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### **Survey of demographic challenges and discussion of human resource management strategies**

Doreen Schwarz & Christiane Hipp, May 2007

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## ***Survey of demographic challenges and discussion of human resource management strategies***

### Abstract

Human resource management is one of the key factors in the productivity, growth and value of companies in which knowledge plays a key role. However, especially the shrinking of industrialized societies, in which the population is ageing rapidly, will dramatically influence the structure of the labor force in the next 10 to 15 years. Fortunately, decision-makers and human resource managers are increasingly responding to these challenges and drawing up strategies for managing the future of their corporations. But up to now not many long-term concepts have been developed. Instead, short term activities focusing on recruiting and advertising/ self-promotion are given more attention. This is alarming. The authors of this paper compare the development of the populations in different countries and devise approaches to human resource management in times of change. Several long term strategies from different countries will be presented and the effects on headcount, productivity, qualifications, and knowledge will be discussed from a personnel economics point of view.

### Key Words:

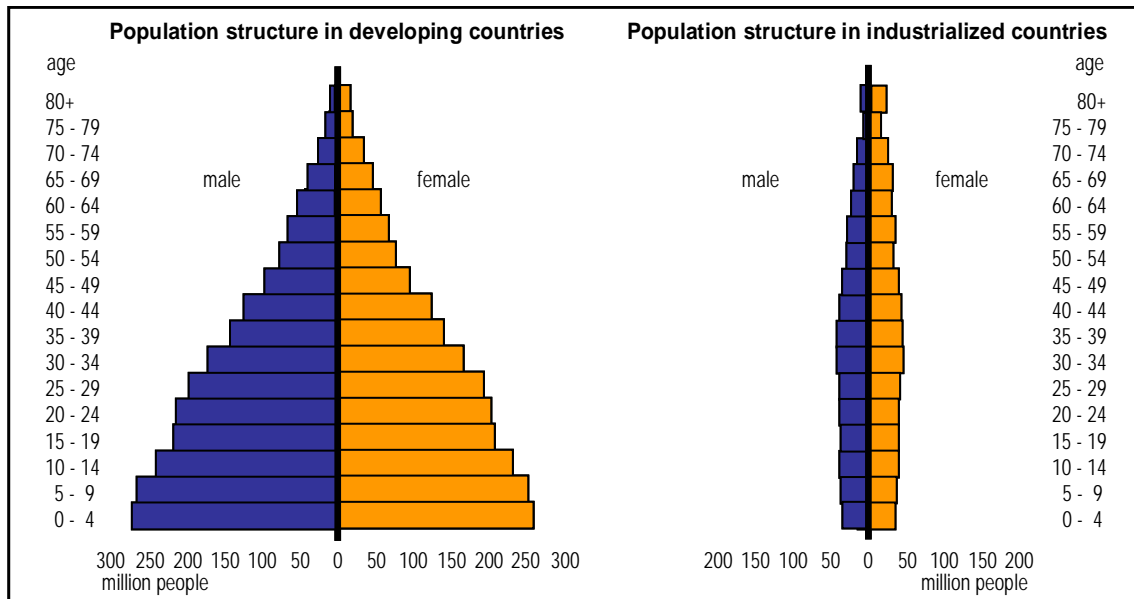
demography, labor force potential, HRM, dynamic effects, strategies

## ***Survey of demographic challenges and discussion of human resource management strategies***

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### **1 Introduction and relevance of the topic**

There has been widespread discussion about demographic changes and managers can hardly fail to be confronted by the issue. It is not only a problem specific to Germany, but a challenge for all industrialized countries. It is a process unique in history, whose effects differ from region to region (Fleisch, 2002). Today there are about 6.2 billion people on the planet. The world's population is currently growing at a rate of 77 million people per year; at the end of the 1980s this figure was 80 million. A study has showed that population growth is limited to the developing countries because of their pyramid-shaped age structure (Fleisch, 2002, pp. 7-16). The proportion of young people is significantly higher in developing countries than in industrialized countries (Figure 1). This generation will grow up in the next few years, thus the number of potential parents in developing countries is increasing steadily.

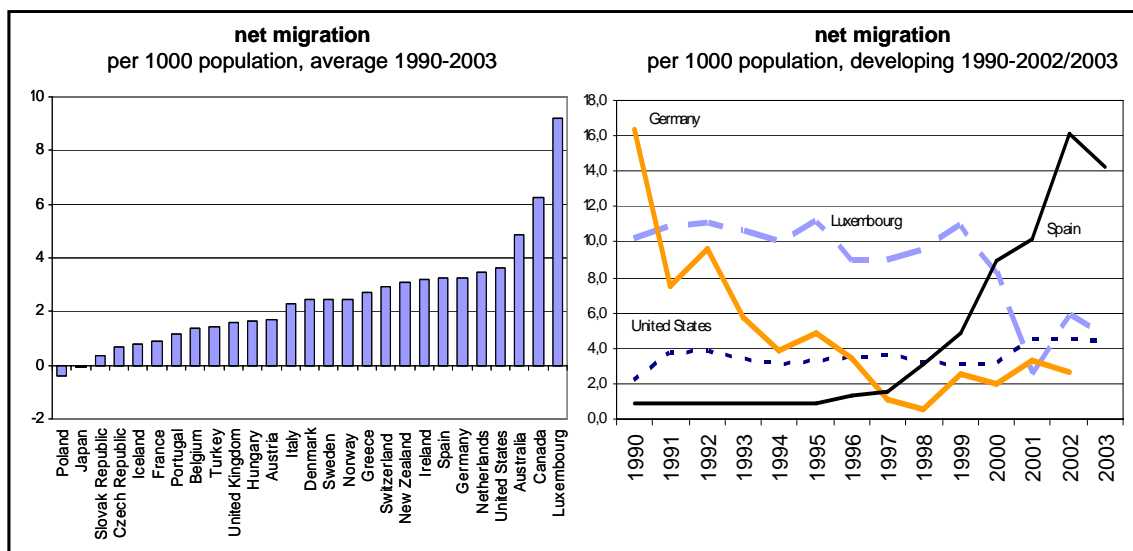


**Figure 1: Population Structure**  
Source: Fleisch, 2002, p. 11.

As Fleisch emphasized the pyramidal age structure and thus the rising number of potential parents accounts for 50 percent of the world's population growth. Therefore, the proportion of people living in developing countries is increasing and the demographic weight of industrialized countries is declining. For example, Europe's share of the world population is going to fall from 12 percent in 2000 to about 7.3 percent in 2050. In real terms, this signifies a decrease of about 70 million people in the next four decades (Fleisch, 2002, p. 9). In the same period, Germany's population will fall from about 82.5 million to slightly more than 75 million in 2050<sup>1</sup>, which is the same level as it was 1963 (Statistisches Bundesamt, 2003, pp. 26-27). The country is highly likely to face an increasing shortage of skilled labor and therefore fierce competition amongst companies for talented people. Thus, the once abstract issue of demographic development is becoming increasingly relevant to organizations. However, the German optimism for recruiting foreign qualified labor in response to the demographic challenges does not seem justified. This is due to demographic developments in industrialized countries in general. Figure 2 includes a chart showing average net migration in OECD member states between 1990 and 2003. It also contains a graph

<sup>1</sup> The results refer to the "middle variant" of the population projection. The "middle variant" is based on the following assumptions: constant birth rate of 1.4 children per woman on average, increase in life expectancy of an infant male to 81.1 years and of a infant female to 86.6 years by 2050, and annual net immigration of about 200,000 people. Statistisches Bundesamt, 2003, pp. 26-27.

illustrating net migration development in four OECD countries with high average net migration.<sup>2</sup>



**Figure 2: Net Migration of OECD Member Countries**  
Source: Data extracted from OECD, 2005.

In Germany, average net migration is relatively high but total annual net migration has been steadily decreasing since the 1990s. As calculations by the Statistisches Bundesamt show, net migration was about 142,700 people in 2003 (Statistisches Bundesamt, 2005a, p. 57). The relevance of these data with regard to the labor force potential has recently been investigated by Fuchs and Dörfler. Their projections demonstrate that Germany requires net immigration of at least 400,000 people per year<sup>3</sup> to keep the labor force at the level it was in 2004 (Fuchs & Dörfler, 2005, pp. 1-2). In this unlikely scenario there would be about 43 million people in the labor force in 2050 (Fuchs, 2005, p. 263). But the more realistic net migration of between 100,000 and 200,000 people per year would not offset the demographic effect. This means that the labor force would decline to between 31.5 million and 35.5 million people in 2050 (Fuchs & Dörfler, 2005, p. 5).

