5. A profile of the employed persons in the ICT sector

5.0 Introduction

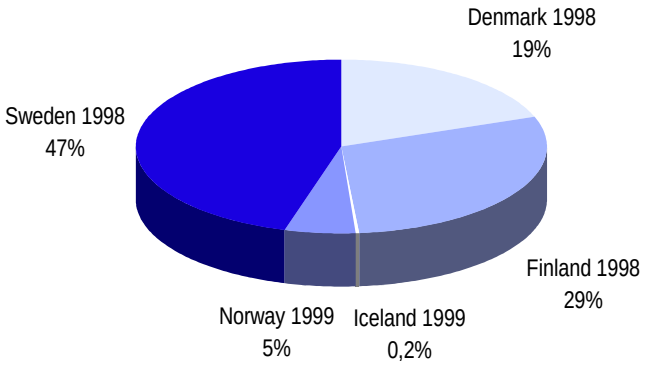
In understanding the skill requirements and the job creation process within the ICT sector, more detailed information is needed on the demographic background of the employees, such as gender, age, occupation, education and work experience. Especially the issue of the requirements of educational qualifications has been in focus in relation to the ongoing discussions of the future growth possibilities of the ICT sector in the Nordic countries.

In this chapter the point of focus is the gender, age and educational level of the persons employed in the ICT sector with the aim of identifying the characteristics of the persons employed compared to the employment in general.

5.1 Gender structure in the Nordic ICT sector

The Nordic countries all have relatively large shares of women on the labour market, as the overall employment rates of women in the Nordic countries in 1999 ranges between 71% (Finland) as the lowest and 84% (Iceland) as the highest[21].

Figure 5.1 Women employed in the ICT manufacturing sector in the Nordic countries 1998

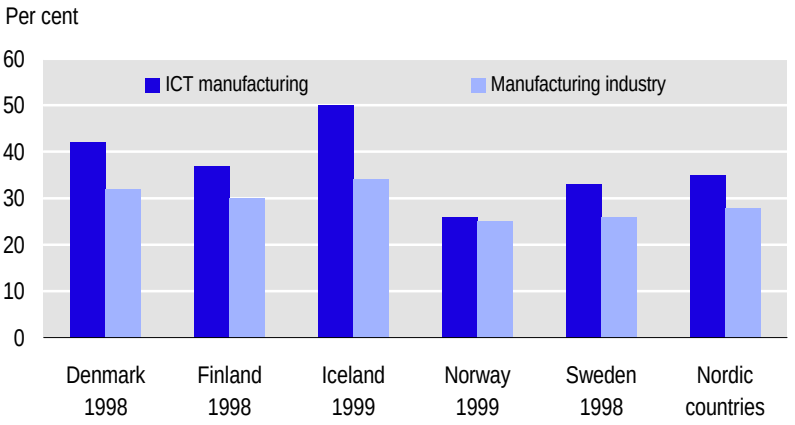


Generally the female share of employment is higher in the services activities than in the manufacturing industries in all Nordic countries. On the Nordic level the female share is 43% in the Services activities and 28% in

[21] Nordic Concil of Ministers: Nordic Statistical Yearbook 2000

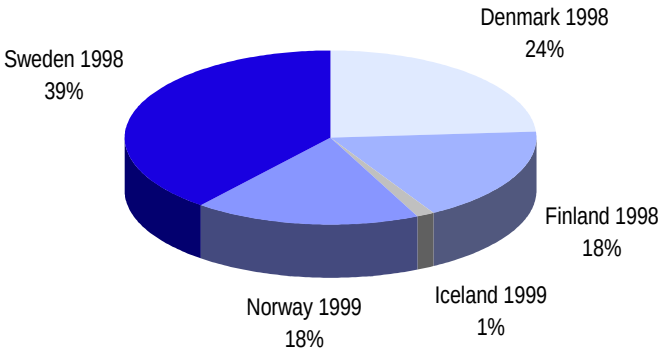
Manufacturing industries. This pattern does not apply to the ICT sector though, as relatively more women are employed in the ICT manufacturing industries than in the ICT services sector, cf. figures 5.2 and 5.4.

Figure 5.2 Share of female employees in ICT manufacturing and in Manufacturing industries in general in the Nordic countries



In the *ICT manufacturing industries* the female share exceeds the average share of Manufacturing industries in general, especially in Iceland and Denmark, while the gender structure in Norway is almost similar in ICT manufacturing and in manufacturing industries in general.

