

Job satisfaction and job performance – impacts on human capital

**Kjell-Åge Gotvassli
Anne Sigrud Haugset**

Job satisfaction and job performance – impacts on human capital

**Kjell-Åge Gotvassli
Anne Sigrid Haugset**

Presented at Mid-Continent Regional Science Association,
41 Annual Conference June 3-5, 2010 St. Louis Missouri



Nord-Trøndelag University College
Report no 70
ISBN 978-82-7456-615-6
ISSN 1504-7172
Steinkjer 2010



Høgskolen i Nord-Trøndelag utgir følgende publikasjonsserier: Rapport, Utredning, Arbeidsnotat og Kompendium

HiNT-Rapport forbeholdes publisering av forskningsarbeider som utgår fra HiNTs fagmiljøer. Rapportene skal fagfellevalueres på faglig og formelt grunnlag før publisering.

Se: http://www.hint.no/hint/fagportal/bibliotek/hint_publicasjoner

Rettighetshaver
Høgskolen i Nord-Trøndelag

Tilgjengelighet
Åpen

Publiseringstype
Digitalt dokument (pdf)

Redaksjon
Hovedbibliotekar

Kvalitetssikret av
Redaktør for konferanserapport

Nøkkelord: Jobbtilfredshet, jobbytelse, ledelse, humankapital

Key words: Job satisfaction, job performance, management, human capital

Opplysninger om publikasjonsserien fås ved henvendelse HiNT:
Biblioteket Steinkjer, Postboks 2501, 7729 Steinkjer, tlf. 74 11 20 65 eller epost:
bibste@hint.no eller hovedbibliotekar@hint.no

Job satisfaction and job performance – impacts on human capital

Kjell- Åge Gotvassli, Ph. D/Dean Nord-Trøndelag University College, Norway
kjell.gotvassli@hint.no

Anne Sigrid Haugset, Business Adviser, Trøndelag Research and Development
Institute, Norway
anne.s.haugset@tfou.no¹

Presented at Mid – Continent Regional Science Association, 41 Annual Conference

June 3 – June 5, 2010 St. Louis Missouri

Abstract

Within macroeconomics it is a well established point of view that investments in human capital is important for the economic growth of a region. In this paper we will look at the connection between job satisfaction and job performance and its impact on the “use” of human capital. A number of Meta - analyses shows that on average, the correlation between job satisfaction and effectiveness is about $r = 0.30 - 0.40$, which can be described as a moderate connection. Our regression analysis employing data from the European Social Survey Round 3 ESS - 3 (2006) shows that how much of the time the job is regarded as interesting has the strongest positive influence on perceived job satisfaction. Also the experience of having authority and influence over one’s own working day and over the organisation has a significant positive effect on job satisfaction. There are some consequences this should have in terms of exploiting and activating human capital amongst employees. One way in which this occurs is for the employees to experience job satisfaction. Fundamental to this goal is the creation of interesting jobs and jobs that offer influence and authority. Our empirical analyses and those of others also show that creating job satisfaction is far more important than salary in terms of developing human capital. If a region is both to attract, develop and retain a skilled and motivated workforce, a great deal of work has to be done to develop jobs that are regarded as interesting and which provide job satisfaction, rather than attempting to compete in terms of salary as the most important attraction. That means a great job must be done by the leadership in the organizations.

¹ Anne Sigrid Haugset has performed the regression analyses and written the Data, Method and Results from the regression analyses chapter of the article. She has also contributed to the Discussion chapter.

Introduction

The studies by the Nobel prize-winner in economics Garry S. Becker (1993) show that investments in human capital – the development of knowledge and skills – are of decisive significance for the economic growth of a region. The consequence of this is that in order to create economic growth it is necessary both to attract develop and retain human capital. Within macroeconomics there has not traditionally been a focus on knowledge and knowledge development as a basis of economic growth, but in the course of the 1990s a number of studies were presented that proposed the development and activation of human capital as an important motor for economic growth (Romer 1990; Davenport & Prusak 1997). Between 1990 and the present day there seems to have been an increasing focus in various studies on the importance of having knowledgeable and motivated staff as the basis for increased competitiveness and economic growth (Thurow 1996; Stewart 1997; Spilling 2007; Western 2008; Siggaard Jensen 2008).

These views are now so firmly held that in many respects they form the basis of the EU's programme "The Europe 2020 Strategy". The programme emphasises that Europe's future lies in a knowledge economy in which training, research and innovation are key elements for economic growth, work and competitiveness. Locally we find this again in the Regional Development Programme for the Norwegian county of North Trøndelag. In that context it is emphasised in several places that the basis of continued growth, settlement and life enjoyment in North Trøndelag depends on knowledge development and on the creation of attractive jobs. Having access to a well-qualified workforce and managing to activate this workforce to productive purposes will therefore be an important factor for economic development in a region.

The basis of the knowledge economy is that the nature of critical resources in today's organisations is no longer of physical and material character such as production resources and capital but has now changed to so-called knowledge capital or intellectual capital in the form of skills embodied in the individual employee (Becker 1993; Nonaka 1994; Nonaka & Takeuchi 1995; Rooney, Hearn and Ninan 2005; Western 2008; Siggaard Jensen 2008). OECD defines the knowledge economy as follows:

"Economics which are directly based on production, distribution and use of knowledge and information". (OECD 1996)

The term “intellectual capital” is variously defined in the literature. A comparison of different authors indicates, however, a frequent three-fold division of the term, which then consists of the following components (Stewart 1997; Sveiby 1990, Edvinson 2002):

Stewart	Sveiby	Edvinson
Human capital	Individual skills	Human capital
Structural capital	Internal structure	Structural capital (organisation)
Relational capital	External structures	Structural capital (customer)

Figure 1. The term intellectual capital

Human capital is the capabilities of individual members of staff in terms of knowledge, skills and attitudes. An important point here is that human capital is not merely connected to formal education and so-called explicit knowledge but is also to the highest degree connected to practical application in the form of implicit knowledge (Newell et al. 2002, Gouarly 2006). Structural capital consists of collaborations, systems, routines and rules, whilst relational capital consists of connections and relationships with customers, distributors, media, the authorities and other organisations. In addition to recognising the importance of intellectual capital, a displacement of power has taken place in terms of who possesses and controls the critical resources – from employer to employees (Hillestad 2002). This means that very many organisations are faced with a new type of employee who is very conscious of his own value; such employees can be regarded as more demanding and less loyal to the company.