<sup>2</sup> „The main sources of information on migration vary across countries, which poses difficulties when comparing the available data on immigration and emigration. However, since these difficulties generally concern the extent to which shorter-term movements are counted in the immigration and emigration, taking the difference between the two (net migration) tends to cancel out the movements that are the source of these difficulties in comparison. The net migration data should nonetheless be treated with caution, firstly because irregular migration is not taken into account in immigration figures and this is significant in some countries; secondly, because the data on outflows are of uneven quality, with departures being not well recorded in some countries or having to be estimated in others.“ OECD, 2005.

<sup>3</sup> The authors also assume an increase in the labor force participation of women and older people.

In short, we are facing a unique phenomenon. There is no experience or detailed knowledge to fall back on in order to deal with it. Therefore, in Chapter 2, we will identify the effects of future population development on the labor force and the opportunities this generates for companies willing to revise their human resource management strategies. Based on this we develop a catalogue of possible countermeasures for strategic human resource management, especially in the main activities of recruitment and personnel development. The conclusion contains a short review of the main issue and summarizes the core strategies discussed.

## **2 The demographic challenge**

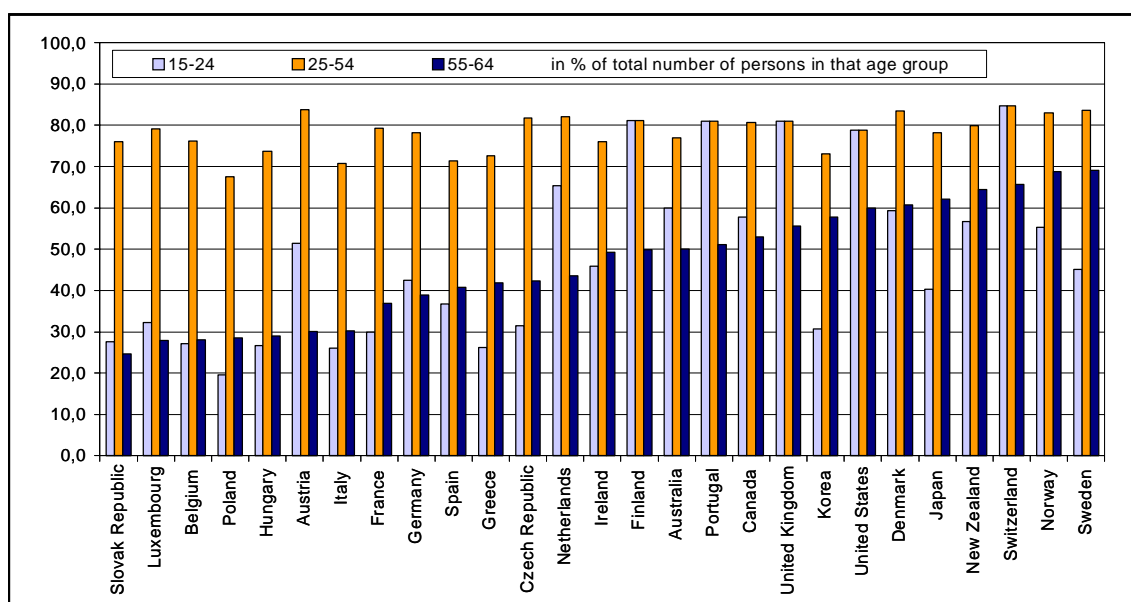
### **2.1 Comparison of OECD member countries**

This chapter looks at special indicators which combine demographic change and its effects on the labor force and thus on human resource management within organizations. The authors focus on data published by the OECD. On December 14, 1960, twenty countries signed the Convention on the Organisation for Economic Co-operation and Development. Since then, ten further countries have joined the OECD. International measuring standards ensure that indicators can be compared although these countries differ particularly when it comes to economic and social levels. Furthermore, looking at all OECD member states provides a broader overview of how Germany ranks.

To demonstrate trends, we focus on the following indicators: firstly, employment rates by age group, secondly, participation in tertiary education by age group, and thirdly, part-time employment rates. The ranking position of Germany could indicate future human resource management strategies to meet the demographic challenges.

#### *2.1.1 Employment rates by age group*

Employment is generally measured using labor force surveys sent to households. The International Labour Organization, ILO, which formulates international labor standards and also provides technical assistance in the field of labor statistics, has standardized the definitions of employed and unemployed people. Thus, an employed person is defined as being aged 15 or over and has been in gainful employment for at least one hour per week before the reporting period. An unemployed person is out of work but available for and actively seeking employment (Commission of European Communities, 2000, p. 2). All countries follow the ILO guidelines when measuring employment, except Iceland, Mexico and Turkey (OECD, 2005). Therefore, the employment rates in these three countries are not strictly comparable with those of the other OECD member states and therefore excluded from the following considerations.



**Figure 3: Employment rates by age group in 2003**

Note: in % of total number of people in that age group, Source: Data extracted from OECD, 2005.

Figure 3 shows the employment rates in the three main age groups: firstly, people between 15 and 24 years of age who have just entered the labor market, secondly, people aged between 25 and 54 who are in the middle of their working lives, and finally, people between 55 and 64 years of age who are approaching retirement. Employment rates in these three age groups are significantly affected by government policies with regard to higher education, pensions and retirement age (OECD, 2005). As Figure 3 illustrates, there are clear differences between individual countries' employment rates especially in the youngest and the oldest age groups. In Germany, the figures in these two groups are lower than in the Netherlands, Ireland, Finland, Denmark, Norway, Sweden and even Portugal.

Employment rates depend on several factors, so explanations require more and detailed country-specific information. However, it is a fact that Germany's employment rates of the 15-24 and 55-64 age groups are below the OECD average. The annual census of the German Federal Statistical Office produced data which suggest some reasons for the low rates (Statistisches Bundesamt, 2005b, Tab. 67). In March 2004 there were about 9,678,000 people in the age group 15-25 (Statistisches Bundesamt, 2005c), including employed people, unemployed people (601,000 people; 286,000 of them without any completed vocational training or degree) and the manpower reserve, for example students and people who are unavailable for employment. The last group alone comprised 4,865,000 people, including 4,357,000 schoolchildren and students



(Statistisches Bundesamt, 2005b, Tab. 55, 60, 62). The proportion of these 4.3 million students who are in tertiary education is indeed low<sup>4</sup> and their average age when completing their first tertiary degree<sup>5</sup> is very high. Daugs found that in Australia, New Zealand and the United Kingdom for example, students on average graduate at the age of 23 (Daugs, 2001, p. 33). In Germany, students on average are 26 when they graduate. Consequently, a significant proportion of students aged between 15 and 24 is in the manpower reserve and therefore, unfortunately, unavailable for the labor market. On the one hand, this could be one of the factors responsible for the low employment rate in the 15-25 age group and at the same time an area with enormous potential for improvement. The German federal government already promotes the introduction of Bachelor and Master programmes to shorten the period of study (Bundesministerium für Bildung und Forschung, 2005, p. 4). With demographic change underway at full speed, Germany and German companies can no longer afford to waste the talents of highly qualified people.

