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EMPLOYABILITY IN ACTION: AN INDUSTRY EMPLOYABILITY INDEX

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All Authors are affiliated with Research Centre for Education and the Labour Market (ROA), a research centre attached to Maastricht University in the Netherlands. ROA's chief research field is the match between education and the labour market. The institute tries to provide scientifically credible information about the extent to which the education system meets the needs of the labour market. This information is intended to be usable for policy decisions of public authorities, educational insititutions, kemployment services, trade and industry and others. The research presented in this jpaper is part of the the Training Employment Programme, which provides insights in developments that increase risks of losing employment and identifies instruments (e.g. training) that can improve labour market perspectives.

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1. Introduction

Employability has recently received considerable attention in the media. Both in scientific publications and in business life, the concept of employability is becoming increasingly important. Partly, this interest is aroused by new opinions concerning career development. The 'lifetime employment' contract with one employer is no longer relevant for a large share of the working population (Bridges, 1994) and is replaced with a more dynamic view towards careers (Hyatt, 1995). Modern careers are characterised by a high degree of flexibility and employees are seen as 'entrepreneurs of their own career'. Employability is a key principle in these 'new' careers.

What is exactly meant by the employability concept is seldom clear. Adding more and more related 'ingredients' has made employability a somewhat fuzzy concept. This paper tries to clear up this matter to some extent by providing a clear definition of the concept in the first part. It also provides an overview of the evolution of the concept during the last decades. The current meaning of employability encompasses both individual and contextual factors, which partly depend upon the sector of industry people work in. This implies that an investigation of employability from the viewpoint of sectors of industry is potentially very interesting. Therefore, we develop an industry employability index that relates individual employability to the *need* for employability and the current opportunities to effectuate employability.

The paper is organised as follows: In section 2, the employability concept is reviewed and attention is given to the ways the concept has changed meaning in the last decades. From this discussion, it will become clear that the current meaning includes personal as well as contextual factors. One of these contextual factors is the sector of industry an employee is currently working in. We develop an industry employability index in section 3. In this part of the paper, we describe the steps needed to develop such an index. In the sections that follow (4 through 7), these steps are described in more detail and empirically operationalised. Section 8 presents the final employability index for 13 sectors of industry while section 9 concludes and summarises.

2.1 Employability: Historical overview and meaning of the concept

Employability is hardly a new concept. The first publications on the subject date from the mid-fifties (Feintuch, 1955). During those days, employability was particularly concerned with the labour market position of underprivileged people such as e.g. the disabled. The fact that these groups got so much attention was the short supply of qualified personnel in this post-war time period, which caused firms to focus their recruitment efforts on them.

In the fifties and sixties employability was seen as the individual potential to become (and stay) employed. Collecting information on this potential and stimulating it should lead to full-employment in (American) society. Promoting employability therefore served a pure economic purpose. The employability of a worker was determined by looking at someone's labour market history. The attention was focused on the attitude regarding employment in general and towards the self-perception people develop during their careers. Influencing and adjusting attitudes and the image people have of themselves contributed to successful labour market re-entry of people that lost their self-confidence. This way of measuring employability by relying on attitudes and using the resulting information to improve labour market allocation was common until the beginning of the seventies (Soloff & Bolton, 1969).

From 1970 onwards, attention became increasingly focused on individual, mainly occupational knowledge and skill aspects instead of attitudes. Not only basic occupational skills, but also knowledge about ones' possibilities (Tseng, 1972), knowledge about ones' own position on the labour market (Mangum, 1976) and knowledge about the employment situation in general play crucial roles here. During the end of the decade, partly related to the economic recessions that plagued the industrialised countries, firms as well as researchers realised that occupational skills are not sufficient to remain attractive on the labour market. Hoyt (1978) acknowledged the importance of 'transferable' skills, which retain their value in many different work situations. Examples of these transferable skills are social and relational skills that not only matter for getting a job, but also for keeping it and moving on to the next job. From employees' point of view, their employability became important, since recessions made it harder to find jobs.

After 1980, the employability concept more and more becomes a meta-characteristic of workers demanded by employers. This meta-characteristic combines attitudes, knowledge and skills and determines the labour market potential of employees. It is an important influence on any career, whether it is in the beginning, building, or final stage (Charner, 1988).

The employability-concept is broadened around 1990 when aspects like labour market situation, knowledge of the labour market and company policy become integrated in the concept. Outin (1990) sees employability as a construct of four elements that influence someone's chances to reach a position in the labour market: individual qualities (relational, motivational), occupation-specific skills, labour market situation and government and employer training policies. Employability thus becomes a shared responsibility of government, the firm and the individual.

In the nineties, the differences between opinions about what employability means and how it effects people become larger. For some authors, only the labour market potential and skills play a role. Others focus on the possibilities to use employability in organisations (Levy, Jessop, Rimmerman, & Levy, 1992), the labour market situation and the responsibility of the government and firms (Outin, 1990), or the capacity to influence one's career (Bloch & Bates, 1995) and to deal with changes (Hyatt, 1995). The definitions of the employability in the nineties become highly diversified, and in the end, the concept becomes rather fuzzy.