Rohlin et al. (1994) depicts the differences by saying that we are moving from yesterday’s industrial society to today’s knowledge society, in which learning and skills development are the most important factors. In the scholarly literature, access to a highly-qualified workforce and the development of attractive jobs are often related to the concept of job satisfaction (Humprey, Nahrgang & Morgeson 2007; Støren 2008). Job satisfaction refers to a person’s general, overall assessment of their own work situation and is thus largely an individual quality (Lock 1983). There appears to be agreement that a high level of job satisfaction is closely related to the employee’s general motivation for their work and it is therefore very interesting to document which factors in work and working life are of most

significance for an employee’s job satisfaction (Lawler & Hall 1970, Tietjen & Myers 1998; Saari & Judge 2004). Kalleberg (1977) argues that one of the reasons for studying job satisfaction is in order to increase productivity. This would suggest that it is important to assess whether there is a clear connection between job satisfaction, motivation and performance/effectiveness at work (Judge, Thoresen, Bono & Patton 2001;Wriht, Cropazano & Bonett 2007).

Our reasoning is based on the following model:



Figure 2 Analytical model

The starting point is a regression analysis employing data from the European Social Survey Round 3 ESS - 3 (2006) to investigate which factors affect job satisfaction amongst Norwegian workers. The focus is also on what factors create job satisfaction and what drives job satisfaction in the workplace. In relation to the model, we will first take a theoretical examination of the concept of job satisfaction and examine the literature concerning job satisfaction and motivation. We will award a relatively-large place in the discussion to the connection between job satisfaction and effective completion of work. Is it the case that there is a direct connection between perceived job satisfaction, motivation and performance? In the methodological section we will attempt to put into operation the technical concepts behind job satisfaction as seen in connection with the variables for ESS – 3. We will then present some hypotheses concerning what creates job satisfaction. Next, we will present the main results of the regression analysis. The article concludes with a discussion of the results of the regression analysis, what it is that creates job satisfaction and what if any consequences this should have in terms of exploiting and activating human capital amongst employees.

Job satisfaction

Job satisfaction is extensively described in the literature (Hertzberg 1987; Agho, Muller & Price 1993; Locke 1976, 1983; Deci & Ryan 1985; Saari & Judge 204; Berge Matthiesen 2005). Together with an attitude of dedicated interest in the organisation, job satisfaction is regarded as an important approach for understanding the individual within working life and organisations (Kaufmann & Kaufmann, 2009). Job satisfaction is often coupled with various aspects of working life such as motivation, performance, absenteeism, turnover and job design – what is it that creates “good work”? (Mitchell 1974; Petty, McGee & Cavender 1984; Perrachione, Petersen & Rosser 2008).

There are many definitions of job satisfaction, but most contain a subjective assessment of personal needs and expectations in comparison to the reality experienced in connection with the job. Conrad's definition involves a match between what the individual considers that they need and the rewards they actually receive from the job (Conrad, Conrad & Parker 1985). We see here that it is the psychological expectations and the degree to which these are met that are at the core of the matter. Another definition, by Lock (1976), defines job satisfaction as a positive emotional state resulting from the individual's assessment of the job or experiences with it. In addition, job satisfaction was dependent on the working environment, the opportunities to have expectations met and the attainment of values that are compatible with the needs of the individual. This point of view of definition of job satisfaction also seems to be well established in recent literature on the topic — for example, in *The Oxford Handbook of Organizational Well – being* (Cartwright og Cooper 2009: 160 – 179)

Others have emphasised job satisfaction as resulting from the degree to which aspects of the work meet personal needs (Smith, Kendall & Hullin 1969). In summary, and somewhat simplified, job satisfaction has been described as the degree to which people like (satisfaction) or dislike (dissatisfaction) their job (Spector 1997) and this is often connected to various aspects of the job.

This is compatible with Thorsrud and Emery's classic term “psychological demands to jobs” of 1970. Today this forms a part of the basis of the requirements for satisfactory working conditions in the Norwegian Working Environment Act (Bjørvik, 1993).

The need for substance and variation in the job, for being able to learn something, for taking decisions within one's own area of work, for recognition, for seeing a connection between work and the world at large and that the job is a part of a desirable future are all identified by Thorsrud and Emery as fundamental requirements for a job in psychological terms, and as aspects that contribute to a job being experienced as meaningful by an employee.

Hertzberg's two-factor theory is based on the existence of two sets of explanatory factors when employees consider satisfaction or dissatisfaction in their job (Herzberg, 1987). The so-called hygiene factors can create dissatisfaction but not satisfaction. The motivational factors, on the other hand, explain workplace satisfaction but not dissatisfaction. Satisfaction and dissatisfaction should thus be regarded as two different dimensions, the values of which are defined by different factors. The hygiene factors include the company's policies and administration, management, working conditions, inter-personal relationships, salary, status, job security and work-life balance.

Motivational factors include performance, recognition, the work itself, responsibility, promotion and growth. Even though Herzberg's survey has received very considerable scholarly attention and worldwide comment, according to Løvland (1999) there is little empirical support for the theory that we in fact are faced with two separate factors that determine motivation in respect of work.

A relatively normal method of studying job satisfaction is to divide the job into five areas: salary-related conditions, promotion/career, colleagues and social aspects of work life, guidance/leadership and job content (the actual work) – a division created by Smith, Kendall og Hulin (1969). Characteristics of the actual job (challenges, personal contribution and autonomy) are also identified by Parker (2003) as an important source of job satisfaction. We observe that many refer to the content of the job – the characteristics of the work – as an important determinant of job satisfaction. Highly-qualified individuals also identify the realisation of professional values and ambitions (Støren 2008).

The content of the job is also the aspect that has the greatest correlation with overall job satisfaction (Berge Matthiesen, 2005). Gender differences are relatively small in relation to perceived job satisfaction, even though the tendency is that slightly fewer women are satisfied with their jobs. Age, however, can be significant. Earlier research indicates that older employees are consistently more satisfied with their jobs than younger ones (Berge Matthiesen, 2005). This is explained by diminished expectations to work and is often mixed with a certain amount of resignation.

The employee's personality type is also thought to affect job satisfaction. Maccoby (1988) uses the term social character types and his message is that different social character types require different kinds of motivation.