Another difference worthy of discussion is the rate of employment in the 55-64 age group, which is quite low in comparison to other OECD countries. Germany ranks in the bottom third. According to the German Federal Statistical Office (2005) the figures are as follows: in March 2004 4,974,000 people in this age group were employed, 669,000 people unemployed, and 5,374,000 were in the manpower reserve (Statistisches Bundesamt, 2005b, Tab. 48, 66). One of the reasons for the large number of people not in employment might be the promotion of early retirement which had also been very popular in the past. By now, the German government has realized that in shrinking societies these policies cause a decline in labor force potential and a collapse of the social security system. It has therefore changed the law and reduced the incentives for early retirement.<sup>6</sup> But the European Union too has set ambitious targets for reducing unemployment and boosting employment. At the Stockholm European Council in Spring 2001 it agreed on a plan to raise the employment rate for older people to at least 50 percent in 2010 (European Commission, 2004, p. 7).

This target does not only require the supply of a relevant number of additional jobs but also the mobilization of elderly persons and a solid education. Today, a high level of education is both the way into the labor market and the prerequisite for remaining in the

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<sup>4</sup> See Chapter 3.1.

<sup>5</sup> Tertiary education includes education at universities, colleges of higher education, higher vocational and industrial training. "The International Standard Classification of Education (ISCED-97) is used to define the levels of education. See the OECD Handbook for Internationally Comparative Education Statistics for a description of ISCED-97 education programmes and attainment levels and their mappings for each country" (OECD, 2005).

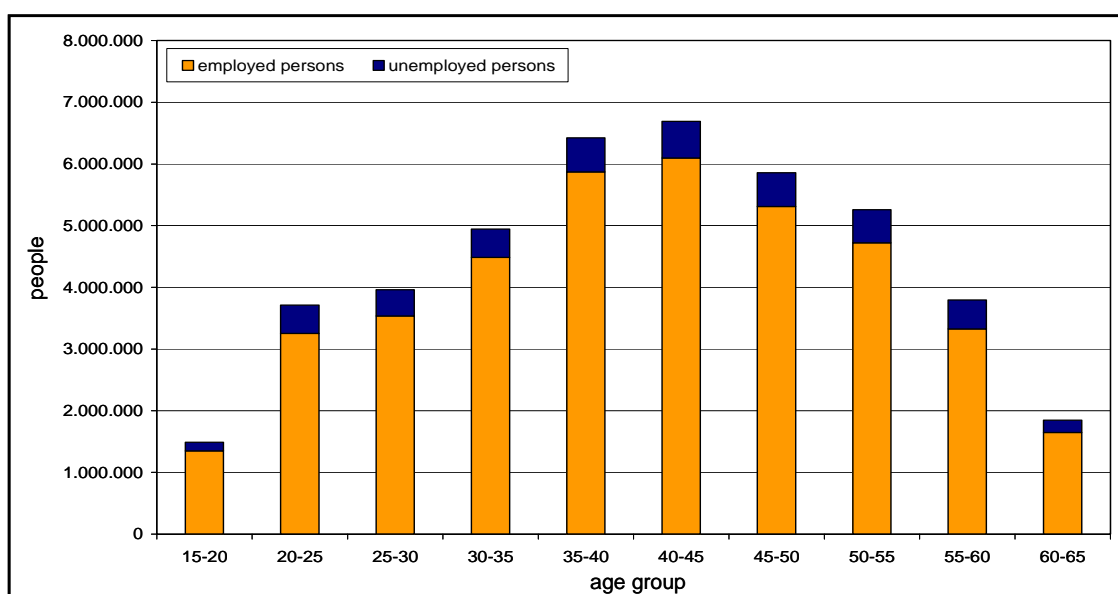
<sup>6</sup> See Bundesministerium der Justiz. In: <http://www.gesetze-im-internet.de/>

labor market. Hence, it is not only important to (re-)activate older people but also to employ and continuously train the aging population, in particular women with children<sup>7</sup>, and to sensitise them to lifelong employment. Sweden for example successfully pursues this type of policy; employment rates of older workers exceed those in all other OECD countries. This policy has also helped to avoid the introduction of early retirement programmes in Sweden (Bosch & Schief, 2005, p. 280). The government of Queensland (Australia) is also very ambitious. It “is pursuing collaborative work with The University of Queensland to develop projections of the public sector workforce to support workforce planning and policy development” (Queensland Government, 2004a, pp. 19-20). Organizations should be aware of the loss of know-how and company-specific knowledge if a disproportionately high number of older workers retire early.

In this context we underline another important fact. The decline and aging of a country's population is reflected in the workforce. The demographic change influences the age structure of a company's personnel but also the future supply of labor. It is not possible to project the specific situation without detailed information. Because of the dynamics a reliable statement definitely requires the analysis of a company's fluctuation rate, its current number of employees, as well as its employees' current average age (Schwarz & Kunz, 2005). But Figure 4 can at least indicate a trend for the available labor force and thus stress the need for managers to monitor a company's specific situation. The results of such an analysis will probably influence in particular an organization's recruiting and training strategies.

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<sup>7</sup> This requires sufficient childcare, for example. In Germany, this prerequisite seems to be coming about also for children under the age of three – 40 years after Sweden (Bosch & Schief, 2005, p. 286).



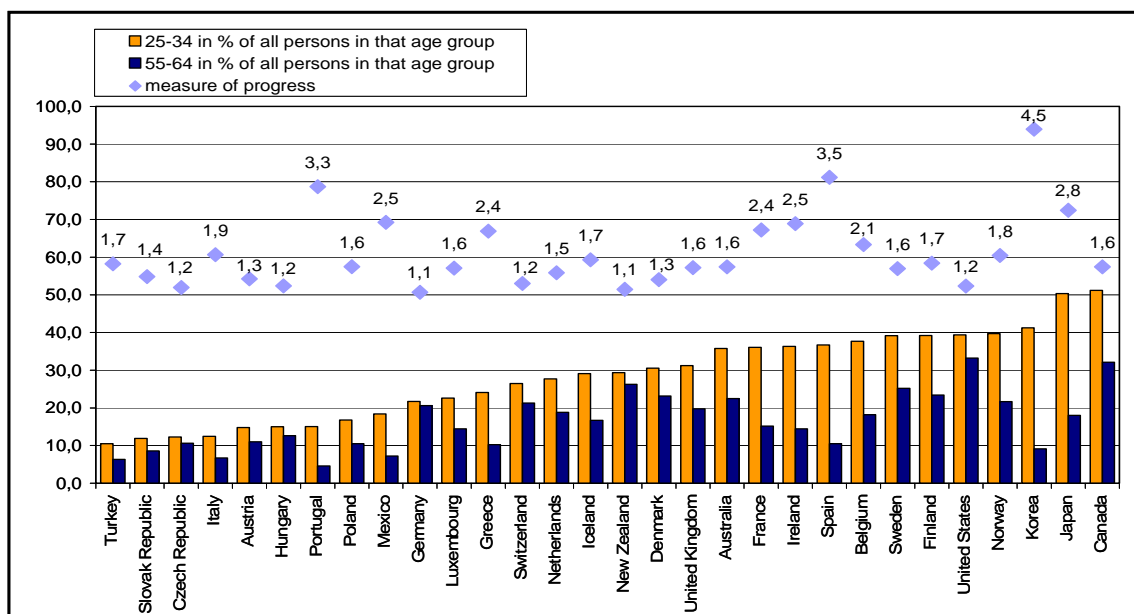
**Figure 4: Direct Labor Force Potential in 2004**

Source: German Federal Statistical Office (Statistisches Bundesamt, 2005b, Tab. 48).