In order to rebuild the structure of the employability concept the Dutch human resource specialist Thijssen (1998) has pointed out that stratification of the existing employability definitions is possible. On the basis of this stratification, he distinguishes between three types of employability definitions: A core definition, a broader definition, and an all-embracing definition. According to the core definition, employability encompasses all individual possibilities to be successful in a diversity of jobs in a given labour market situation. In its core definition, employability is only concerned with one's capacities; wishes, aspirations or contextual conditions are not relevant here.

The broader definition of employability incorporates the capacity as well as the willingness to be successful in a diversity of jobs. In addition, the ability to learn is included. Therefore, in the broader definition, employability encompasses all individual characteristics that determine the future position on a given labour market.

In the all-embracing definition, contextual factors and effectuation conditions are added. Effectuation conditions are context-bound factors that facilitate or make it harder to effectuate one's employability, such as e.g. the employer provision of training. In the all-embracing definition, employability encompasses all individual and contextual conditions that determine the future position on the labour market.

Further research using definitions from the literature lead to three aspects that are central to the employability-concept. Employability is about employees, who are willing and able to be *pro-active*, which makes and keeps them attractive for the whole labour market. For the purpose of this paper, we define employability as follows:

Being employable involves both the capacity and the willingness to be and to remain attractive for the labour market, by anticipating changes in tasks and work environment and reacting on them.

Employability becomes crucial when employees are confronted with changes in their work. Developing employability therefore requires employees to be constantly aware of the risk of (partial) job loss.

2.2 Employability and employers

Employability has until now been looked at from an employee point of view. It has become clear that enhancing worker employability increases the value of employees in both the current firm and the external labour market. What does this imply for the employer? The employer is supposed to offer conditions so that employees can develop themselves and keep themselves employable. But, what if employees decide to take advantage of favourable conditions in one firm and later decide to take a higher paying job elsewhere. The early human capital literature (see e.g. Schultz, 1961, and Becker, 1962) already stressed that employers run this 'poaching' risk of insufficient return on employability investments. Gaspersz & Ott (1996) analysed this phenomenon by introducing the so-called 'employability paradox': An employer that invests in his employee employability tends to attach workers to his firm by increasing their mobility potential. In addition, employers that invest a lot in their human capital signal a good image of an 'excellent employer', which makes it easier to attract high-potential personnel. This is of even greater importance in times of labour market shortages (ROA, 1997).

In addition, employability can be a tool for realising company goals. Employable workers can provide the organisation with extra flexibility, which allows firms to react and adjust faster to changes. This is hardly a luxury anymore, since technological and organisational developments as well as increased competition demand an employable workforce. An interesting feature of the employability literature is that often no distinction is made between the employability of employees in different segments in the labour market. Since occupations and sectors of industry are not confronted with developments in society to the same extent, the need for employability probably differs between those segments.

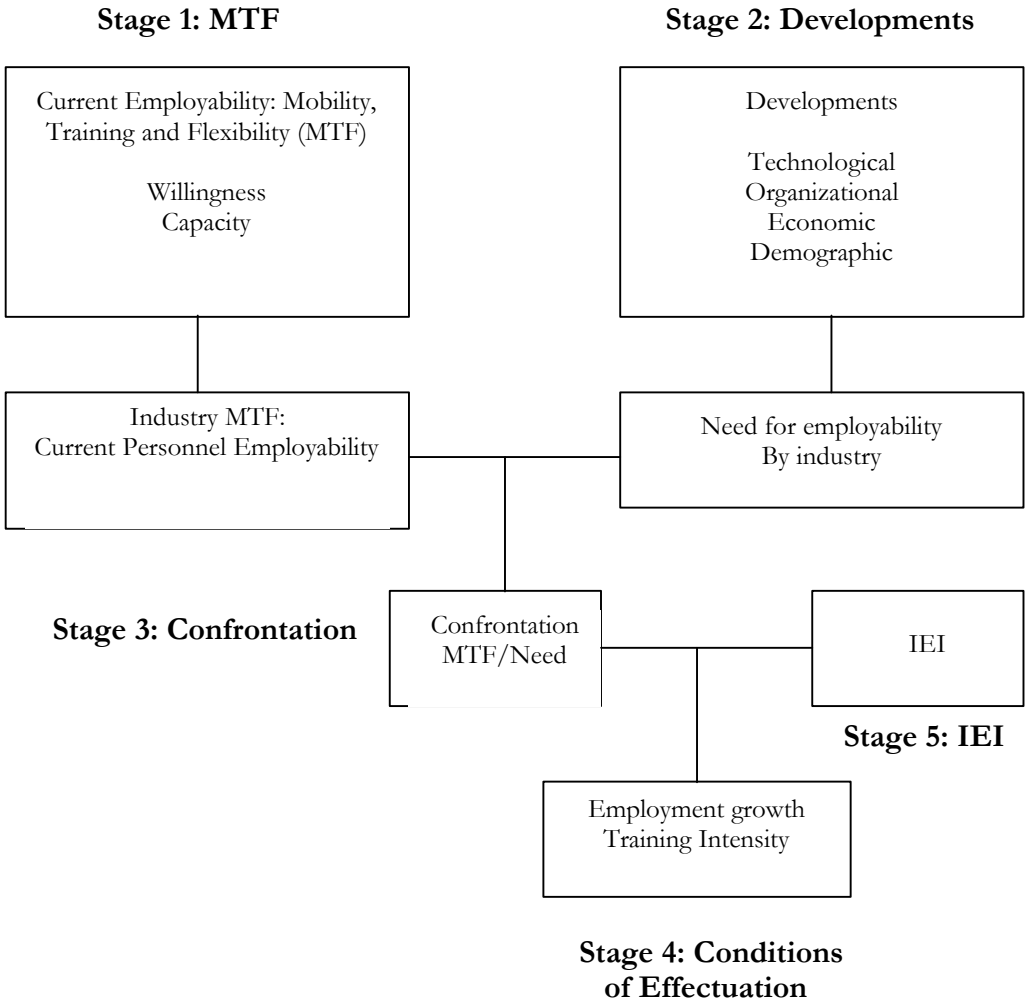
3. The development of an Industry Employability Index