Maccoby's (1988) research indicates that the new generation of employee, which he terms self-developers, experience job satisfaction primarily under the following circumstances: responsibility and response in the workplace, opportunities for change and development, increased interest in the content of the work, team work in combination with personal development, fair and meaningful reward, involvement and participation. We also find much of this in the work of Deci & Ryan (1985) which associates job satisfaction and motivation with empowerment, or empowering management (Thomas & Velthouse 1990). Here the emphasis is on autonomy, the experience of skills and mastery, meaningful work and influence.

As we see, job satisfaction is a concept with many approaches and which consists of many factors. Nevertheless, the model proposed by Hackman and Oldham (1980) can stand as a summary of the most important factors involved in job satisfaction and motivation. They speak of the motivational potential of work (MPW) as a function of skill variety (SV), task identity (TI), task significance (TS), autonomy and feedback in work. This can be expressed as follows:

$$\text{MPW} = (\text{SV} + \text{TI} + \text{TS}) : 3 \times \text{autonomy} \times \text{feedback}$$

Put simply, the motivational potential of work (the extent to which it provides motivation) consists of characteristics of the job itself – whether it is perceived as interesting and what opportunities exist for autonomy and feedback in the job. Job satisfaction reflects a kind of emotional state of satisfaction or pleasure connected with the job, whilst motivation is concerned with the activation of conditions in which power or energy is mobilised (creating drive-force) and with the expenditure of energy having a direction or a goal (Mitchell and Larson 1987). Job satisfaction is thus, as we see it, associated with the general aspects of the job whilst motivation is associated with special aspects (such as tasks and achieving goals). , In research terms there is a great deal to suggest that this and other descriptions of the significance of job characteristics for motivation and performance are relatively well founded, even though it is difficult to demonstrate a direct and linear connection (Porter 1973, Argyle 1989).

Job satisfaction and performance

Theoretical analyses

In our model we propose a connection between job satisfaction, motivation and performance. This is naturally an area of enquiry that has occupied occupational researchers over a long period. Judge et. al (2001) describes it as the hunt for the work psychologist's "Holy Grail". Purely intuitively we can perhaps suggest that an employee who feels job satisfaction is a motivated employee and one who works effectively and creates results for the organisation. In the 1950s and 1960s this was a generally accepted assumption, but theoretical and empirical studies gradually emerged that set out a more nuanced view of this.

We will now look at various theoretical models for the Job Satisfaction – Job Performance Relationship, before surveying some of the empirical studies dealing with this topic. The latter will be carried out primarily with reference to a number of meta-analyses that have been carried out in the area of job satisfaction and productivity.

Several authors have explored the connection between job satisfaction and performance (Lawler & Porter 1967; Locke 1968, Mitchell & Knudsen 1973). In an often-cited article from 2001, Judge et al. list seven different connections between "Job satisfaction and Job performance" (Judge et. al 2001, s. 377 – 381).

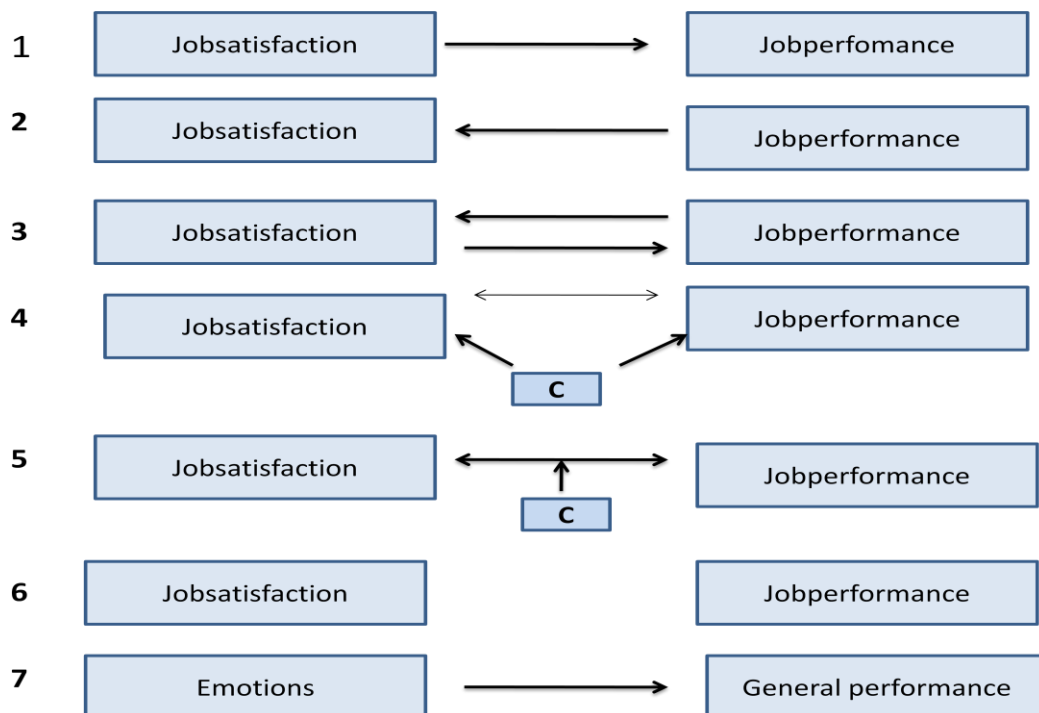


Figure 3 Different connections between job satisfaction and job performance

Model 1 portrays a direct connection between job satisfaction and performance and is, as already indicated, based on the general opinion that had been predominant for some years. A number of subsequent studies reversed this opinion. Model 2 indicates that job performance leads to job satisfaction. Lawler and Porter (1967) claim that working and achieving goals subsequently leads to the experience of job satisfaction. Model 3 indicates a more complex interplay between job satisfaction and performance, but this model has been little portrayed in theoretical or empirical studies. Model 4 takes as its starting point that the connection between two factors is due to a third factor that is unmeasured but significant – a spurious connection. A factor of this sort may be, for instance, the degree of confidence in the situation. Many studies of the relationship between job satisfaction and performance are based on the input of a number of moderating factors. This is illustrated in model 5. An attempt is made to detail these factors, but it is difficult to establish which the most important factors are. Factors such as salary, external and internal motivation, personality traits and career direction are often mentioned. Model 6 postulates that there is no connection between job satisfaction and performance: there are separate variables that do not influence each other at all. This assumption seems to enjoy very little support in the literature. The last model alleges that if we are to study the connection between job satisfaction and performance we must re-define both terms and, for instance, study different types of emotions and different types of performance. It may be the case that a general positive or negative attitude means more than job satisfaction in itself. Similarly, the concept of performance can be discussed by taking a broader starting point in a social commitment in which performance bears little relationship to traditional job satisfaction.