Figure 4 shows a strong group of people aged between 40 and 45. The number of people in younger groupings is significantly lower than the number of people in older ones. Thus, the workforce seems to decline in the long run. But figure 4 provides only an indication of future labor force potential because the changes and stock affecting variables are not diagramed. A reliable projection of the future supply of labor would require a dynamic simulation of all influencing factors, for example migration rate, graduation rate, fertility rate, mortality rate, etc.

### 2.1.2 Participation in tertiary education by level

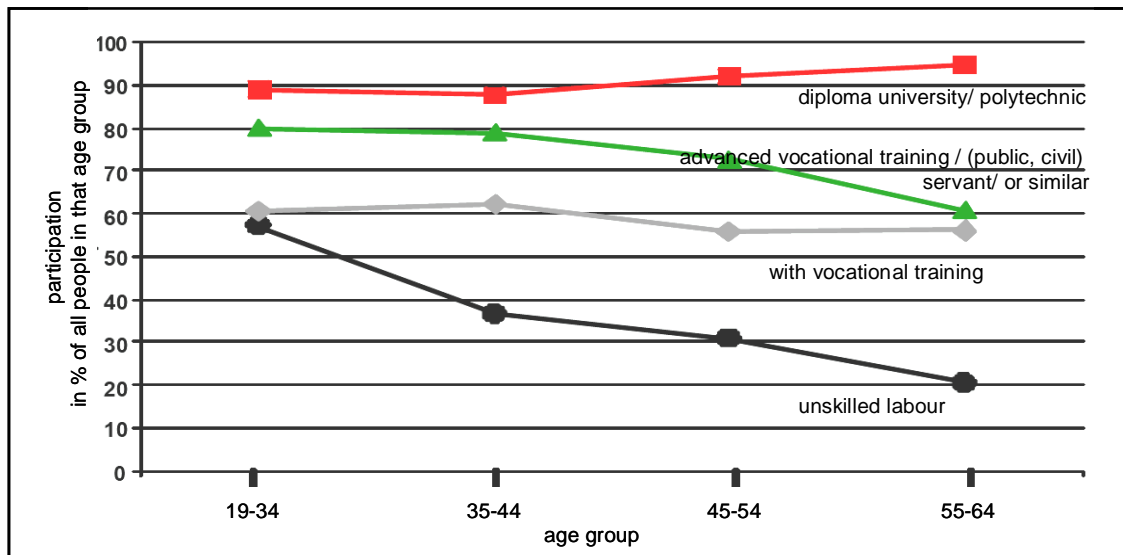
In this chapter we mainly focus on international differences in participation in tertiary education, because the “share of the population that has attained qualifications at the tertiary level is a key indicator of how well countries are placed to profit from technological and scientific progress” (OECD, 2005). Furthermore, statistics show that employment outlook for the highly qualified are better than for people with low qualifications: in March 2004 only 5 percent of all unemployed people had qualifications gained at tertiary education level, whereas 27 percent of unemployed people had no qualifications, and the proportion of unemployed people who had completed industrial training or an internship was 59 percent (Statistisches Bundesamt, 2005e, p. 77).



**Figure 5: Tertiary Education by Age Group in OECD Countries 2002**  
 Source: Data extracted from OECD, 2005.

Figure 5 illustrates the proportion of people in each age group who have completed tertiary education. The differences between the younger and older group are of particular importance. These differences identify the measure of progress in the provision of higher education (OECD, 2005). That means, the larger the difference, the greater the educational progress of the country. Korea, Spain, and Portugal, for example, have more than tripled the rate of people with tertiary education in the past 30 years. Germany has made rather limited progress in the rate of people in higher education compared to other OECD countries.

In-service training is just as important as the first tertiary degree because of the decline of the labor force, the stagnation of the level of education, the accelerated change of personnel requirements (Fuchs, 2005, p. 273; Morschhäuser, 2005, p. 292), and also the extension of working life. For example, Denmark and Sweden ensure employability by high investments in lifelong learning (Expertenkommission, 2004, p. 135). A study showed that participation in in-service training in Germany is significantly lower than in Denmark, Sweden or Finland (Bosch, 2004, p. 1).



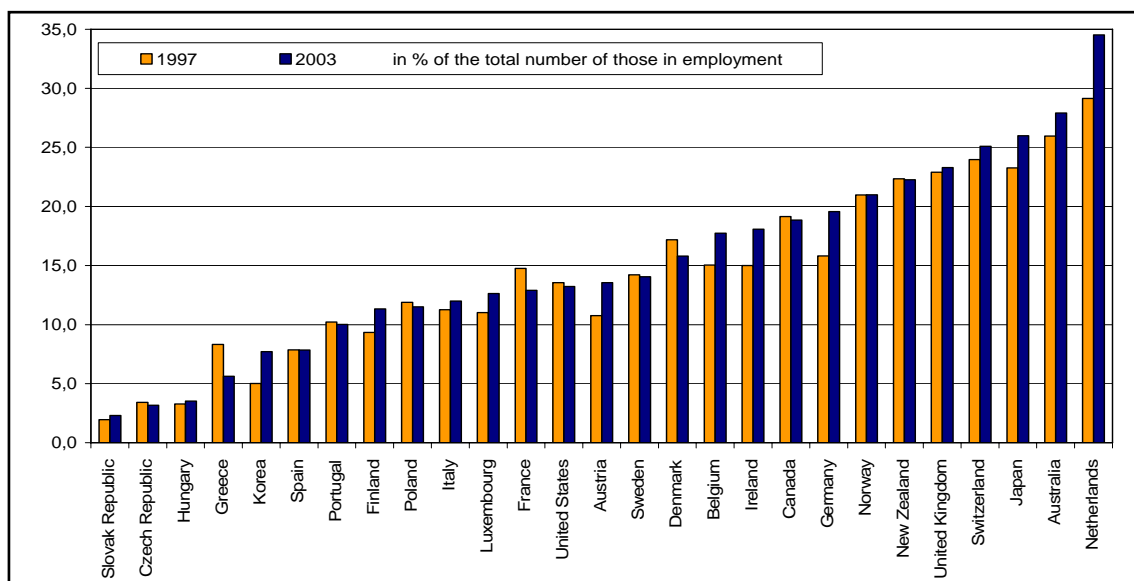
**Figure 6: Participation in Training by Age Group and Education in Germany 2003**  
 Source: Bosch, 2004, p. 4 (Data extracted from Schröder & Schiel, 2004).

Furthermore, a frequent complaint in Germany is that the proportion of elderly employees who participate in training is too low (Kuwon & Thebis, 2004, p. 25) – either because of low supply or low demand. But fortunately, age is not the only aspect which plays a role in whether a person takes part in training programs; the level of education is more significant. Figure 6 illustrates that high skilled people participate independently of age in further training. More often, only low qualified middle-aged and aged employees hardly participate in further education (Bosch, 2004, p. 3).

The international comparison shows Germany's educational deficit with respect to supply of higher education as well as participation in further training. The current level of participation in general and vocational/ professional training is definitely too low (Bosch, 2004, p. 4) to cope with the current demographic change. Highly qualified people are increasingly becoming a scarce resource, and a company's capability of producing innovative and strategic solutions will determine whether it succeeds or fails.