Since employability matters for both employees and firms, these groups both have an interest to gain some knowledge about the current state of employability. This has been the main reason to develop an Industry Employability Index (IEI) in this paper. The index attempts to rank the various sectors of industry according to their employability-situation. The index is not an absolute measure, but rather a relative one meant to compare the sectors of industry according to their employability. The empirical part of this paper uses various Dutch data-sources: The labour supply and the labour demand surveys of the Organisation for Strategic Labour Market Research (OSA) and the labour force survey of Statistics Netherlands. The development of the IEI has five stages, which are discussed in the following sections:

1. Determination of the current personnel employability by sector of industry (section 4);
2. Determination of the influence of relevant developments in society that partly cause the need for employability by sector of industry (section 5);
3. Relating current employability to the need for employability, by sector of industry (section 6);
4. Determination of the possibilities that the various sectors offer to effectuate one's employability: Effectuation conditions (section 7);
5. Combining stage 3 and 4 into the 'Industry Employability Index' (section 8).

The sections dealing with the five stages in the development of the IEI are built up identically. Firstly, the indicators and the variables used to measure them will be discussed. Secondly, a table with the empirical results is presented. Finally, each section ends with a discussion of these results. To show what relationships exist between the various elements of the index, we have summarised the stages in figure 1 below.

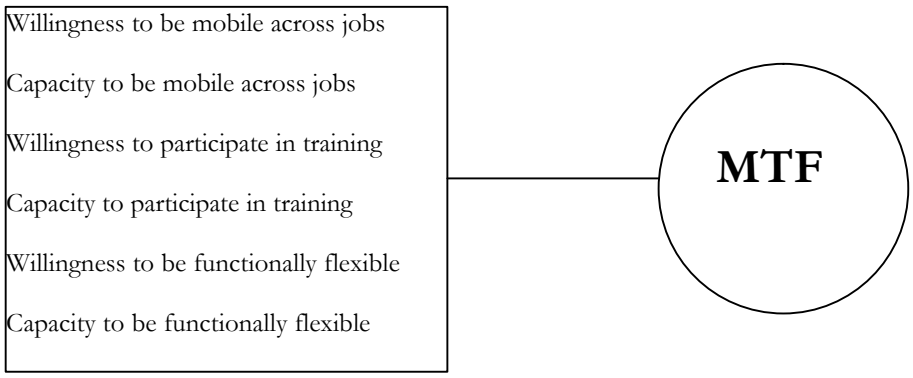
Figure 1: The development of an Industry Employability Index.



4. Current Personnel Employability

The first stage concerns the measurement of the current employability of the workforce in the various sectors of industry (*current personnel employability*). Current personnel employability can be measured using two dimensions: willingness and capacity. Willingness measures peoples' desire to engage in activities that keep them attractive in the labour market. Capacity is concerned with the power to develop one's position on the labour market. Using the Dutch employability literature (e.g. Bolweg & Maenhout, 1995) as a guiding principle, current personnel employability is measured by six indicators; three measure willingness and three are concerned with capacities. Figure 2 lists the indicators and shows that these six indicators are converted into an MTF-score (mobility, training and flexibility).

Figure 2: Determining Current Personnel Employability



Willingness to be mobile across jobs

The willingness to be mobile across jobs concerns changing jobs as well as changing work location, both internally and externally. Various authors consider this attribute of workers a key factor in their employability since changes allow workers to gain more knowledge and experience. It also prevents a 'concentration of experience' (Thijssen, 1997). Concentration of experience (the process of competences that become more and more job-specific due to a long tenure in the same job in the same firm) can be damaging for workers, since their value on the labour market decreases. In this case, the opportunities to switch to another job in the case of job loss decrease.

The willingness to be mobile can best be measured using data on workers' actual search behaviour. When employees apply for new jobs on a regular basis they express their willingness to be mobile across jobs. However, not all search behaviour can be considered relevant here; it can also be caused by external factors (e.g. the cancellation of a job in the near future). 'Forced' search behaviour should therefore not be seen as employability enhancing.

The willingness to be mobile across jobs is measured using data on workers' current search behaviour and search behaviour in the immediate past (last 12 months). Whenever an employee searches for another job on his own initiative, this implies a willingness to be mobile and this adds to his or her employability.