This survey of the connection between job satisfaction and performance shows how complex and difficult it is to identify definite connections between these aspects. Many studies that have been carried out have the weakness that individual specific aspects of job satisfaction have been studied and these have been related to general goals in productivity at work. It becomes apparent that these connections are consistently weak, but as Judge et. al (op. cit) points out, there are considerable problems with comparing something specific with something general, or vice versa. Both parts must occupy the same level, which means that in this instance it is necessary to contrast a total score for job satisfaction with a total score for performance.

Analyses of empirical studies

A number of empirical analyses have dealt with the relationship between job satisfaction and performance. Some are concerned with the experiences individual work groups have of their own working situation and the connection between this and performance. More recently some meta-analyses have also been carried out, using statistical techniques to sum up the results from a number of primary studies. Within certain areas such as psychology, pedagogy and health, meta-analyses have to a great extent replaced traditional review articles. Individual analyses show considerable divergence in the indicated degree of correlation between job satisfaction and performance. The correlation varies from small negative values to relatively-store positive values (Argyle 1989). Within the relatively complex picture we have sketched of possible connections, such meta-analyses will be of great value in order to obtain a good overview over the many empirical studies that have been carried out. In our survey of such analyses we have primarily drawn on meta-analyses from 1974 up to 2007 (Mitchell 1974; Petty, McGee & Cavender 1984; Iffaldano & Muchinsky 1985; Argyle 1989; Judge et. al 2001; Schleicher, Watt & Greguras 2004; Saari & Judge 2004; Wright, Cropanzano & Bonett 2007; Humprey, Nahrgang & Morgeson 2007). These are relatively comprehensive assimilations of studies carried out on the connection between job satisfaction and performance. The analysis of Judge et. al takes into account 312 previous studies with 54 117 subjects, and the study by Humprey, Nahrgang og Morgeson consists of an analysis of 259 previous studies including altogether 219 625 participants. Even though these studies show a certain amount of variation, the conclusion is that perceived job satisfaction is a good indicator for performance and efficiency at work. An employee who is satisfied with his or her job is also an effective employee. On average, the correlation between job satisfaction and effectiveness is about $r = 0.30 - 0.40$, which can be described as a moderate connection. On the basis of the theoretical survey we have conducted of core concepts such as job satisfaction, motivation and performance, along with the survey of previous empirical research, it seems that we find some support for the model that we presented on page 3. We will now make a presentation and discussion of a regression analysis using data from the European Social Survey Round 3 ESS - 3 (2006) to investigate which factors influence job satisfaction for Norwegian employees. The focus is thus on what creates job satisfaction and on what drives job satisfaction in the workplace.

From theory to hypotheses

We have already examined the significance of human capital for economic growth. The idea of “getting the most out of” this resource will be an important competitive advantage and as such important for all organisations. Siggaard Jensen (2008, s. 134) puts it as follows: *In the knowledge economy financial capital is still an important element, but the challenge is how to transform human capital, social capital and intellectual capital into financial capital.*

This can be expressed as how we can use human resources to increase productivity. The main point is that in order to create development in a region, it is necessary to attract, develop and keep a skilled and motivated workforce. On the basis of core features from the psychology of work, we have shown that an important factor in this work is to create attractive jobs with a great potential for motivation, and as such increase the opportunity for job satisfaction. Next, we have shown that there is a connection (if not necessarily strong, but at least demonstrated and moderate) between job satisfaction, motivation and efficiency in the workplace.

Data

We wish to use parts of the European Social Survey Round 3 ESS - 3 (2006)²³ to investigate which factors affect job satisfaction amongst Norwegian employees. ESS:3 is a dataset collected in 28 European countries, and it aims at making it possible for researchers to compare attitude variables on the micro level with institutional differences between countries on the macro level. The advantages of using this dataset are that the data are made statistically representative by random sampling, and that ESS:3 offers data that spans a wide range of occupations and organisations. The response rate is 63,3 percent for Norway. The response rate is somewhat lower among respondents with low education.

² ESS Round 3: European Social Survey Round 3 Data (2006). Data file edition 3.2. Norwegian Social Science Data Services, Norway – Data Archive and distributor of ESS data.

³ The Central Co-ordinating Team (CCT) and the producers bear no responsibility for the uses of the ESS data, or for interpretations or inferences based on these uses. The CCT and the producers accept no liability for indirect, consequential or incidental damages or losses arising from use of the data collection, or from the unavailability of, or break in access to the service for whatever reason.

In the analyses we use data from the 1215 Norwegian respondents in ESS:3 who were in paid work at the time of the survey. 17 respondents were excluded from the analysis due to not answering all the questions (listwise deletion). The total number of respondents in the analyses are 1198.

Variables

The ESS:3 survey includes the following independent variables, amongst others:

- How satisfied with job/work balance
- How often the job is perceived as interesting
- How often the job is perceived as stressful
- The extent to which salary is perceived as unreasonable
- Perception of authority and influence ⁴
- Number of years training
- Age
- Gender

The opportunity to influence organisational policy and the extent to which it is possible to organise one's own work are factors concerned with authority and influence. We see here that many of the factors located in the independent variables are found in the theoretical models associated with job satisfaction, especially in what is termed models of job characteristics, including the work motivation potential models by, amongst others, Herzberg (1987), Parker (2003), Spector (1987) and not least Hackman and Oldham (1980). A survey of this sort of the available variables compared to core elements of job characteristics should secure an acceptable conceptual validity.

Of the variables that are available through the data material, it is these that are expected to contribute to the explanation of job satisfaction. We anticipate a positive effect from the following variables: satisfaction with the job/other balance, the opportunity to

⁴ *Authority and influence* is a scale constructed on the basis of questions regarding the extent to which the individual can organise their own working day and opportunities to influence the activities of the organisation (Chronbach's alpha = 0,708).

The extent to which the job is perceived as interesting is concerned with characteristics of the actual work work itself.

influence the organisation and the opportunity to organise own work; whilst we anticipate that the experience of a stressful job and of being dissatisfied with salary in relation to effort and performance will have a negative effect on job satisfaction. On this basis we have formulated the following hypothesis which will be tested through the regression analysis.