### 2.1.3 Part-time employment rates

Part-time employment refers to people – both employees and self-employed – who usually work less than 30 hours per week in their main job (OECD, 2005). We already mentioned that Iceland, Mexico and Turkey do not follow the ILO guidelines for measuring employment, thus, they are excluded in the following considerations. Recent surveys in a large number of OECD countries have shown that most people work part-time by choice. "This suggests that countries with little part-time employment could foster increased employment by policies that promote the availability of part-time positions. This would particularly benefit women with young children" (OECD, 2005).



**Figure 7: Part-time Employment Rates in OECD countries**  
Source: Data extracted from OECD, 2005.

Figure 7 compares part-time employment rates in OECD member states. Figures for Germany are in the top third, i.e. Germany had a relatively high level of part-time employment: in 2003 19.6 percent of employed and self-employed people worked less than 30 hours per week in their main jobs. But the reasons for this are not clear and could be complex. Important factors are policies specific to each country, like partial retirement or tax incentives and lower social insurance contributions for “mini jobs” (Bosch & Schief, 2005, p. 284). Bosch and Schief (2005) noted furthermore that the objective of partial retirement programs has been so far the early retirement of older workers (p. 284). In the near future these partial retirement programs could be used to keep older workers in organizations to preserve their extremely important know-how.

## 2.2 Emphasizing companies' opportunities

Awareness of these data and the analysis of global demographic change seem to be the first step in seizing opportunities. It is important to realize and to evaluate the demographic development and also to recognize its relevance for the company. The second step has to be the analysis of the company-specific situation. The adoption of ready-made solutions in the guise of managerial wisdom could be risky because a strategy's success depends on internal and external factors that may differ from company to company.

Furthermore, we should realize that change does not automatically imply negative consequences. We have to be aware of the opportunities changes offer. The current demographic process and the aging of societies create room for development and progress. Managers need to be flexible and open-minded to identify new product niches

and innovative technologies. The “silver market” and the “silver consumer generation” – well tested concepts in Japan and the USA – offer significant potential for economic growth and thus profit (Conrad & Gerling, 2005).

There is another opportunity, one which stems from knowing about the effects of early retirement programmes and downsizing through layoffs. They make sense economically only in the short run. Many companies have used these strategies to get rid of more highly paid older employees or to manage the size and composition of their workforce (Hedge, Borman, & Lammlein, 2006, pp. 15-16.) But the long term consequences of these measures are the loss of the people with the greatest experience and organizational know-how and thus lower levels of productivity (Shea, 1991; Hedge, Borman, & Lammlein, 2006, p. 16.) and adverse selection<sup>8</sup>. Hence, there is the risk that especially qualified and highly productive employees choose the exit option because they are aware of their qualifications and employability (Lazear, 1998, p. 65). They know about their good job chances and leave a staff reducing organization. From a principal-agent theory viewpoint, less highly educated and less productive employees would stay because of their poorer job chances. The company thus is forced to keep those people it would prefer to see leave. Consequently, this scenario represents the beginning of a self-enforced decline in motivation and productivity in the company. Apart from this effect, the company’s workforce decreases. Population decline and increasing competition amongst companies for talented human resources will probably make recruitment of qualified employees difficult, although the extent may vary from region to region. Therefore, above all, small and medium-sized companies should be particularly careful when reducing staff. They often use traditional recruiting methods without distinctive marketing and they concentrate their search on their region, all disadvantages in the competition amongst companies for talented human resources (Mühlbradt & Grumbach, 2005, p. 360).

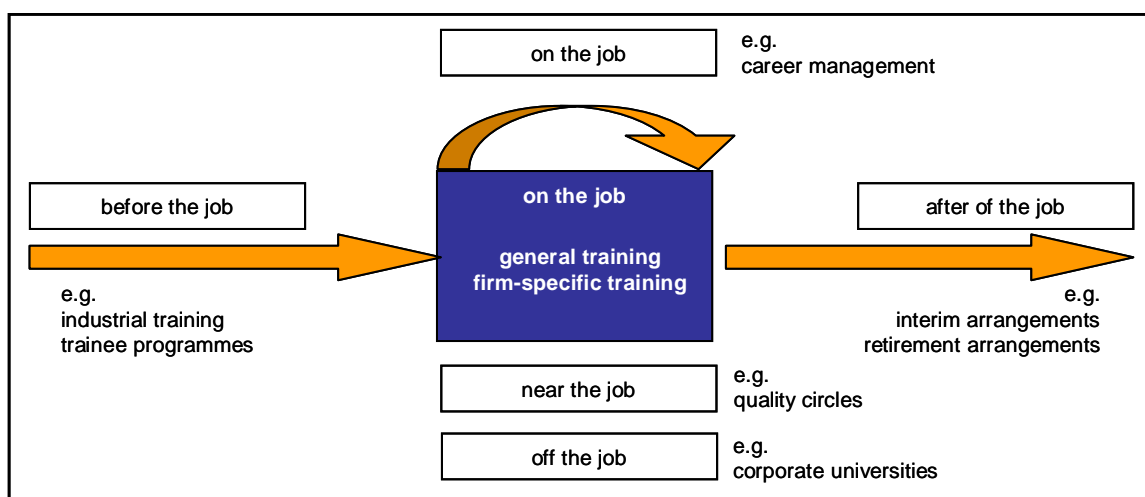
The capability of meeting the demand for personnel is becoming a central factor. For small and large firms, for companies in economically declining and prospering regions this means that a long-term human resource strategy based on reliable analyses of their staff as well as unique and targeted recruiting could provide them with a competitive advantage.

The current demographic change necessitates another task: to dispel the prejudice that the performance of workers deteriorates with age. There are a lot of surveys about the

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<sup>8</sup> Adverse selection arises from asymmetric information between employer and employee. Often, the employer does not know important characteristics of the employee, thus „it is difficult to distinguish those with good job qualifications from those with bad qualifications” (Akerlof, 1970, p. 495).

performance decline due to illness. In the case of chronic diseases there is indeed a correlation between age and performance, but it also depends on the profession and kind of job (Mühlbradt & Grumbach, 2005, p. 360). With respect to the more general question of the correlation between age and performance no clear findings have been made yet. As Börsch-Supan, Düzgün and Weiss (2005) noted this is a very complex question (p. 3). In short, they assumed a positive relationship between age and experience and between age and a calm working atmosphere, a negative correlation between age and physical ability, and age and mental ability. Furthermore, they hypothesized: the higher the value of these four parameters as well as the level of education, the higher the productivity (Börsch-Supan, Düzgün & Weiss, 2005, p. 4). Other studies on aging have also emphasised age-related performance reductions could be offset by incentives and targeted training programmes (Baltes, 1987). Additionally, the theory of human capital applied to personnel issues indicates the usefulness of educational investments. This is a very important part of modern economics, thus two Nobel prizes in economics were awarded at least in part in recognition of the theory's relevance (Lazear, 1998, p. 135). Becker (1993) stressed that education and training are the most important investments in human capital (p. 17). Skills can be acquired in many different ways. First of all, there is formal education, i.e. going to school or university, and then there are numerous forms of further training. As Figure 8 illustrates, there are various ways of training employees.



**Figure 8: Methods of Personnel Development**  
Source: Scholz, 2000, p. 511.

The principle of the theory of human capital is that managers decide to invest in education if this will lead to increased productivity and higher earnings in the future, which make the cost of training worthwhile (Lazear, 1998, p. 136).