Capacity to be mobile across jobs

The capacity to be mobile across jobs is the extent to which employees are actually able to change jobs or work location. It is obviously valuable when people are willing to be mobile, but when they are not able to do so because they lack the capacities, this willingness becomes worth less. Therefore, the capacity to be mobile across jobs is the second indicator for a person's employability. This capacity is determined to a large extent by the experience of an employee in previous jobs. Job-specific skills can imply serious handicaps, since this type of experience is only valuable in a limited number of places.

In order to measure the capacity to be mobile across jobs, we looked at the duration of the current job of workers and divided this by the time individuals have been on the labour market. This ratio is multiplied by workers' age. Older workers run a greater risk of 'concentration of experience', which decreases their capacity to be mobile.

Willingness to participate in training

The willingness to participate in training is workers' willingness to invest time, money and energy in the development of their human capital. Whether employees are willing to invest in themselves will depend on the expected return of this investment. This return partly consists of an improved labour market position. Since employers suppose that the higher educated produce more than their low-skilled colleagues, the better positions are usually taken by highly educated people (see Thurow, 1975) and this makes people that are unwilling to invest in their human capital less attractive. This implies that people who do not invest in themselves run a double risk. Firstly, they do not develop themselves, which causes skills obsolescence, making them less attractive for the labour market, and secondly, they give a negative signal to (future) employers, which reduces their chances on the labour market. The willingness to participate in training therefore is an important indicator for someone's employability.

The willingness to participate in training is measured using data on training participation. Ideally, one should be able to distinguish between training financed by the employee and training paid for by the employer. An employee is obviously more employable when he pays for his training him self as this indicates the more general character of the training. Marking this distinction is, however, not possible with the available data, forcing us to take total training participation as our key variable here. Whether or not an employee has successfully completed a training course is not relevant: We here only consider the willingness to participate here.

Capacity to participate in training

Not only the willingness to participate in training is important in determining current employability, the capacity to do so is as least as important. In addition to the willingness to invest in oneself, workers must therefore also be able to do so. The capacity to participate in training can be determined using three types of current knowledge of workers (Bolhuis, 1995):

1. Basic knowledge: Knowledge that was created during initial education;
2. Meta-cognitive knowledge: Knowledge and opinions about learning;
3. Knowledge and opinions about one's own learning capacities.

The first type, basic knowledge, is crucial as it allows workers to learn new things. The more extensive this basic knowledge, the easier it is to learn new skills. In this framework, initial education can be seen as a positional good, which implies that higher initial education where extensive basic knowledge is gained improves labour market position and employability. Meta-

cognitive knowledge facilitates the process of learning. Knowing where to find specific information is part of this type of knowledge, and especially in very technology intensive sectors of industry, it is highly valued. The third type of knowledge has a more psychological character. Knowledge and opinions about one's own learning capacities may be related to the decision to participate in training.

The capacity to participate in training is measured by the total duration of initial education and previous (firm) training. Only education and training courses that were successfully completed are taken into account. Naturally, part-time training courses were converted to full-time equivalents. The number of years that results determines a worker's capacity to participate in training.

Willingness to be functionally flexible

Functional flexibility can be either quantitative or qualitative. Qualitative functional flexibility involves doing tasks or duties that are not part of the current job. This kind of flexible behaviour endows workers with a wide range of different experiences, which improves their employability. Quantitative employability refers to flexibility concerning work hours (changing shifts, working overtime). The willingness to be quantitatively flexible can, however, also indicate a weak position in the (secondary) labour market. Therefore, the willingness to be functionally flexible will be measured using the qualitative dimension.

Capacity to be functionally flexible

When someone is willing to be functionally flexible but lacks the capacity to do so, this willingness does not add much to someone's employability. The capacity to be functionally flexible depends on a number of different factors: not only those concerned with cognitive capabilities but also physical health and condition.

The capacity to be functionally flexible results from actual functional flexibility in the past, which provides employees with a wide range of valuable experience. As is the case with the ability to be mobile across jobs, experience plays a central role here. The essential difference between the two concepts, however, is that the capacity to be mobile across jobs concerns changing jobs, while the capacity to be functionally flexible is about performing tasks which are no part of one's job. It is measured by determining the frequency of performing tasks that are not part of one's job.

Current personnel employability by sector of industry

Current personnel employability by sector of industry is presented in table 1. First the six separate employability indicators are presented. Then, in the final column all indicators are combined into the MTF-score. This industry MTF-score is the unweighted average of the six separate indicators.

Table 1 reveals that the sectors of industry do not differ that much when individual employability is concerned. *Financial services* and *hotels/restaurants, repair, business services* are the sectors with the most employable employees. In *financial services*, this is due to the fact that employees in this sector have both a high capacity and willingness to participate in training. In the *hotels/restaurants, repair, business services* sector, the high willingness and capacity to be mobile across jobs and the willingness to participate in training are responsible for the relatively high score on the MTF.