Having an interesting job, leadership responsibility, the opportunity to influence the organisation, the opportunity to organise one's own work, a fair salary level and a good balance between job and other aspects of life will cause the experience of job satisfaction in an employee.

We anticipate that the motivational factors of an interesting job, authority and influence (Herzberg, 1987) will have a greater effect on job satisfaction than the hygiene factors of salary, job/life balance and work-related stress.

Method

We have carried out a stepwise linear regression analysis based on the Norwegian respondents who stated that they had paid employment at the time of the ESS:3 survey (N=1198). The dependent variable in the analysis is the perceived job satisfaction of the respondents, measured in values between 0 and 10, where 0 is extremely dissatisfied and 10 extremely satisfied. This variable is potens transformed (power = 2,2) to symmetry on account of the imbalance in response distribution (average value = 7,45).

Regression analyses claims a causal direction from the independent to the dependent variable (Grønmo, 2004:2004). The causal direction between job satisfaction and the independent attitude variables interesting work, job stress, authority and influence, fair pay and the balance job/other life aspects is not without problems in a cross sectional survey like ESS:3. The use of attitude variables as independent variables in regression analyses demands a strong theoretical support for the direction of causality (Ringdal, 2007:362). The demand oriented theories on job satisfaction and the theories of job characteristics make up our theoretical fundament for using these as causal variables in this analysis. These theories have traditionally had a strong standing in the job satisfaction research (Bjørvik, 1993). There are other theoretical approaches to the issue as well, such as theories on cognitive social learning and social information processing, implying other causal directions (Wong, Hui and Law, 1998).

Results from the regression analyses

The results of the regression analysis show the following:

Independent variables	Standardised Coefficient	Standard error	Significance level
How interesting job	.485	.794	.000
How stressed job	-.056	.580	.015
Unreasonable salary against input/performance	-.093	.824	.000
Authority and influence	.150	.187	.000
Satisfied with work/other balance	-.363	1.893	.001
(Satisfied with work/other balance) ²	.584	.156	.000
Age	-.069	.407	.003

Dependent variable = How satisfied with the job (power = 2.2)

$N = 1198,$

$R^2 = .422$

Table 1 Results from the regression analysis

Interpretation of the standardized regression coefficients in this analysis is complicated by different measurement level on the variables. Answers from the respondents are given on different scales, and in addition is age a continuous variable. It is therefore not possible to compare regression coefficients directly. We have used conditional effect formulas and plots for each independent variable, in order to calculate how much variation it creates in total in the dependent variable when all other independent variables is held constant on the average values (Hamilton, 1992). The conditional effect plot for the independent variable with the greatest impact on job satisfaction (how interesting job is) is shown in figure 4.

The main result in this analysis is that how much of the time the job is regarded as interesting has the strongest positive influence perceived job satisfaction. Also the experience of having authority and influence over one's own working day and over the organisation has a significant positive effect on job satisfaction. (Figure 5). This effect is however far weaker than the effect of experiencing the job as interesting. They demonstrate the connection between perceived job satisfaction and job interest and authority/influence, respectively.

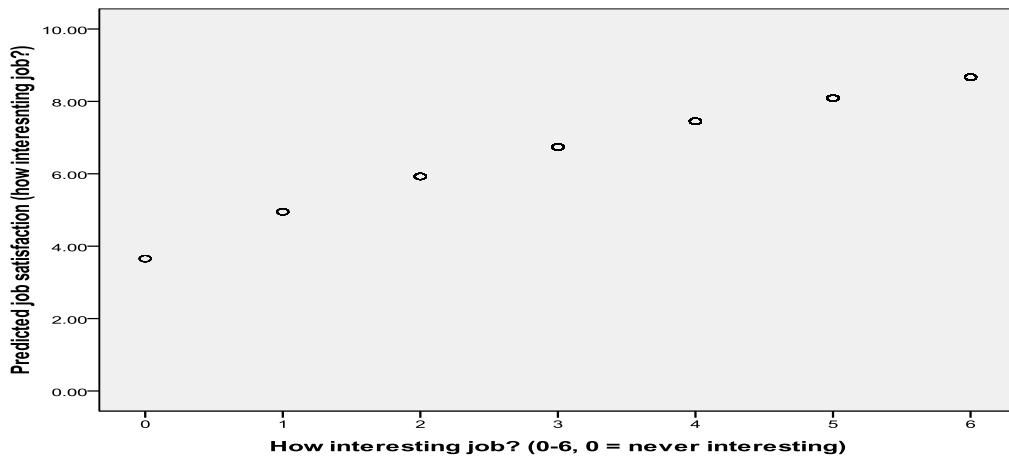


Figure 4

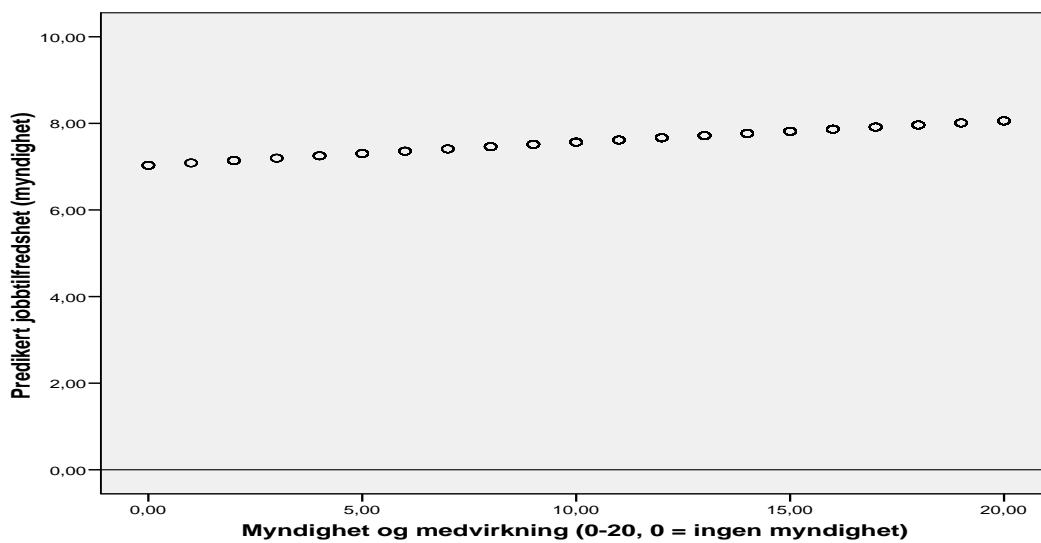


Figure 5

Amongst other findings, the extent of the perceived balance between job and leisure time has a curvilinear influence on job satisfaction, in which those who are very satisfied with this balance report a somewhat higher degree of job satisfaction. Experiencing the job as stressful and not experiencing a fair level of pay for effort has a moderate but significant negative effect on job satisfaction. Increased age also appears to exert a weak to moderate negative effect on job satisfaction. Number of years in education and gender has no significant influence on job satisfaction in this analysis.

