of this fact, he/she may find it easier to determine the needs for further training and the existing qualification potentials in his/her company.

From the "practitioner's" point of view, he/she further educates him/herself for the benefit of his/her employees. At the same time he/she sets no great value on his/her employees visiting external trainings. He/she mediates his/her acquired expertise (even though rather unsystematically) using the "snowball effect". In this he/she backs the principle of "learning by doing".

However, the "practitioner" always has to struggle with the organizational problem of work overload. Consequently he/she has little time left to mediate his/her know-how. In addition, the interest of his/her employees to assimilate new knowledge diminishes with time.

Because the practitioner carries out and controls the process of knowledge transfer, the necessity of a separate monitoring of the future training is not perceived by the "practitioner".

Organizational pattern of the "guide"

Task perception and involvement in the information-flow

In the case of the organizational pattern of the "guide", the strategic and dispositive aspect of contract acquisition, is regarded as a managerial task. In addition, the "guide" participates in operations planning and scheduling.

Another focus of the tasks performed by this type of manager is the internal co-ordination of order execution. Here the co-ordination through personal instructions are more and more replaced by the co-ordination through procedural guidelines. The "guide" organizes the process of creation of goods and services at the dispositive level, but does not however, carry out tasks on the operative level (with respect to the order execution). Such operational tasks are delegated to the employees. In contrast to the "practitioner", the "guide" concentrates more on the co-ordination and commercial aspects of order execution.

Only if bottlenecks arise, does he/she actively participate on the operational level. This requires that he/she him/herself, still has some amount of expert knowledge.

In order to control the different steps of the heterogeneous job contracts, the "guide" tends to resort to organizational instruments e.g. time and material management systems.

Reference to the task of further training management

The further training of the "guide" does not concentrate primarily on professional and up-to-date skills. Rather his/her interests are more on acquiring organizational skills and competences. In connection with this he/she for example, visits trade fairs, to inquire about computer-aided time and materials management systems. With their aid he/she would like to have a better control of individual working steps and improve the allocation of material and labour expenditure to the respective contracts. Here he/she demands that these systems be trimmed to his/her business. At the same time the use of these systems should warrant the ability of his/her company to react flexibly towards customer wishes. Since this type of manager does not or rather does no longer dispose of the professional up-to-date competences, he/she is limited in his/her ability to train his/her employees further, with regard to

professional skills. Therefore, in contrast to the "practitioner", the possibility that the manager of this pattern passes on professional up-to-date competences to his/her employees is not given.

In order to ensure that employees acquire professional and for the company relevant up-to-date skills, on-site manufacturer trainings are increasingly resorted to. In many cases such training is part of the services rendered in connection with the purchase of new technical equipment. To great extent, the employees have to care themselves about further skill enhancement, even though the management supports them in this.

Organizational pattern of the "strategist"

Task perception and involvement in the information-flow

The "strategist" tends to have long-term goals as regards products and services rendered. Of special importance for the strategist is information about developments regarding customer demands and the competitive situation. He either collects this information him/herself or he/she obtains it via his/her employees, who are in close contact with customers and perceive market developments (see also Kotthoff and Reindl, 1990, p. 55, "the strategic-conceptional company policy").

Day-to-day contract acquisition is handed over to selected employees, e.g. the master craftsman. In contrast to the "practitioner" and the "guide", the respective decision-making authority is delegated. The "strategist" only acquires important and extensive contracts him/herself.

Even in bottleneck situations, the "strategist" does not involve him/herself directly in operative execution of orders. A reason for this is that he/she does not have, or rather no longer has the necessary professional competence. Instead of co-ordinating himself, like the "guide" does, he/she rather delegates this job to others and/or trusts the co-ordinational instrument of self-tuning.

The "strategist" has the organizational problem of making sure that he/she is adequately informed about what goes on in the company, without having the flood of information hindering him/her in his/her managerial activities. The use of new techniques increases this problem.

In some cases the capacity of a company is not large enough to fulfil all contracts and/or the company lacks the necessary qualified employees. In order still to fulfil parts of the contract, the "strategist" initiates and co-ordinates the co-operation with other companies.