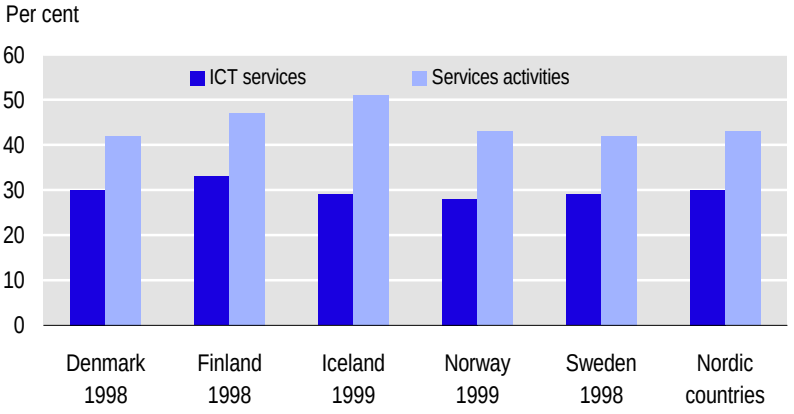
Figure 5.3 Women employed in the ICT services sector in the Nordic countries



The shares of females employed in the ICT services sector of the Nordic countries are very close to the shares of employment, which means that

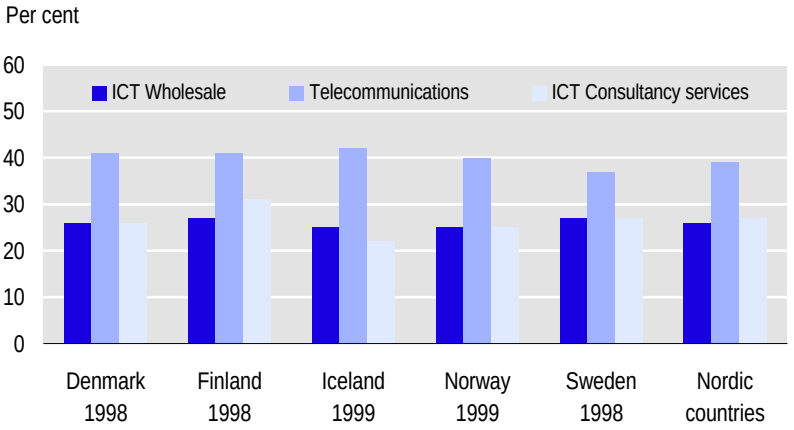
the share of women employed in ICT services is more or less identical between the Nordic countries, cf. figure 5.3.

Figure 5.4 Share of female employees in ICT services and in Services activities in general in the Nordic countries



The *ICT services activities* are characterised by a generally lower proportion of female employees (30%) than the Services activities in general (43%), cf. figure 5.4. Iceland whose share of women in the Services activities is much higher than the average of the Nordic countries (51% and 43%, respectively) has the same proportion of women in ICT services as the other Nordic countries.

Figure 5.5 Share of female employees in the ICT Services sub-sectors in the Nordic countries



The sub-sector level of ICT services shows significant differences, cf. figure 5.5, as *Telecommunications* with an average share of 39% of

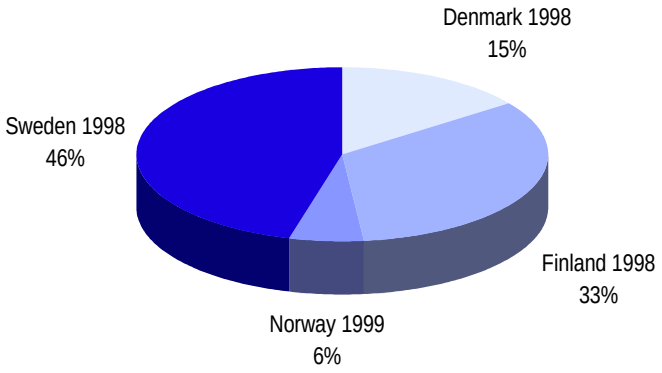
female employees is close to the average female employment level of Services activities in general. The opposite situation applies to the sub-sectors *ICT wholesale* and *ICT consultancy services* which both show a very low female representation with 26%, respectively 27% females employed. The female proportion in ICT wholesale activities is more or less the same in all the Nordic countries, ranging from 25% (Iceland and Norway) to 27% (Finland and Sweden). In ICT Consultancy services there are certain variations between the countries, as Iceland has the lowest rate of female employees (22%), Denmark, Norway and Sweden is close to the overall Nordic level (25-27%), and Finland, with 31%, shows the highest share of female employees.