Discussions

Causes of job satisfaction

Our theoretical survey of causes of job satisfaction shows that job satisfaction is a concept with many facets and approaches. A common thread, however, is that job satisfaction is often connected to qualities associated with the job itself – how interesting it is. Another important issue is that job satisfaction is positively affected by having authority and influence at work. This formed the background for our formulation of hypotheses concerning the various causes of job satisfaction. Our findings support most of the causal factors in the hypothesis concerning what creates job satisfaction amongst employees. Regression analysis shows that having a job that is felt to be interesting much of the time and having authority and influence in the workplace and its tasks has a positive influence on job satisfaction, whilst stress at work and the feeling of not receiving fair pay negatively influences job satisfaction.

As has already been commented, these are results which coincide both with theoretical analyses of job satisfaction and with the results of empirical studies in the area (Løvland 1999; Berge Matthiesen 2005; Judge et. al. 2001; Humprey, Nahrgang & Morgenson 2007). We expect that the factors identified by, amongst others, Herzberg (1987) as motivational factors should have the strongest influence on job satisfaction in the survey, and this hypothesis is fairly substantially supported by the results of the regression. It is the motivational factor that the job is perceived as interesting for much of the time that is clearly the most important causal factor of job satisfaction in the analysis. If the job is perceived as interesting for much of the time, job satisfaction increases. Variation in this variable amounts to a change of 50.1 percent of the scale in perceived job satisfaction when the rest of the variables are set to average values. The relationship between experiencing having an interesting job and job satisfaction is curvilinear and the effect on job satisfaction of an increase in how interesting the job is diminishes higher up in the scale. An implication of this is that it will be most profitable for the employer to invest more in more interesting jobs for those who initially experience that their work is not very interesting. The effect is greater here than in making already fairly interesting jobs more exciting, given that the goal is increased job satisfaction.

Authority and influence, which are also motivational factors, also lead to greater job satisfaction but have far less effect on job satisfaction. This variable can altogether yield a change in job satisfaction of 10.3 percent of the scale, if all other variables are held at average values. Job satisfaction diminishes when there is a perception that salary is unreasonable. How reasonable or unreasonable the salary level is thought to be in relation to performance and effort creates a variation in perceived job satisfaction of 5.4 percent of the scale when other variables are held at average values. This finding is also clearly in accordance with Herzberg's hygiene factors and other theoretical contributions.

The significance of age

In this analysis, increased age affects job satisfaction significantly but slightly in a negative direction. A variation in age between 20 and 67 years (the working life in Norway) creates a variation in job satisfaction of 4.4 percent of the scale, if other factors are maintained constant. Earlier research results are not unanimous in terms of the significance of age. Berge Mathiesen (2005:170) suggests that increased age is normally associated with higher job satisfaction, and mentions resignation and reduced expectations to working life as a possible mechanism for explaining the reported higher satisfaction amongst older employees.

There is also variation between different occupations in terms of the significance of age. In a survey of job satisfaction amongst a hospital's nursing assistants, registered nurses and doctors respectively, it was seen that age had a positive effect on job satisfaction amongst the nurses and nursing assistants but a negative effect amongst the doctors.

Educational level

One of the independent variables that were included was level of education. This was included because from a theoretical standpoint it was assumed that employees with more education had higher expectations of how interesting the job should be and that they would to a greater degree than other workers emphasise on this as a cause of job satisfaction. Both the general theory of job satisfaction (Lock 1993) and more specific discussions of the knowledge worker's demands of their work (Newell et. al.2002) support such a hypothesis. A number of studies of job satisfaction have included the employee's educational level as one of the causal variables, but findings have been very variable and no clear-cut conclusions can be drawn. The studies show both positive effect, negative effect and no effect at all of educational level on job satisfaction (Vila & Garcia-Mora, 2005, p. 411.)

In this analysis we do not find any significant connection between educational level and job satisfaction, when adjusted for age and aspects related to the actual work. Initial analyses show a significant but weak correlation (Pearsons $r = .102$) between total years of education and authority and influence in the workplace. Educational level does not correlate with the other variables in the analysis for these Norwegian employees.

Conclusion

In relation to our introductory line of enquiry about economic growth, human capital, job satisfaction, motivation and workplace effectiveness, our conclusions from our survey of theory in this area, previous research and our own analysis are as follows:

Firstly, it is still the case that in order to create economic growth in an area such as North Trøndelag, for instance, it is very important to focus on human capital – workers with a good level of knowledge, high skills and experience. One way in which this occurs is for the employees to experience job satisfaction. Fundamental to this goal is the creation of interesting jobs and jobs that offer influence and authority.

Being able to realise professional values, professional goals, to use one's abilities, to carry out tasks with which one can identify, and so on, are important factors for the experience of job satisfaction and motivation. We have also demonstrated that there is a connection between job satisfaction, motivation and performance. This means that in order to develop a staff that performs well in their jobs one should attempt to develop jobs that are perceived as interesting and which offer job satisfaction.

A number of studies have also been carried out that suggest that using and developing the implicit and explicit knowledge of employees will have a positive effect on the organisation's output and competitiveness. Westeren (2008, p. 143), who has carried out a larger study at the Aker Verdal plant, puts it as follows: *The importance of knowledge to explain firm performance and competitiveness is reflected in a growing number of theoretical and policy oriented articles.*

Needless to say, there are also a number of other aspects that affect effectiveness and competitiveness, including technology and different management systems. In our work, however, we have focused on what creates job satisfaction and how this affects performance at work and how human capital in the form of experience, knowledge and skills can thus be used to improve competitiveness.