The process of controlling on the operative level, is either delegated to other employees (middle management level, e.g. master craftsman) or to a group of employees, and/or this process is increasingly substituted by methods of self-control (e.g. using check-lists with control questions).

Reference to the task of further training management

Since the "strategist" is not directly involved on the operative level, he/she finds it difficult to determine and perceive professional competence deficiencies and potentials of his employees. In view of the phase of identifying training needs, he/she will therefore be confronted with an information deficit. The "strategist" will also have difficulties estimating the use of the further training activities which his/her employees carry out or will carry out.

The following is a positive example of how a "strategist"solved this problem. In a medium-sized company of the electronics branch, ten years ago, some electricians wanted to educate themselves further in the area of personal computers. A direct connection between the two branches could not be seen at the time. The management assumed that the employees had thoroughly checked the expediency of this measure, if they were ready to educate themselves further after working hours. The company offered these employees favourable conditions (e.g. the payment of the training costs). With time, this double qualification of the employees proved to be an important competitive advantage.

Therefore it is more expedient for the "strategist" if he/she creates such decentralized, self- control mechanisms and creates organization conditions/requirements, so as to promote the motivation for further training and to use the self-initiative for skill enhancement to the advantage of both sides.

Further training management as a non-routine managerial task

The question is, how can management or rather personnel managers of small and medium-sized companies carry out future training? Here it is of little help if they develop ingenious and extensively detailed plans in which all possible influence factors are anticipated beforehand and which stipulate who has to acquire which qualifications and when. Even well-meant and standardized requirements, as can be found in textbooks for personnel management (e.g. that a concordance between company aims and employee aims is to be achieved or that employees are to be thoroughly informed) do not offer much help. In connection with the iterative potential-oriented further training management

those resistances that prevent or inhibit competence enhancement are decisive factors. The perception and overcoming of such resistances is an essential step in the direction of a practice-oriented further training management. Management or rather personnel managers have the task of finding out whether and to which extent the above-mentioned hindrances to future training management are present in the company's concrete situation. Here the task of future training management, resembles a steeplechase. Since the restraints differ from situation to situation, the task of future training management can be regarded as being non-routine.

Furthermore, sub-optimal solutions for skill enhancement are to be avoided. Therefore the managerial role as a further training manager is to be combined with other function-oriented roles, e.g. that of the planner, the organizer, the crisis manager or technical expert (Staudt and Barthel, 1991). The tasks of managers during the various phases of further training management, differ depending on the organizational pattern (i.e. "practitioner", "guide" or "strategist").

Disclosure of potentials and recognition of development paths

The integrative personnel, organizational and technological development, which can be seen as a mutual iterative process between competence potential and market conditions and their developments (Staudt *et al.*, 1995), has to realize the following tasks, when identifying further training needs :

- Clarification of which competence potentials are inherent in the company and what competence profile the company has as a result of this.
- Disclosure and analysis of future development paths (Dosi, 1982) with regard to the areas personnel, organization, technology and market.
- Checking whether predictable developments will require new skills. If this is so, how do these affect the qualification needs?
- Discussion with employees, so as to recognize how far these carry out self-initiated further training and whether the hereby acquired skills are sufficient to facilitate a timely reaction to future developments.

In most cases the "practitioner" does not dispose of long-term contracts. This factor makes it difficult to determine the future qualification needs. At the same time it has to be considered that acquiring qualification or competences takes some time. Therefore it is generally of advantage, especially for the "practitioner", if he can resort to the self-initiated competence enhancement of his/her employees. However, the use of self-initiated further training for operational processes, brings about new organizational challenges.