We point out two different types of training, because they have different implications with regard to earnings.<sup>9</sup> General training is as effective in raising productivity in the company providing the training as it is in any other company. This is the reason why general training has to be paid for by the employees themselves through reduced wages. If the company paid for general training, it would produce sunk costs in the long run because the trained employees have no incentive to stay. They could apply the general knowledge they gained free of charge at their company to other jobs. In contrast, company-specific training generates higher productivity only in the respective organization. The additional qualifications have no effects on the productivity of other firms; the knowledge cannot be applied outside an employee's current company. Therefore, employees and companies share the costs and benefits of company-specific training. This reduces turnover and provides incentives for both parties to make appropriate investment decisions. On the topic of the aging of companies' workforces due to the aging population, older employees who have been with the same organization for many years represent a greater loss to both the organization and the workers when laid off compared to junior members of staff. Therefore, early retirement schemes drain off that know-how which is unique to the firm and with which the company made its highest profits (Backes-Gellner, Lazear, & Wolff, 2001, p. 41).

The demographic effects on the labor force require increasing managerial activity to qualify companies' personnel. In various parts of the economy Mühlbradt and Grumbach observed an increase in the level of skills; workers require ever higher qualifications to ensure success (2005, p. 360). At the same time, it is important to bind and retain highly qualified employees. Therefore, personnel development seems to be the second key factor in maintaining and increasing productivity and motivation.

Of course, there are further key factors. However, in this paper we are focusing on the main demographic effects on human resource management, which create the following challenges:

- offsetting the shortage of skilled personnel through innovative recruiting,
- offsetting the supply and demand of labor through training and in the long run through higher productivity, and
- responsible managerial behaviour with respect to a company's age structure through long term personnel planning, which influences both recruitment and personnel development.

In the next chapter we will present concrete recommendations as well as approved concepts in other countries.

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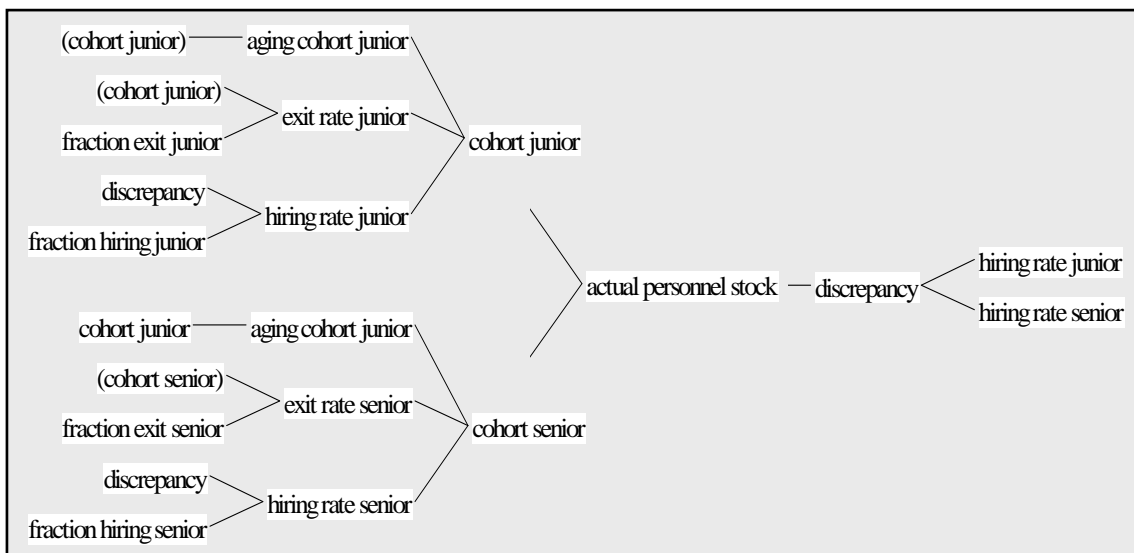
<sup>9</sup> See Lazear, 1998, pp. 142-159.

### 3 Strategies for human resource managers

#### 3.1 Recruitment

The sharpest decline of the labor force is expected between 2015 and 2020 (Naegele, & Reichert, 2005, p. 342). And it is assumed that East Germany will be particularly affected (Bundesamt für Bauwesen und Raumordnung BBR, 2005, p. 32), because in the same period a wave of retirement of employees currently aged 50 and over is expected. In contrast, many West German companies in economically well-off regions will probably not face a shortage of labor. But the age structure, and thus all advantages and disadvantages could be similar in all regions. Therefore, before designing any recruiting strategies, it is essential to analyse the age structure, rate of fluctuation and qualification structure of the current workforce and to project its development.

As indicated, a company's workforce is a complex and very dynamic system. This means that managers cannot easily calculate the replacement needs of personnel. Each parameter of a system requires considering interdependencies, feedback and delays, otherwise unintended side-effects could counteract a personnel manager's plans.

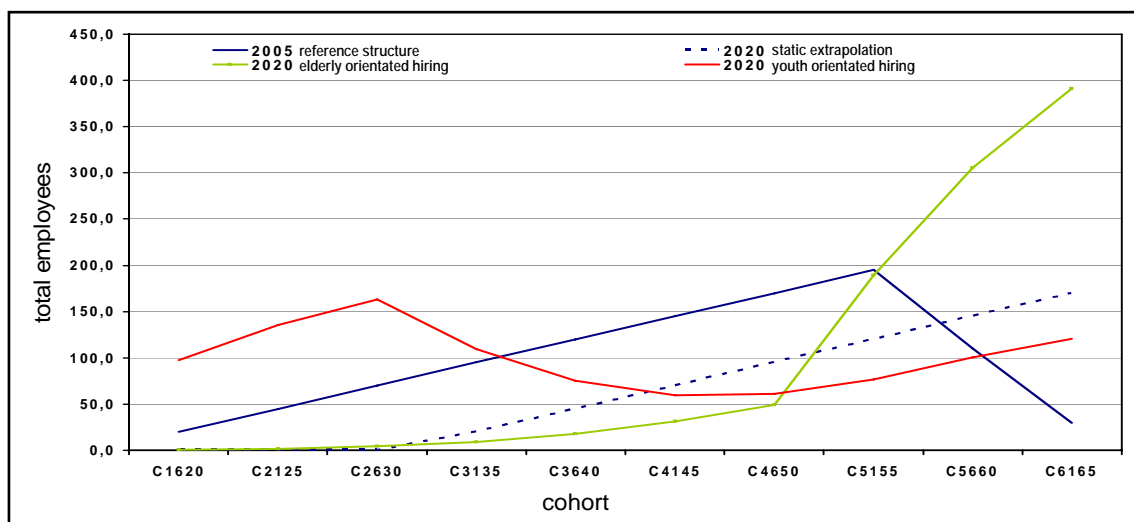


**Figure 9: Interdependency Patterns with Regard to Current Workforce**  
 Source: author's illustration.

Figure 9 shows a very simplified structure of dependencies, which influence how a company's current workforce should be put together. Let us assume we were able to break down a company's workforce into two different age groups: a younger group, including, for example, employees aged 15 to 40, and a more senior one, comprised of employees aged 41 and over. The size of each group is affected by a specific hiring

rate, a specific leaving rate, and a pre-determined aging (or transition) rate. This aging rate indicates the transition of employees from one age group to the next and influences both the previous grouping through outflow and the next cohort through inflow. The current workforce is the sum of all persons in both groups. The discrepancy is the difference between the current workforce and the desired level of staff, and affects the hiring rate in the next period. The hiring rate in turn influences the size of each group. If relevant for future hiring strategies, each cohort could be subdivided into different hierarchical levels for example. The closer the model represents reality, the more complex it becomes, and the more effective the measures are.