5.2 Age structure in the Nordic ICT sector

Previous studies have shown the ICT sector, especially the ICT consultancy services, as a *"young industry"* in the sense that a relatively large share of the employees are young[22]. In the discussion concerning the competitiveness of the ICT sector worries about the aging work force within the ICT activities have been brought forward. This sub-chapter presents the statistical information related to the age structure of the employment within the ICT sector by defining an age group of *"young employed persons"*, ie. persons less than 35 years. On the Nordic level the persons employed in the ICT sctor are generally younger than in the private sector as a total. In ICT manufacturing 48% are below 35 years, and in ICT services the similar share is 44%, whereas the average share of the private sector is 40%.

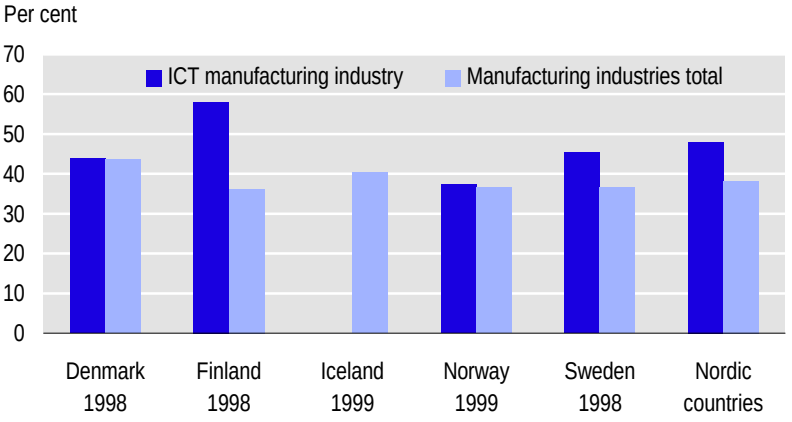
[22] See S. P. Bøegh Nielsen and S. Rikama: Employment Characteristics in Market Services Activities: Case Study of Denmark and Finland, paper presented at the Voorburg Group Meeting on Services Statistics 1997

Figure 5.6 Share of employed persons below 35 years in ICT manufacturing industry in the Nordic countries



Generally the relative shares of young persons employed in the Nordic countries are very similar to the relative shares of employment. The Swedish ICT manufacturing industry employs nearly half (46%) of the total number of persons employed below 35 years in the Nordic ICT manufacturing sector, cf. figure 5.6, 33% are employed within the Finnish, 15% in the Danish and 6% in the Norwegian ICT manufacturing industry.

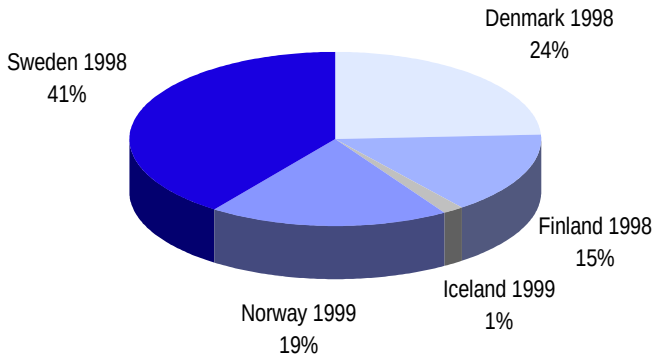
Figure 5.7 Share of employed persons below 35 years in ICT manufacturing industry and in Manufacturing industries total



In all the Nordic countries except Iceland, the share of young persons employed in ICT manufacturing is at least as large as the share in manufacturing industries in general, cf. figure 5.7., and in Sweden, and

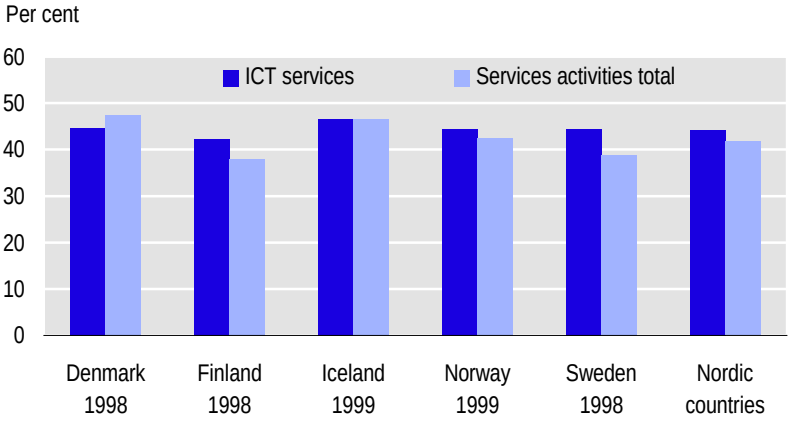
especially Finland, the share of young persons employed is much larger within ICT manufacturing compared to Manufacturing industries total.