*Table 1: Employability indicators and MTF-score by sector of industry**

Sector of industry	WM	CM	WT	CT	WF	CF	MTF
Agriculture and fisheries	85	97	91	91	111	110	97
Food and beverage industry	114	100	105	95	91	104	101
Chemicals	103	94	102	103	97	112	102
Metal- and electrical industry	102	104	96	98	105	98	100
Other industry	101	95	94	96	113	107	101
Energy	93	105	105	112	103	94	102
Construction and real estate	100	109	96	95	103	104	101
Commerce	109	103	92	94	100	106	100
Transport and communication	97	97	94	92	94	93	94
Financial services	92	104	119	110	105	85	103
Hotels/restaurants, repair, business services	109	112	106	101	96	96	103
Non-commercial services	100	92	98	102	87	94	96
Civil service, police, defense and education	95	88	102	113	97	98	99

WM=Willingness to be Mobile across jobs; CM=Capacity to be Mobile across jobs; WT=Willingness to participate in Training; CT=Capacity to participate in Training; WF=Willingness to be functionally Flexible; CF=Capacity to be functionally Flexible; MTF=Mobility, Training and Flexiblity indicator. Source: OSA/ROA

In *transport and communication*, employees are the least employable; this sector scores bad on every employability indicator. *Government services* are also in a bad state when we look at individual employability; especially the willingness to be functionally flexible and the capacity to be mobile across jobs is below average in this sector of industry.

5. The need for employability: Developments in society

Now that current personnel employability has been assessed, the *need* for employability is discussed in this section. It goes without saying that a sector of industry is, irrespectively of all other conditions, better off with more employable personnel. The need for employability is, however, dependent on the intensity of various developments in society. Four main developments can be distinguished (see ROA, 1998):

1. Technological developments;
2. Organisational developments;
3. Economic developments: mainly developments in competition;
4. Demographic developments.

The sectors of industry that have the highest impact of the combination of these four developments, are the sectors where the need for employability is highest. We discuss these developments in turn in the next subsections.

Technological developments

Ongoing technological developments can cause job-specific skills obsolescence, which implies that skills learned in the past and experience are no longer sufficient for an adequate job performance. Due to the upgrading of the skill requirements in jobs, a gap arises between the human capital workers have and the required human capital (Borghans & De Grip, 2000). In order to bridge this gap, employability plays an important role. Technological developments can also cause certain jobs to disappear entirely. In the banking industry, for example, information technology has caused the disappearance of traditional teller jobs. When jobs disappear, a worker's employability becomes crucial for labour market participation. However, in this case

employers also benefit from an employable workforce since they do not have to bear the cost of expensive outplacement procedures for workers who have to be reallocated.

Since technological developments are often linked to improvements or changes in information and communication technology, the percentage of personnel that uses a computer regularly during work has been used as an indicator for technological developments.

Organisational developments

Technological developments often take place simultaneously with organisational changes. These developments ask a lot of workers, in the sense that they must be able to adapt to the new circumstances.

Modern organisations are set up with a need for flexibility these days. The more bureaucratic organisations of the past make place for less rigid ones, where employers often work in project teams and have a large degree of control over their own actions. Organisational developments demand a large degree of flexibility, which can be accomplished by being employable. When, e.g., workers are used to changes in the content of their job due to the fact that they are regularly involved in task-and job-rotation programs or training, both the employee and the organisation are more able to adapt to changes faster (Wissema, Messer, & Wijers, 1991).

The degree of organisational developments is measured by two indicators, which are combined into one. Firstly, the percentage of employees that has experienced reorganisations is considered. The second indicator is the percentage of people that works for a firm where a change of the position of the organisation in the larger configuration (parent company, franchisee etc.) has taken place (e.g. a merger).

International competition

One of the most visible developments in the last ten years is the increase in international competition, inside the EU, but also outside of it. With a higher degree of international competition, organisations need to be able to adapt to changes in the international context faster. Innovative capacity is of key importance here, and since well-trained personnel are generally better innovators, good training programs should be a key priority for those firms aiming to survive. Changes in international competition also demand flexibility from employees.

To get an idea from the degree of international competition in sectors of industry, we looked at the export shares of their production. This indicator is a proxy of the degree of 'openness'; sectors that are very open to international competition, are expected to be sectors with a high need for an employable workforce.

Demographic developments

Finally, demographic developments (greying and a decreasing share of younger workers) are important tendencies that require an employable workforce. The Netherlands Bureau for Economic Policy Analysis (CPB) has projected that the share of employees older then 55 will double or even triple during 1995-2020 (CBS/CPB, 1997). Conversely, the share of workers below 40 years of age will decrease both in absolute and in relative terms. Due to the greying of the workforce, established channels of labour market exit (pre-pension etc) will become less common, simply because the costs will increase to an unsustainable level. For employers, there will be a need to keep their personnel longer, since supply of younger workers will be scarce.

Demographic developments of personnel in the different sectors of industry will be measured by dividing the percentage of older employees (55+) by the percentage of young people (16-29 years of age). This indicator shows the severity of greying tendencies in the various sectors of industry and the effect of the decreasing share of younger employees in the working population.