Secondly, our empirical analyses and those of others also show that creating job satisfaction is far more important than salary in terms of developing human capital. In a broadly-based analysis by NIFU-STEP about job satisfaction amongst the highly educated (Støren 2008) the following conclusion is reached:

” Summary – job satisfaction: Both the realisation of professional goals, that is to say, subjective measures of how good a working situation one has, and objective goals such as aligning with the work market (relevant versus irrelevant work), professional values as well as seeing the benefit of one’s education, is of significance for job satisfaction. Of these the most important, however, is to realise one’s professional values – salary appears to have relatively little significance. Of particular importance for job satisfaction is the realisation of professional ambitions, thereafter comes career direction and the fulfilment of social values related to a job.”

(Støren 2008, p. 150)

If we think regionally it is the case that there is considerable geographic variation in commercial structures, job types and salary levels, often along the centre-periphery axis. Our analysis and those of others imply that if a region is both to attract, develop and retain a skilled and motivated workforce, a great deal of work has to be done to develop jobs that are regarded as interesting and which provide job satisfaction, rather than attempting to compete in terms of salary as the most important attraction.

References

- Arbeidsmiljøloven (2005). Hentet 1. november 2007 fra <http://www.lovdata.no/all/tl-20050617-062-004.html>
- Agho, A. O., Mueller, C. W. & Price, J. L. (1993). Determinants of employee job satisfaction: an empirical test of a causal model. *Human Relations*, 46, 8, 1007 - 1027.
- Argyle, M. (1989). Do happy workers work harder? The effect of job satisfaction on work performance. In: Ruut Veenhoven (ed.). *How harmful is happiness? Consequences of enjoying life or not*. Rotterdam: Universitaire Pers.
- Becker, G. S. (1993). *Human Capital. A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago: The University of Chicago Press.
- Berge Matthiesen, S. (2005). Hvorfor trives vi så godt? Om jobbtilfredshet i det moderne. In S. Einarsen, & A. Skogstad (Eds.), *Den dyktige medarbeider* Bergen: Fagbokforlaget.
- Bjerkan, A.M. (2007). Faktoranalyse. In T.A. Eikemo, & T.H.r. Clausen (Eds.), *Kvantitativ analyse med SPSS. En praktisk innføring i praktiske analyseteknikker*. Trondheim: Tapir.
- Bjørvik, K.I. (1993). *Arbeids- og lederpsykologi*. Bergen: Bedriftsøkonomens forlag.
- Bogler, Ronit (2002): Two profiles of schoolteachers: a discriminant analysis of job satisfaction. *Teaching and Teacher Education* 18 (2002) 665–673.
- Cartwright, S. & Cooper, C. L. (2009). *The Oxford Handbook of Organizational Well - being*. Oxford: Oxford University Press.
- Conrad, K. M., Conrad, K. J. & Parker, J. E. (1985). Job satisfaction, mental - health, and job stressors among general dental practitioners in the uk. *British dental journal*, 162, 77 - 81.
- Davenport, T & Prusak, L. (1997). *Working Knowledge*. Cambridge: Harvard University Press.
- Deci, E. & Ryan, R. (1985). *Intrinsic Motivation*. New York: Plenum.
- Edvinsson, L. (2002). *Corporate longitude: what you need to know to navigate the knowledge economy*. London: Financial Times Prentice Hall.
- Eikemo, T.A., & Clausen, T.H.r. (2007). *Kvantitativ analyse med SPSS*. Trondheim: Tapir.
- ESS Round 3: European Social Survey Round 3 Data (2006). Data file edition 3.2. Norwegian Social Science Data Services, Norway – Data Archive and distributor of ESS data.
- Gardner, H., Csikszentmihalyi, M & Damon, W. (2001). *Good Work. When Excellence and Ethics Meet*. New York: Basic Books.
- Grønmo, S. (2004). *Samfunnsvitenskapelige metoder*. Bergen: Fagbokforlaget.
- Gourlay, S. (2006). Towards conceptual clarity for tacit knowledge: a review of empirical studies. *Knowledge Mangement Research and Practice*. 4, 1, 60 - 69.

- Hackman, J. & Oldham, G. R. (1980). *Work design*. Cambridge, M A: Addison - Wesley.
- Hamilton, L.C. (1992). *Regression with Graphics. A Second Course in Applied Statistics*. Belmont: Duxbury Press.
- Hedegaard Hein, H. (2008). Ledelse af primadonnaer - myter og fakta. *NHH Bulletin 2008(nr 4)*, 22-26.
- Herzberg, F. (1987). One more time: How do you motivate employees? *Harvard Business Journal* 65(5), 109-120.
- Hillestad, T. (2002). Organisasjon og ledelse av kunnskapsvirksomhet. I Nordhaug, O.: *Kunnskapsledelse. trender og utfordringer*. Oslo: Universitetsforlaget.
- Humprey, J., Nahrgang, J., & Morgenson, F. (2007). Integrating motivational, social, and contextual work design features: A meta - analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology*, 92, 1332 - 1356.
- Iffaldano, M. T. & Muchinsky, P. M. (1985). Job Satisfaction and Job Performance: A Meta - Analysis. *Psychological Bulletin* 97, 2, 251 - 273.
- Jensen, H. S. (2008). Management and Learning in the Knowledge society. *Journal of Regional Analysis & Policy*, 38 (2), 130-137.
- Judge, T., Thoresen, C., Bono, J. & Patton, G. (2001). The job satisfaction - job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, 127, 376 - 407.
- Kaufmann, G., & Kaufmann, A. (2009). *Psykologi i organisasjon og ledelse*. Bergen: Fagbokforlaget.
- Kalleberg, A. L. (1977). Work value and job rewards: A theory of job satisfaction. *American Sociological Review* 42, 124 - 143.
- Krogstad, U., Hofoss, D., Veenstra, M., & Hjortdahl, P. Predictors of job satisfaction among doctors, nurses and auxiliaries in Norwegian hospitals: relevance for micro unit culture. *Human Resources for Health* 4(3). 2006.
- Locke, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), *Handbook of Industrial and Organizational Psychology* (pp. 1297-1349). New York: John Wiley & Sons.
- Lawler, E. E., & Hall, D. T. (1970). Relationship of job characteristics to job involvement, satisfaction, and intrinsic motivation. *Journal of Applied Psychology*, 54, No. 4, 305 - 312.
- Lawler, E. & Porter, L. (1967). The effect of performance and job satisfaction. *Industrial Relations*. 7.
- Løvland, J. (1999). Arbeidstilfredshet - relevant mål i bedriftsutviklingsprosesser? *Økonomisk fiskeriforskning* 9(2), 113-127.