Choice of participants and activation of the applicable qualifying strategy

In the preparatory phase for competence enhancement, the following tasks become necessary:

- Depending on the individual qualification deficits, that form of future training is to be resorted to which promises to be of greatest use. Here not only the traditional, external training, but also alternative training forms are to be considered. For the "strategist" it is easier to initiate and carry out future training co-operation for his/her employees. The "practitioner" will have more difficulties here.
- Employees should be informed about possibilities for professional skill enhancement, such as visiting trade fairs, trade and technical journals, manufacturer training or external training.
- Discussing with the motivated employee and clarifying how far the company will support him/her, for example by carrying the training costs or travelling expenses, as well as the possibility of further qualification during working hours.
- In choosing the participants, care should be taken that the "snowball-effect" can be used. In other words it is, for example, to be tested, whether the employees have the ability to hand on their knowledge to others and whether they are willing to do this.
- The course content of the qualifying measure needs to be cleared with the respective provider beforehand, so as to assure a reference to operational conditions. This applies especially to external training measures. The "practitioner" finds it easier than the "strategist" to judge the training measures with regard to the professional contents.
- In order to avoid disturbances of the operational processes, internal replacements have to be regulated. In small businesses the time for qualifying measures and the order situation have to be co-ordinated, since in most cases no other employee can replace the trainee. Therefore a good opportunity for professional skill enhancement and further training measures is in times of low order volumes, which are subject to seasonal influences.
- The quality of various offers for future training needs to be compared. Since the "practitioner" has more professional competence, he/she is in a better position to judge the quality of such training.

Creating the necessary organizational frame conditions

The management of small and mid-sized companies finds the mission of having to motivate employees to acquire further qualifications quite difficult. Training is not about "carrying the dogs to the chase".

Which tasks are to be realized in the qualifying phase, depend on the one hand on the organizational pattern or rather the role interpretation of management and on the other hand on the form of such training. In connection with this and from the perspective of management of small and mid-sized companies, it is convenient to differentiate between:

- self-organized future training;
- further training organized and carried out by the company;
- future training co-operatives; and
- external future training.

In self-organized future training, the activities are essentially carried out by the trainee him/herself. From the viewpoint of the company, it is of advantage if the self-initiated training of the employees can be resorted to, if the topics are of relevance to the company. Since some of the tasks of training fall away, e.g. choice of courses and employee motivation towards professional skill enhancement, the self-initiated further training saves the company time and work.

In connection with the training carried out by the company, the tasks are as follows. The "practitioner" for example transfers his/her knowledge to his/her employees using the "snowball effect". However, he/she has little time to transfer his/her knowledge, because in most cases the "practitioner" is swamped with work. In addition, the "practitioner" does not always have the necessary methodical, didactical abilities. The "strategist" in this case has the task of creating organizational requirements, so that enough time for skill enhancement is available. It can therefore become necessary to shift contracts or rather orders and/or to determine replacements. Also the necessary materials, tools, software, etc. are to be provided for the trainee.

For the "strategist" it will be easier to organize future training co-operation, since he/she already has experience in co-operation with other companies. This is more difficult for the "practitioner", especially in view of the competitive situation.

Regarding external training measures, the actual qualifying process cannot be directly influenced by the management of small and mid-sized companies. This is true for the "practitioner", the "guide", as well as for the "strategist". In this case the main emphasis of further training management lies is on what is done before and what comes after the training.

Using new competence potentials

In the phase of enabling transfer of learning, the following tasks need to be undertaken, in order to make the future training management effective and efficient:

- The period of time between the acquisition and the use of the skills should be kept to a minimum, so that the acquired skills are not forgotten or lost. Since the "practitioner" more or less reacts to orders, it will be difficult for him/her to reduce the period of time between acquisition and use of the skills. The "strategist" on the other hand can influence the transfer of learning, through a new orientation of orders to be carried out.
- During the qualification, the first step towards the transfer of the newly acquired skills should be taken.
- It should be warranted that the qualified employees be integrated in the job-organizational process. In this way, other employees can also profit from the newly acquired skills, by familiarizing themselves with these on-the-job.
- The newly acquired skills can only be used if there are corresponding orders. Since small and mid-sized companies are order-oriented, it is of advantage to inform potential customers about the competences inherent in the company. Here the "strategist" will achieve the best results.
- Normally the implementation of the new skills will not function straight off. It is therefore necessary to create the organizational requirements, so that the employees have the chance to make mistakes. In addition, employees are to be given enough time to implement their new skills.
- As a result of the implementation of new skills, job organizational decisions need to be made, e.g. restructuring of task allocation, new co-ordination of functions and change of responsibilities. Since the "guide" and the "strategist" both have the ability to organize, they are in a better position to use these organizational design options.