As can be seen, the relationship between the parameters is not a simple one of cause and effect, but an endogenous reiterative process influencing the workforce. Thus, simply updating the age of current employees to determine a company's age structure 10 years from now does not reflect the complexity and is definitely not sufficient. However, if any, this kind of extrapolation is the current practice within companies. In our analysis we determined the forecast error for a firm with 1,000 employees. We considered the two extremes of hiring only young employees and hiring only older employees. Then we compared the results of a dynamic projection to the results of a static extrapolation (no fluctuation) of the current personnel structure. The differences are enormous and demonstrate the risk of rough estimates (see also Weber & Schwarz, 2007).



**Figure 10: Forecast Errors of Static Extrapolation**  
Source: author's illustration, author's data.

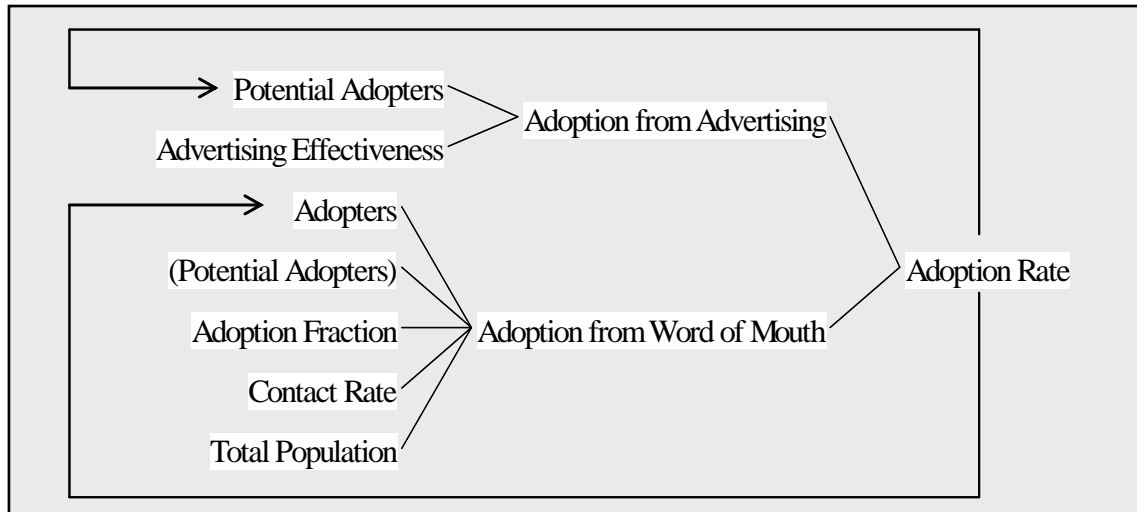
The static extrapolation in Figure 10 indicates a lack of employees under the age of 25 in 2020, and the largest share of staff in the 61-65 age group. The total workforce is decreasing steadily from 2005 on as older workers retire and no new ones are hired. The more realistic projections illustrate the error. Assuming that firms recruit only

younger workers, they could then completely reshape their age structure and reduce the average age (red line). If firms, in particular East German companies, have to assume that only older workers are available in the future, they could expect their workforce development to correspond to the green line. Understandably, these different scenarios require different strategies.

To sum up, the fluctuation rate has the greatest influence on the structure of the workforce, and at the same time it is the factor that is underestimated most. The static analysis creates a false sense of security and distracts from the importance of recruiting, training, motivating, and in particular financing strategies. Static extrapolation produces flawed data and therefore recruiting policies that do not meet the demands of the company. The results are similar to ignoring the effects of demographic change on the workforce. This could be fatal for a company's efficiency: a strong reduction of staff could endanger a firm's knowledge base as well as the service quality and quantity; excessive recruiting on the other hand would increase personnel costs. Imprudent policies could also be detrimental to a company's reputation and employees' workload, and thus commitment and motivation. As the study from Schwarz and Kunz (2005) showed, the hiring of employees on the basis of rough estimates – or worse of past developments – could have calamitous consequences in times of demographic change (pp. 145-147). Dynamic projection and computer-based modelling of workforce development is an innovative procedure in human resource management especially for medium-sized and large enterprises.

Another important aspect is the recruiting method, whether it is passive, active, internal or external. Many companies use active external strategies to hire the best people. For example, they organize company contact fairs, offer internships, initiate co-operations with universities to recruit specialized students, etc. This is especially widely used in larger firms. Although internal recruitment provides several advantages for both employee and employer, it is not a very innovative approach. Assuming that the decline of the workforce is equalled by the decline in the population, internal recruitment is no solution for the gap between the desired and current workforce. What about passive recruitment? Passive external recruitment means recruiting through word of mouth. When discussing positive staff feedback and network effects we have to look at diffusion models. Diffusion models are widely used, for example, to analyse the spread of infectious diseases and computer viruses, the growth of the market for new products, and many other things. Bass (1969) developed a model for the spread of innovations that has become one of the most popular models for new product growth (Sterman, 2000, p. 332).

In Bass's diffusion model there are on the one hand potential adopters, who adopt an innovation or a new idea independently of the decision of other individuals in a social system. They are defined as innovators. On the other hand, there are later adopters, who are influenced by the pressures of the social system; this increases with the number of previous adopters. These adopters are defined as imitators (Bass, 1969, p. 216).



**Figure 11: Interdependency Patterns in Bass's Diffusion Model**  
Source: author's illustration.

Figure 11 illustrates again the dynamics of the process and the interactions of innovators and imitators. The adoption rate is influenced by two different effects: the external sources of awareness and adoption are usually interpreted as the effect of advertising, and positive feedback is usually interpreted as the effect of word of mouth (Stermann, 2000, p. 332). The adoption rate in turn influences the number of potential adopters (it decreases their numbers), and simultaneously the number of adopters (it increases their numbers). The importance of innovators is greater at first but will diminish continuously over time, while the rising number of adopters increases the network effect and thus the number of imitators. Bass proved empirically that "for successful new products the coefficient of imitation will ordinarily be much larger than the coefficient of innovation" (Bass, 1969, p. 219). Applied to our case of advertising jobs by word-of-mouth we assume that the first employees (innovators), who were influenced by advertising, in turn influence potential employees (imitators) through word of mouth. The effect is then an increase in the number of satisfied employees in the

firm.<sup>10</sup> This assumption could prove a very effective and efficient method in addition to active recruitment in times when competition for talented staff is fierce. Indeed, passive recruitment requires an incentive system for employees, but there are obvious advantages:

- Employees try to convince others to apply for a job at their company if they have good human relations. This positively affects the working atmosphere.
- Simultaneously, employees should receive the agreed incentive not until the new employee has satisfied minimum requirements, like a successful probation period. Because of these specific requirements employees will not just recommend anyone. Thus the risk of incorrect selection is reduced (Scholz, 2000, p. 394).
- Furthermore, if an employee only recommends people who do not fit into the company, he damages his reputation. Presumably, employees are motivated to attract desired and sufficiently qualified workers.
- Recruiting through word of mouth could also reduce employee turnover, because of the loyalty between recruiting employee and new employee. A low turnover rate avoids additional costs (Lazear, 1998, p. 169).
- It can also be assumed that word of mouth reaches more people than conventional advertising because of the world-shrinking effects<sup>11</sup> of social networks.
- Moreover, employees are actually involved in their company's development. Managers encourage employees to provide input to the firm by making them officially part of the company (Lazear, 1998, p. 514).

All in all, there are good reasons to seriously consider passive recruitment more. For the method to be successful a company needs to have a good reputation and satisfied employees, and then the chances of attracting high potentials could be excellent.