Figure 5.8 Share of employed persons below 35 years in ICT services in the Nordic countries



The Swedish ICT services sector accounts for 41% of the young persons employed in the ICT services sector of the Nordic countries, cf. figure 5.8. Compared to the relative size of the employment, Finland's share of young persons employed is relatively lower (15% and 18%, respectively), whereas for Denmark the opposite situation applies (24% and 22%, respectively).

Figure 5.9 Share of employed persons below 35 years in ICT services and Services activities total

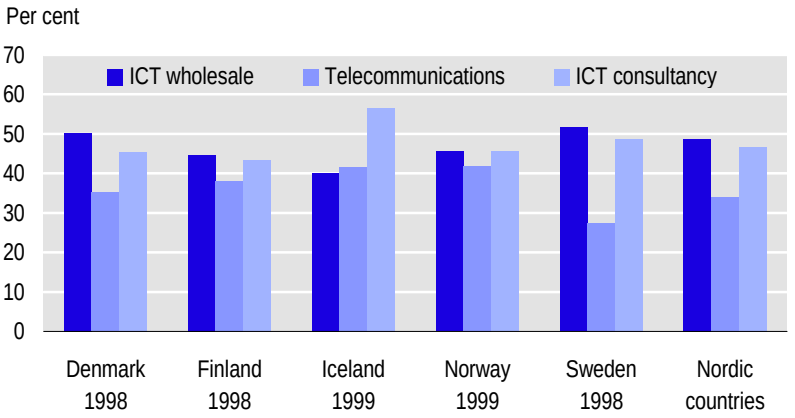


Also in ICT services the share of young persons employed generally exceeds the services activities in general, cf. figure 5.9. On the national

level Denmark is the only Nordic country where there are relatively fewer young persons in ICT services than in services activities in general.

Looking closer at the ICT services sub-sectors it is obvious that the relative shares of young persons employed are influenced significantly by the Telecommunications sector, whose share of young persons employed is only 34%, against shares of 49% in ICT wholesale and 47% in ICT consultancy services on the Nordic level, cf. figure 5.10. In Sweden this share is particularly low (28%). The highest shares of employed persons below 35 years in ICT wholesale services are found in Sweden (52%) and Denmark (50%). ICT consultancy services in Iceland must be characterised as activity strongly influenced by young persons, as the proportion of persons below 35 years is 57%, followed by Sweden (49%).

Figure 5.10 Share of employed persons below 35 years in ICT services sub-sectors



5.3 Educational structure in the Nordic ICT sector

The demand for qualified persons with a high-level education is one of the main challenges for the ICT sector in recent years, and the educational structure of the employed persons is analysed in this sub-chapter. The common nomenclature used for this purpose is ISCED[23] which is developed by OECD. The educational levels refer to the public educational system, but it is important to notice that national differences in the educational systems complicate the comparability across the Nordic countries[24]. It is also important to notice that qualifications obtained by

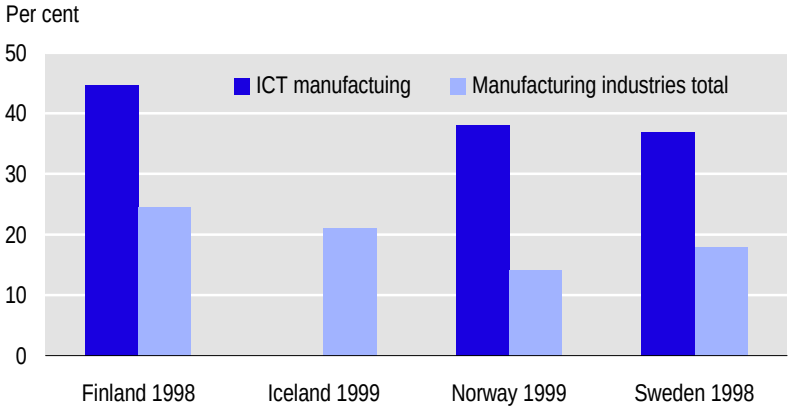
[23] OECD: International Standard Classification of Education

[24] It has not been possible to provide educational data for Denmark on comparable basis.

post-graduate education, courses, on-the-job-training or "learning-by-doing" is not captured in this sub-chapter.