Preventing the demotivation of trainees and evaluating the training success

As a result of the problems of isolating and identifying the influential factors to competence development, it is not possible to make exact cost-benefit calculations with regard to future training. If, however, the chance of learning through experience is to be used,

then the monitoring of training effectiveness cannot be neglected despite these difficulties.

The monitoring of training is not an end in itself. In connection with this, perfectionism leads to sub-optimal solutions. If this is to be avoided, then the monitoring of further training has to be carried out in the context of personnel, technical, organizational and company development. In addition care has to be taken that the monitoring expenditure does not exceed the use.

Against the background of a potential-oriented approach, monitoring training cannot be reduced to a variance in the sense of matching qualification demands to the newly acquired skills. In accordance with a potential-oriented approach, present and future competence potentials need to be used and the self-initiated skill enhancement of the employees is to be resorted to. In this way the problem of a time-lag mentioned previously can be reduced. A simple comparison between set and actual instances is not appropriate, because the competence potentials are difficult to identify and their development (if any) is hardly predictable. Instead training needs to be monitored in such a way as to find out, which expectations and which intended and unintended effects these had on employees. Unfulfilled expectations lead to the demotivation of trainees.

It is also to be clarified, how far the qualification can aid the reduction of operational problems, e.g. high processing times, lack of product quality, high error rates or lagging introduction of new technology.

The process of training and skill enhancement, starting with the identification of competence deficiencies, via competence acquisition and ending with the use of these skills takes a lot of time. In connection with the monitoring of the further training, it is therefore to be checked how this process can be shortened and how time-consuming external training activities can be when substituted by job-organizational measures. In addition, the monitoring of training has to make reference to the following questions:

- Was the choice of employees correct?
- Were the qualifying strategies correct and adequate?

From the viewpoint of the "practitioner", who hands down his/her knowledge to his/her employees, there is no necessity for monitoring, since he/she him/herself controls the events. For the "strategist" it is not possible to carry out a direct control of the results of the further training. He/she for example has the alternative of receiving report either from the trainee and/or the trainee's direct superior.

Conclusions

Since the sole focus is on the implementation of the technological push, the internal diffusion of technology fails when confronted with obsolete organizational and personnel structures. It is necessary to build, develop and use the required competences by implementing strategic further training management. Here, increasing use of the self-initiative trainees for competence development, is to be made.

On the managerial side (of small and mid-sized companies), the respective organizational requirements are to be created, so as to facilitate inter-departmental, co-operative and self-regulated competence development (Staudt *et al.*, 1995). If the process of learning on-the-job is to be used increasingly, then management have the task of creating institutional frame conditions, so as to enable the mechanisms of self-regulation.

From the perspective of innovation management and combined competence development, old traditional forms of further training are reduced to lesser significance. To do justice to the dynamics of change and to enable the build-up of innovative potential, it is necessary to develop practice-oriented instruments, methods and strategies for personnel management. At the same time, indicators are to be worked out, with the help of which the effectiveness and efficiency of competence development from an economic and individual career-developmental view, can be determined.

Notes

1 Further training describes all measures that serve the purpose of covering the skill enhancement needs in a company and/or the expansion of desirable qualification potentials. Hence, further training measures encompass all activities of qualification and know-how acquisition, by way of studying trade and technical journals, visiting trade fairs, through information and experience exchange or through the use of consultant services.

2 From the viewpoint of the personnel manager, it is useful to differentiate between self-organized further training, further training organized and carried out by the company, further training co-operations and external further training.

3 Depending on the relationship between the further training and the work process, a differentiation can be made between learning-on-the-job, learning-near-the-job, learning-off-the-job. In view of the operational further training, it is useful to resort to the successful principle of dual qualification

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