Developments in society and the need for employability

Table 2 gives an overview of the need for employability in the different sectors of industry based on the developments discussed earlier. Technological developments play an important role in the *banking and insurance* industry, in the *chemical industry* and in the *energy* and *government* sectors. In *farming and fisheries* and *construction and real estate*, however, technological developments are only of minor importance.

Organisational developments are most prominent in *catering, repair and business services*, as can be seen from the second column. The *metal and electrical industry* are also characterised by important organisational developments. *Banking and insurance* and *farming and fisheries* are the organisationally most stable sectors of industry.

*Table 2: Developments in society and the need for employability**

Sector of industry	TD %	OD Index	ED %	DD Index	NEED Index
Agriculture and fisheries	15	33	48	0,98	97
Food and beverage industry	42	42	53	0,42	99
Chemicals	70	38	72	0,83	105
Metal- and electrical industry	46	76	58	0,66	104
Other industry	53	40	35	0,62	99
Energy	78	94	34	1,97	113
Construction and real estate	27	35	3	0,54	92
Commerce	50	37	7	0,33	94
Transport and communication	50	50	33	0,61	99
Financial services	95	30	3	0,37	98
Hotels/restaurants, repair, business services	60	100	4	0,34	101
Non-commercial services	47	44	3	0,59	96
Civil service, police, defense and education	73	61	3	1,32	103

*TD=Technological Developments; OD=Organizational Developments; ED=Economic Developments: mainly developments in competition; DD=Demographic Developments; NEED=Need for employable personnel.
Source: OSA/CBS/ROA

The *chemical* sector is the most open sector, as the third column shows. In this sector of industry, international competition plays a very important role. The need for employability induced by international competition is smallest in the *construction and real estate*, the *financial services*, the *non-commercial services* and the *government* sectors.

Graying and decreases in the share of younger workers are most prominent in the *energy* and *government* sectors. Conversely, the *commerce* and *hotels/restaurants, repair, business services* sectors are least affected in this respect.

The combination of the four developments we discussed determines the over all need for employability. The last column in table 2 reveals that the need for employability is highest in the *energy* sector, due to the relative strong effect of all developments. In the *chemicals* sector, three

out of four developments are relevant, which results in a second position on the need index for this sector of industry. On the third place on the employability-need index, we find the *metal and electrical industry* and the *government sector*. In these sectors of industry, the organisational and the demographic developments are of key importance. *Commerce* and *construction and real estate* are the sectors with the smallest need for employable personnel. Non of the discussed developments is important in the latter sector while only technological developments matter in *commerce*.

6. A confrontation of the need and the available employability by sector of industry

In stage three of the development of the Industry Employability Index, current personnel employability is confronted with the need for employability. This was accomplished by dividing the MTF-scores by the scores on the need index for each sector of industry. In table 3, the results of this calculation are presented. A score of 100 implies an average position, while a score of at least 100 implies a positive situation since, in this case, the available employability is larger then the need for it.

The table reveals that shortcomings in employability are highest in the *energy* sector. In the *government*, the *transport and communication*, the *chemical* and the *metal and electrical* sectors, there are shortcomings as well, but these are less severe.

*Table 3: Confrontation of current personnel employability (MTF-score) and need for employability**

Sector of industry	Confrontation Index
Agriculture and fisheries	100
Food and beverage industry	103
Chemicals	97
Metal- and electrical industry	97
Other industry	102
Energy	90
Construction and real estate	110
Commerce	107
Transport and communication	95
Financial services	105
Hotels/restaurants, repair, business services	102
Non-commercial services	100
Civil service, police, defense and education	95

*Source: ROA

7. Conditions of effectuation

In stage one to three, the need for additional employability policy has been determined. When there are shortcomings in the available employability, it is profitable for both employees and firms to invest in the personnel employability. In this fourth stage, we will identify the possibilities that currently exist to effectuate or expand one's employability. Following Thijssen (1997) these possibilities are labelled as the 'conditions of effectuation'.

Thijssen distinguishes between two types of conditions of effectuation. *Contextual* conditions of effectuation refer to *e.g.* the general situation on the labour market, the possibilities for career counselling and the provision of training courses. *Personal* conditions of effectuation refer to the willingness and the preferences of individual employees. Since this latter type of conditions of

effectuation has already been dealt with in the determination of the MTF-scores, the conditions of effectuation we discuss here are contextual in nature.

The contextual conditions of effectuation were determined using two indicators. Firstly, the intensity of training provision in the different sectors of industry was considered. The share of employees involved in job training is presented in the first column of table 4. In the *financial services* and *energy* sector, training intensity is highest. Conversely, employees in *agriculture and fisheries* are least involved in training.

In addition to the training intensity, the general labour market situation is considered a contextual condition of effectuation. The general labour market situation by sector of industry is indicated by expected employment growth (see ROA, 1997). Whenever employment shrinks, employment growth will be negative. Positive employment growth implies more attractive conditions of effectuation, since the opportunities for changing jobs are favourable in that case. Far more jobs become vacant available then in times of negative labour market developments, due to so-called vacancy-chains.

The expected yearly expansion demand is presented in the second column of table 4. Expected employment growth is very favourable in the *hotels/restaurants, repair, business services* and *commerce* sectors (3.6 and 2.2% respectively). The expected employment situation is far less favourable in the *agriculture and fisheries* and *energy* sectors of industry: In these sectors, employment is expected to shrink with 1 and 0.1% respectively.