The share of persons employed with *third level education*[25] is very high within both the ICT manufacturing industry and the ICT services sector, thus reflecting the knowledge-intensive character of this sector.

Figure 5.11 Share of persons employed with third level education in ICT manufacturing and manufacturing industries

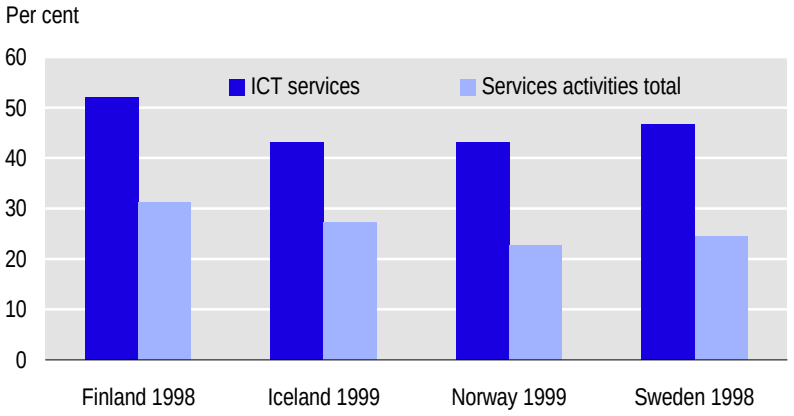


The share of persons employed with tertiary level education in *ICT manufacturing* is higher than in the manufacturing industries in general in the Nordic countries except Iceland, cf. figure 5.11. The highest share of persons with tertiary education in both ICT manufacturing and manufacturing industries total is found in Finland (45% and 24%, respectively). In Norway and Sweden the share of persons with high-level education in ICT manufacturing is also high (38% and 37%), and especially in Norway the share of persons with third-level education is relatively higher than the manufacturing industries in general compared to Finland.

The educational structure in *ICT services* and services activities in general is very similar to the structure of the manufacturing industries, where Finland has the largest shares (52% and 31%, respectively), cf. figure 5.12. The shares of persons employed with third-level educations are higher in ICT services than within ICT manufacturing in all the countries.

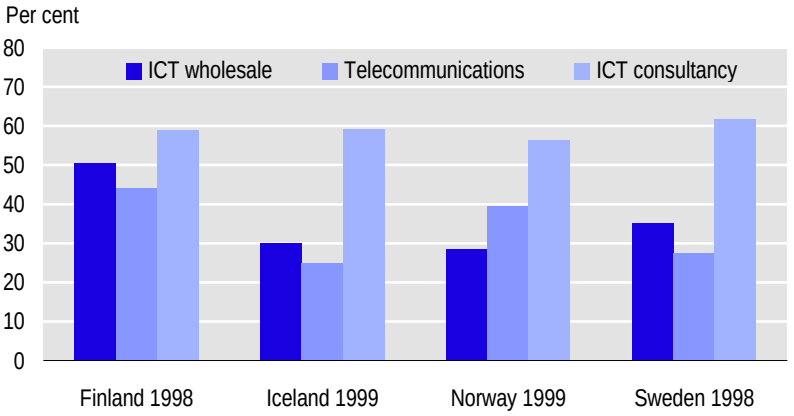
[25] See Annex I for further definition of educational levels.

Figure 5.12 Share of persons employed in ICT services with third level education



A more detailed look at the sub-sectors of ICT services reveals major differences, as the share of persons with third-level education in all the countries is highest within *ICT consultancy services* with shares ranging from 56% in Norway as the lowest to 62% in Sweden as the highest, cf. figure 5.13.

Figure 5.13 Share of persons employed in ICT services with third level education



The Telecommunications sector show the largest variations concerning the shares of persons employed with third-level educations, which for Iceland is 25%, whereas 44% of the persons employed within the Finnish Telecommunications sector possess a third-level education. Only in Norway the relative share of employed persons with third-level education is higher within Telecommunications than within ICT wholesale.

6. Annex

The annex consists of three parts;

I Definition of ICT sector, ICT wholesale and ICT products

II Statistical tables

III List of data definitions and data sources used in this publication.