- Maccoby, M. (1988). *Why Work: Motivation, and leading the New Generation*. New York: Touchstone.
- Mitchell, T. R. (1974). Expectancy models of job satisfaction, occupational preference and effort: A theoretical, methodical, and empirical appraisal. *Psychological Bulletin*, 81, 12, 1053 - 1077.
- Mitchell, T. R. & Larson, J. R. (1987). *People in organizations*. New York, NY: Wiley.
- Newell, S., Robertson, M., Scarbrough, H., & Swan, J. (2002). *Managing knowledge work*. New York: Palgrave MacMillan.
- Nonaka, I and H. Takeuchi. (1995). *The Knowledge - Creating Company*. New York: Oxford University Press.
- Nonaka, I. 1994. A dynamic theory of organizational knowledge creation. *Organization Science* 5(1):
- OECD. (1996). *The Knowledge - Based Economy*. Paris: OECD.
- Parker, C. P., Baltes, B. B., Young, S. A., Huff, J. W., Altmann, R. A., Lacost, H. A., et al. (2003). Relationships between psychological climate perceptions and work outcomes: A meta-analytic review. *Journal of Organizational Behavior*, 24, 389-416.
- Perrachione, B. A., Petersen, G. J., & Rosser, V. J. (2008). Why do They Stay? Elementary Teachers' Perceptions of Job satisfaction and Retention. *Professional Educator* 32, No. 2
- Petty, M. M., McGee, G. W. & Cavender, J. W. (1984). *The Academy of Management Review*, 9, 4, 712 - 721.
- Porter, L. W., Steers, R. M. & Boulian, V. (1974). Organizational commitment, job satisfaction, and turnover among psychiatric technicians. *Journal of applied psychology*, 59, 5, 603 - 609.
- Ringdal, K. (2007). *Enhet og mangfold: samfunnsvitenskapelig forskning og kvantitativ metode*. Bergen: Fagbokforlaget.
- Rohlin, L, Skärvad, P H. & Nilsson, S. Å. (1994): *Strategisk Ledarskap i Lärsamhället*. Dalby: MiL Publishers.
- Robbins, S. P. & Judge, T. A. (2007). *Organizational behavior*. Upper Saddle River, N. J.: Prentice - Hall.
- Romer, P. M. (1990). Endogenous technical change. *Journal of Political Economy* 94, 71 - 103.
- Rooney, D., Hearn, G. & Ninan, A. (2005). *Handbook on the Knowledge Economy*. London: Edward Elgar.
- Sancar, Mine (2009): Leadership behaviors of school principals in relation to teacher job satisfaction in north Cyprus. *Procedia Social and Behavioral Sciences* 1 (2009) 2855–2864

Saari, L. M., & Judge, T. A. (2004). Employee attitudes and job satisfaction. *Human Resource Management*, 43, No. 4, 395 – 407.

Schleicher, D., Watt, J., & Greguras, G. (2004). Reexamining the job satisfaction – performance relationship: The complexity of attitudes. *Journal of Applied Psychology*, 89, 167 – 177.

Smith, P. C., Kendall, L. M. & Hulin, C. L. (1969). *The Measurement of Satisfaction in Work and Retirement*. Chicago: Rand McNally.

Spector, P. E. (1997). *Job satisfaction: Application, assesment, causes, and consequenses*. Thousand Oaks, CA, Us: Sage Publications. Inc.

Spilling, O. R. (2007). *Kunnskap, næringsutvikling og innovasjonspolitik*. Bergen: Fagbokforlaget.

Steers, R. M. & Mowday, T. T. (1981). *Employee Turn - over and Post - decisions Accodation Processes*. I L. L. Cunnings & Straw, B. M. (ed.) *Research in Organizational Behavior*. JAI Press.

Stewart, T. A. (1997). *Intellectual Capital. The New Wealth of Organizations*. New York: Doubleday.

Støren, L. A. (2008). *Høyere utdanning og arbeidsmarkedet i Norge. NIFU - STEP rapport 6/2008*. Oslo: NIFU - STEP.

Sveiby, K. E. (1997). *The new organizational wealth. Manageing and measuring knowledge - based assets*. San Francisco: Berrett-Kohler Publishers, Inc.

Thurow, L. C. (1996). *The future of capitalism: how today`s economic forces shape tomorrow`s world*. New York: Morrow.

Tietjen, M. A. & Myers, R. M. (1998). Motivation and job satisfaction. *Journal of Management Decision*, 36, Vol. 4, 226 – 231.

Torp, H. (2005): Det nye arbeidslivet: Forklaringer og konsekvenser. *Søkelys på arbeidsmarkedet* 22: 129-139.

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., et al. (2003). Les Passions de l'Âme: On Obsessive and Harmonious Passion. *Journal of Personality and Social Psychology*, 85(4), 756-767.

Vallerand, R. J., & Houliort, N. (2003). Passion at Work. In D. Steiner, S. Gilliland & D. Skarlicki (Eds.), *Emerging Perspectives on Values in Organizations* (pp. 175-204): Information Age Publishing.

Van Oort, F. G. (2004). *Urban Growth and Innovation*. Aldershot: Ashgate.

Vila, L.E., & Garcia-Mora, B. (2005). Education and the Determinants of Job Satisfaction. *Education Economics* 13(4), 409-425.

Westeren, K. I. (2008). How to Define and Measure Knowledge for the Analysis of Competitiveness. *Journal of Regional Analysis & Policy*. 38, 2, 138 – 144.

Wong, C., Hui, C. & Law, K. S. (1998). A longitudinal study of the job perception-job satisfaction relationship: a test of the three alternative specifications. *Journal of occupational and organizational psychology*, v. 71, June 1998, p. 127-146

Wright, T., Cropanzano, R., & Bonett, D. (2007). The moderating role of employee positive well being on the relation between job satisfaction and job performance. *Journal of Occupational Health Psychology*, 12, 93 – 104.

Footnote: The Central Co-ordinating Team (CCT) and the producers bear no responsibility for the uses of the ESS data, or for interpretations or inferences based on these uses. The CCT and the producers accept no liability for indirect, consequential or incidental damages or losses arising from use of the data collection, or from the unavailability of, or break in access to the service for whatever reason.