*Table 4: Conditions of effectuation**

Sector of industry	TI %	ED %	CE Index
Agriculture and fisheries	1	-1.0	86
Food and beverage industry	5	0.4	97
Chemicals	7	1.7	105
Metal- and electrical industry	4	1.8	101
Other industry	4	0.9	98
Energy	11	-0.1	103
Construction and real estate	6	0.8	100
Commerce	3	2.2	100
Transport and communication	3	1.5	98
Financial services	12	0.4	107
Hotels/restaurants, repair, business services	3	3.6	106
Non-commercial services	5	1.7	102
Civil service, police, defense and education	6	0.3	97

*TI=Training Intensity (share of employees involved in job training, 1995-1996). ED=Expansion Demand (forecasted yearly growth of employment, percentage 1997-2002); CE=Conditions of Effectuation index. Source: CBS/ROA

The final column in table 4 is the combination of both contextual conditions of effectuation. This index is calculated by taking the average of the normalised scores for the training intensity and expansion demand indicators. The sectors of industry that have the best conditions of effectuation are *financial services*, *hotels/restaurants, repair, business services*, and *chemicals*. In the *financial services* sector, the good conditions are mainly due to the high training intensity; in the *hotels/restaurants, repair, business services* sector the expected expansion demand is high. The *chemicals* sector does well on both indicators. *Agriculture and fisheries*, the *food and beverage* industry and *Civil service, police, defense and education*, however, score low on the conditions of effectuation. Especially

agriculture and fisheries face bad conditions of effectuation, due to shrinking employment and low training intensity.

8. The Industry Employability Index (IEI)

In the final stage of the model, the IEI is determined. It is based on all previously discussed indicators. Whenever a sector of industry has a high MTF-score, a moderate need for employability and favourable conditions of effectuation, the IEI-score will be relatively high. When a sector scores badly on one of these elements of the IEI, the IEI itself will be lower.

The industry employability index is based on an unweighted average of the underlying indicators (MTF-score, Need-index and Conditions of Effectuation-index). First, it is calculated for the whole population of workers. In a second step, the IEI is determined for sub-populations, which are often considered target groups that deserve special attention: Young workers (16-29 years of age), older employees (50-64 years of age), low educated workers and women.

The IEI for all workers

In table 5, the IEI for all workers is presented. The *Financial services* sector has the best score, which is mainly due to the favourable MTF-scores and the good conditions of effectuation. The c*onstruction and real estate* sector has the second-highest IEI-score. This is due to a moderate MTF-score (it ranks 5th) and to the fact that the need for employable personnel is lowest in this sector of industry. This combination implies, just as in the case of the *financial services* sector, that the available employability (MTF-score) at least partly offsets the need for it. Moreover, the conditions of effectuation are favourable in *construction and real estate*.

*Table 5: Industry Employability Index, all workers**

Sector of industry	**IEI Index**	MTF Index	NEED Index	CE Index
Financial services	**112**	103	98	107
Construction and real estate	**109**	101	92	100
Hotels/restaurants, repair, business services	**109**	103	101	106
Commerce	**107**	100	94	100
Chemicals	**102**	102	105	105
Non-commercial services	**102**	96	96	102
Food and beverage industry	**100**	101	99	97
Other industry	**100**	101	99	98
Metal- and electrical industry	**97**	100	104	101
Energy	**93**	102	113	103
Civil service, police, defense and education	**93**	99	103	97
Transport and communication	**93**	94	99	98
Agriculture and fisheries	**86**	97	97	86

*IEI=Industry Employability Index; MTF=Mobility, Training and Flexibility Index; NEED=Need for Employability; CE=Conditions of Effectuation. Source: ROA

Agriculture and fisheries scores worst on the IEI. The individual employability of workers in this sector of industry (MTF-score) is fairly low. The need for employability is also low, but the conditions of effectuation (CE-score) are unfavourable, resulting in the worst position on the index.

The IEI for sub-populations

Table 6 gives an overview of the IEI for four particular groups of workers: Youngsters, older workers, low-skilled employees, and women. The first column is devoted to the index for the group of workers that is 30 years of age or younger. For this group of workers, conditions are most favourable in the *financial services* sector. *Commerce* and *hotels/restaurants, repair, business services* take the second and third place. Current personnel employability (as expressed in the MTF-scores) of young workers in these sectors of industry lags somewhat behind. *Agriculture and fisheries* has the least favourable employability situation. The high need for employability in this sector of industry is not met by the provision of employable workers. Moreover, the conditions of effectuation are not favourable, which implies that the possibilities to effectuate of enhance one's employability are limited.

The *transport and communication* sector and the *metal- and electrical industry* show relative unfavourable employability-conditions for young workers as well. This is mainly due to the low current personnel employability in these sectors of industry. *Commerce*, *energy* and the *food and beverage* industry are the sectors that have better employability conditions for young workers as compared to the scores for the whole population of workers.