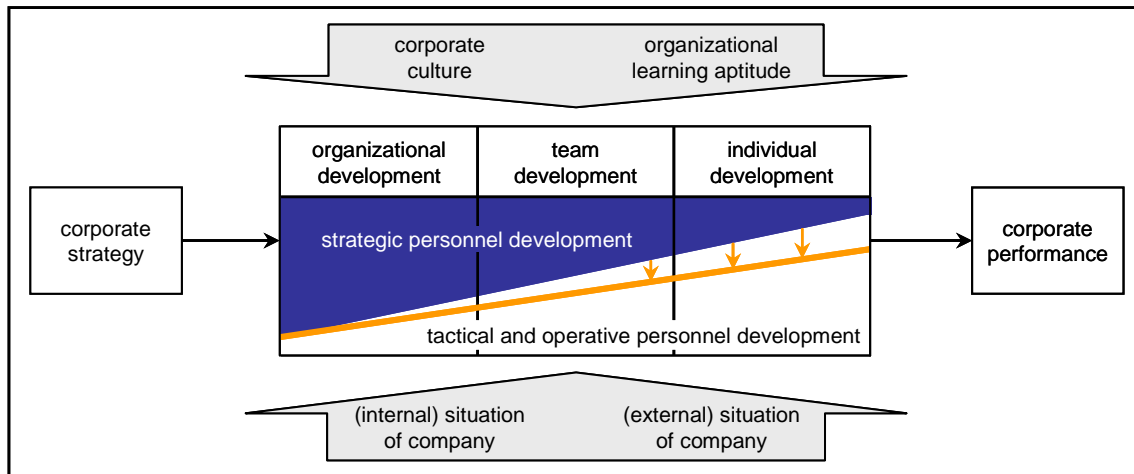
### **3.2 Staff development and retention**

As already mentioned, the second relevant field of managerial activity is a long term plan for staff retention and training. Scholz (2000) has outlined the training of personnel in the following terms (Fig. 12).

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<sup>10</sup> As Sterman (2000) noted, the model itself, or variants of it, is broadly applicable to a wide range of diffusion and growth phenomena (p. 334). But this is the first assumption with respect to recruitment and has to be verified in further research.

<sup>11</sup> Milgram, S. (1967) conducted a small-world experiment and explored the premise that everyone in the world is connected to everyone else in the world by a chain of only 6 acquaintances. See Travers, J., & Milgram S. (1969). An Experimental Study of the Small World Problem. In: Sociometry, Vol. 32, No. 4, pp. 425-443.



**Figure 12: Personnel Training**

Source: Scholz, 2000, p. 410, modified by the authors.

Strategic personnel development is influenced by a company's corporate strategy, its corporate culture, the internal and external situations and learning aptitude within an organization. As illustrated, we are assuming that the future significance of strategic personnel development, in particular individual development, will increase. In this regard, there are four main fields of development (Scholz, 2000, pp. 410-411):

- emphasising strategic thinking across the company;
- improving lateral thinking to make people aware of the complexity of corporations and interdependencies with external systems;
- improving thinking which is geared to individuals with regard to leadership and communication;
- emphasizing corporate culture to positively influence employees' identification with the company and their motivation.

These areas stress the need for lifelong and constant learning. This concerns also today's older employees. There are health-related and qualification problems, which should not be taken lightly (Bosch & Schief, 2005, p. 289). Increasing psychological stress is putting strains on absenteeism. A representative study has shown that 18.4 percent of men over 45 and 21.6 percent of women in that age group suffer from chronic health problems (Illmarinen, 1999). This is one indication of the need for both individual and organizational development at the same time. Scandinavian countries have shown themselves to be the most committed to humanizing the workplace (Bosch & Schief, 2005, p. 286). This includes for example a long term employment plan. Assigning tasks on the basis of short term economic criteria could produce a mismatch between an employee's qualifications and the work assignments and reduce individuals' flexibility as well as their qualification for other jobs (Morschhäuser, 2005, p. 296). Therefore, managers and employees have to negotiate individual career pathways.

Furthermore, there is the need for innovative education concepts like co-operations between companies and universities, training networks between companies, modular in-service or specialized training, etc. Swedish companies for example are testing the viability of state-subsidized sabbaticals (Morschhäuser, 2005, p. 303). In Germany, a discussion in this area has unfortunately only just been initiated, because in most economic sectors we can observe a continuous trend of up-skilling processes (Mühlbradt & Grumbach, 2005, p. 360). Apart from capital, know-how is the most important factor influencing growth and labor productivity. Investments in human capital, i.e. increasing productivity, could counteract the decline of the labor force especially in East Germany (Bastian, 2006, p. 7). We also have to think about aspects that encourage people to undertake and continue with education and training to acquire relevant job-related skills and qualifications. A study commissioned by the Australian government focused on conditions under which the number of older people in gainful employment could be improved. Assuming that companies have to rely on the labor force potential of older employees to satisfy their labor demand, the Australian investigation identified five key aspects that ensure success for adult learners and help people towards active learning:

- an initial education experience in a safe, non-threatening environment,
- negotiation with learners about the content, format and timing of educational experiences,
- the use of social cohesion and a focus on learner interests to motivate learners,
- a learner focused approach to learning, and
- organizational innovation and flexibility (Gelade, Catts & Gerber, 2003, p. 106).

But educational programs have to be combined with staff retention strategies. Otherwise investments in a company's human capital would be inefficient. Therefore we assume that innovative methods of incentive pay will increasingly be used because of two main effects: rise in productivity and retention of scarce skilled labor.

Another important factor in employees' satisfaction is flexible working hours. First of all, this is due to the increasing relevance of a balance between work and private life. Although these arrangements generate costs and often require a re-organization of the existing system, there are advantages like the employment of young mothers who are highly skilled, a good reputation in times of fierce competition for talent, as well as motivated staff because of greater independence. Secondly, it is a fact that performance depends on an individual's biological rhythm. Scientists have proved empirically that people differ in their circadian rhythms (Seeber & Rutenfranz, 1989, p. 38). Thirdly, it is a very good incentive for convincing highly-qualified older workers to stay in companies longer and to ensure the knowledge transfer from older to younger



workers. An Australian study emphasized another advantage for workers, according to which “a preference for more leisure time may be balanced with the need to maintain some level of income. Part-time or reduced hours in the transition to retirement may also provide workers with more recovery time from physically demanding or stressful jobs.” (Queensland Government, 2004b, p. 13)

As Figure 12 illustrated, strategic personnel development affects organizational structures, interpersonal relationships, and individual behaviour, so that they may not be considered separately. Again, managers decide within dynamic processes.

#### **4 Summary**

Efficiency and effectiveness are the most significant indicators of organizations' success. It is therefore of vital importance for companies to think about their future activities. The comparison between OECD member countries in Chapter 2.1 showed that more or less all of them are confronted with demographic change. The decline of the population concerns all industrialized countries. Governments, society and companies have to actively meet these challenges. On the one hand, this creates risks for companies, for example uncertainty about costs and the size of the demographic effect on the labor force potential and a company's workforce. On the other hand, it generates numerous opportunities, if companies start with their analysis and implementation of strategies in good time. In Chapter 2.2 we considered selected opportunities.

In Chapter 3 we focused on special and more innovative strategies to realize these opportunities. That is, to implement unique strategies to create a sustainable competitive advantage in the intense competition for talent. In addition to acquiring and integrating employees from all over the world companies face the problem of the management of an elderly workforce. To conclude with reference to the title of this paper: ad hoc decisions and simply reacting to changes could cause enormous losses because such strategies underestimate the dynamics and complexity of the expected changes. The demographic development and the effects on the labor force potential seem intangible and are of course not fixed. But ignoring the prognoses could be devastating for several institutions. Therefore, long term planning is required as results take time to manifest themselves.

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