*Table 6: Industry Employability Index, sub-populations**

Sector of industry	IEI Young	IEI Old	IEI LE	IEI Women
Financial services	133	99	101	116
Construction and real estate	112	96	104	113
Hotels/restaurants, repair, business services	115	93	102	106
Commerce	118	92	105	106
Chemicals	108	86	96	102
Non-commercial services	109	92	97	100
Food and beverage industry	110	91	90	102
Other industry	105	90	98	99
Metal- and electrical industry	101	90	95	96
Energy	105	103	89	104
Civil service, police, defense and education	105	85	94	91
Transport and communication	104	81	91	89
Agriculture and fisheries	84	87	83	101

*IEI.=Industry Employability Index; Young=Younger workers (26-29 years of age); Old=Older workers (50-64 years of age); LE=Lower Educated workers; Women=Female workers. Source: ROA

The second column in table 6 presents the IEI for older workers (50 or more years of age). Comparing the overall scores of this group of workers to the scores for young workers reveals that the IEI for older workers is lower in virtually every sector of industry. For the sub-population of older employees, the conditions are most favourable in the *energy* sector, due to a combination of a relatively high level of current personnel employability, a high need for employability and relatively favourable conditions of effectuation. The *financial services* sector and the *construction and real estate* industry also show a relatively good employability situation for older workers. In the latter sector of industry, this can be attributed to the low need for employability.

Older workers in *transport and communication*, *government services*, and the *chemical* industry face the worst prospects when it concerns employability. In the first sector, the employability-situation is worst due to the unfavourable current personnel employability. In the other sectors mentioned,

the need for employability is fairly high. Moreover, *government services* has score badly due to the very limited conditions of effectuation. It is noteworthy that the IEI for the *chemical* industry is very low for older workers (ranks 10th) in comparison to the whole population of workers (5th position).

The Industry Employability Index for lower educated (LE) workers is presented in the third column of table 6. Lower educated workers are employees with an educational background equal to or less then lower vocational or general education. Just as was the case with the total population, *commerce*, *construction and real estate*, *financial services* and *hotels/restaurants, repair, business services* have the best scores for lower educated employees, while *agriculture and fisheries* ranks last. *Commerce* beats the other sectors of industry due to the high current personnel employability in this sector of industry. The *construction and real estate* and *commerce* industries are the only sectors where the current employability is higher then the need for employability. Since both sectors have relatively good conditions of effectuation, they end up with favourable IEI scores. In the *agriculture and fisheries* sector, the low individual employability of the lower educated is combined with a high need for employable personnel and relatively unfavourable conditions of effectuation. This causes this sector of industry to be the least favourable for lower educated workers.

The final column of table 6 lists the IEI-scores for female employees. The differences between this sub-population and the total working population are small. In a number of industries, the employability situation for working women is better then for the working population as a whole. This might be largely due to the fact that the share of women that also belong to the group of older workers is small. Just as with the total working population, the employability of female personnel is highest in the *financial services* and *construction and real estate. Transport and communication* also scores worst for female employees. In this sector of industry, the individual employability of female workers is even worse than the individual employability of the total working population.

9. Summary and conclusions

In this article, we discussed the development of an Industry Employability Index (IEI). The index gives an indication of the performance of sectors of industry concerning employability. Not only *current personnel employability* has been taken into account The *need* for employability in the various sectors of industry has also been integrated in the analysis. The third ingredient of the index are the *conditions of effectuation*, which refer to the degree to which the employability of the workforce can be effectuated or enhanced. These three elements together determine the position of sectors of industry on the IEI.

Financial services has the best score on the Industry Employability Index. Other sectors with favourable IEI-scores are *construction and real estate* and *hotels/restaurants, repair, business services*. The *agriculture and fisheries* sector does worst in terms of employability.

When we look at he IEI for four different groups of workers, it becomes clear that the employability-situation for older workers is generally a lot worse than it is for their younger colleagues. In addition, lower educated workers face worse prospects in terms of employability than intermediate or higher-educated individuals. However, the difference between male and female employees is rather small.

The top-4 of sectors of industry with the best employability is virtually the same for all distinguished groups of workers. For women, lower educated workers and young employees, *construction and real estate*, *financial services*, *hotels/restaurants, repair, business services* and *commerce* are in the top positions. For older workers, the *energy* sector has the best score; the next four positions

are taken by the above-mentioned sectors of industry. The tail of the index exhibits more differences between sub-populations. For female workers and older employees, the *transport and communication* sector scores worst; for younger workers and lower educated people the worst sector in terms of employability is *agriculture and fisheries*.

To obtain a more detailed image of worker employability, firm-specific data would prove extremely helpful. This type of data refers to information about individual organisations. Using this type of data would enable the construction of an organisation-specific IEI. Such an index would make the labour market more transparent for those employees wanting to gain better understanding of their development opportunities and their employability. The comparison of organisation-specific employability-scores to industry IEI would enable organisations to gain valuable insights in their own employability situation. Such a comparison would also once again make clear that employability is not only dependent upon the worker himself, but is also affected by the organisation and the sector of industry. The individual firm scores could perhaps also be related to the 'Investors in People' standard. Another research opportunity would be to use the framework developed in this paper with data from other countries. This would enable international comparisons between the employability-situation of sectors of industries in different countries.

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