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Documents

**Implementation of a Certificate
in Official Statistics**

- A tool for Human Resource
Management in a National
Statistical Institute

Implementation of a Certificate in Official Statistics

– A tool for Human Resource Management in a National Statistical Institute

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1. Introduction

A statistical office that aspires to produce official statistics of high quality needs staff with excellent qualifications. The concept of quality in Official statistics is multidimensional and covers

- Completeness
- Relevance
- Consistency
- Continuity
- Accuracy
- Timeliness
- Punctuality
- Availability
- User orientation

The Fundamental principles of official statistics (UN) is used as a common reference for many National Statistical Institutes (NSIs) and state in item 2 that decisions about official statistics should be based on professional considerations including scientific principles and professional ethics, on the methods and procedures for the collection processing storage and presentation of statistical data.

The benefit from Official Statistics for a nation is dependent on the use of statistics in various sectors, government, local authorities, industries and individual use. The common use will be dependent on the confidence in official statistics.

One challenge for the National Statistical Institute (NSI) will be to have staff with skills, competence and experience to match the quality requirements. To recruit, train, develop and keep the relevant staff is not an easy task due to some of the settings that are fairly common for NSIs – even if there are differences between countries.

The main topic of this paper is to discuss how a certificate in official statistics can be one of many elements in a human resource management strategy for NSIs. The recent experience from Statistics Norway with a certificate in official statistics is described.

2. Human resource management - a totality

Human resource management in an NSI needs a broad perspective. The staff members need relevant knowledge, skill, talent and attitude, in order to be able to do their job according to the requirements. The staff's ability to solve problems and work in teams is crucial. Official statistics should fulfil ambitious requirements as regards actuality, and not at least punctuality, without errors and delays. This means that the work has to be done and finished according to fairly strict procedures.

NSIs are parts of the central government. Their size and position can vary among countries but they will often be rather big institutions compared to ministries etc measured by employment. The size and the complexity of their duties makes it clear that human resource management has to be considered seriously by the NSIs. The human resource strategy has to be built on several activities and programmes. The following list gives some important items to help with building competence:

- On the job training
- Let staff participate in international meetings and conferences
- Training programs,
 - Basic training in statistics for new staff
 - Training in project work and project management
 - Training in Total Quality Management
 - Management training
 - An internal training programme in application and understanding of statistical methodology
 - An internal training program in IT,
 - Various ad hoc courses in different subject matter fields
 - Training of European Statisticians (TES)
 - Admission to courses etc at college or universities with or without grants from employer

Salary policy will be one element in the human resource strategy. The salary policy has normally to be managed with the limitations that follow from the fact that the NSIs are not in an economic position to pay wages that can compete with the private sector. They can at the best compete with the average of government institutions. It is however important to have an internal salary policy that stimulates career plans directed towards increased competence in the methodology of official statistics.

The experience and competence that each individual gain from the work experience in an NSI is relevant also for work outside the NSI and this means that staff members also are in demand from other employers. This can be one of many causes for high turnover.

The manpower situation in a normal NSI may have the following characteristics:

- High turnover especially among young staff with higher education.
- A significant proportion of staff with long experience, with internal training and experience.
- A combination of several professions with different educational background
- Budget limitations with effects on both salary level and the need for internal mobility.

3. Official statistics as an academic discipline and a profession

A Human Resource Strategy for an NSI should comply with the disciplines or professions involved. For Official statistics one should bear in mind that this is an interdisciplinary activity, which is dependent on several academic disciplines. The link between official statistics and the academic disciplines and institutions is of importance for the human resource strategy.

The cooperation between academics and official statistics can be discussed as follows. Firstly: If official statistics can be classified as an academic discipline. If not – what can be done to develop it to be an academic discipline? Secondly: How to strengthen the links between the academic world and official statistics?

The key elements in official statistics are that it:

- Cover the whole society
- Use data from different sources
- Integrate statistical methods and accounting principles
- Use coherent set of definitions and classifications
- Heavy weight on comparability (between countries, sectors and time)

- Relates to other academic disciplines as economics, sociology, demographics and epidemiology
- Are obliged to be processed solely based on the best professional methods
- Should be processed independent from political desires or pressures, that is with autonomy

It is obvious that to produce official statistics is not a simple task and the requirements and principles behind official statistics seem comparable with academic standards.

Several authors have discussed the link between official statistic and academics. This was one of the topics in the Presidential address to the ISI in 1975 by Petter Jacob Bjerve (Former Director General in Statistics Norway) In his discussion there are three groups:

- Official statisticians,
- Statistical theorists and
- Subject matter analysts.

In 1976 Bjerve observed a wide gap between official statisticians and academic statisticians (theorists). Bjerve's advise in 1976 was to try to close the gap by improving the methodological work in the NSI. This advice is in my opinion still relevant. The human resource management strategy in an NSI should be in accordance with this. Bjerve also suggested that Statistical agencies could invite statistical theorists from the outside to assist. A special trust was given to Statistics Norway to finance scholarships for senior statistical theorists used for stays in Statistics Norway (The trust was given to Statistics Norway from the Central Bank as a 100 years anniversary gift, 1976.)

In a stimulating book; Proceedings from a conference on Statistical Science Honouring the Bicentennial of Stefano Franscini's Birth, 1997, edited by Malaguerra (1997) there are several papers on the link between academia and NSIs. In Malaguerra's opening of the conference he stated, "In all countries statistical information today is the product of complex production systems which require substantial scientific input. The quality of information directly depends on the scientific quality of the whole production process".

Kenessey (1997) points out that there are several examples of close links between the academic world and official statistics in the very early history of both, but he also states that "it is almost as if probability and mathematical statistics, on the one hand, and official statistics, on the other have historically evolved separately." Kenessey argues that a broad description of official statistics makes it meaningful to argue that official statistics could be developed as a proper part of statistical science. He adds that one also can include in statistics and official statistics knowledge about macroeconomic data systems. This knowledge is a part economics as a science. This is also supported by the fact that several Nobel Prize winners have this field as an important part of their scientific background (Simon Kuznets, Richard Stone, Ragnar Frisch and Wassily Leontief).

Kenessey reflects on the reasons behind the lack of academic traditions within NSIs and he observes that there is a weak tradition for individual authorship and that promotion etc within NSIs does not put much emphasis on publications and refereed journals. The Norwegian experiment with a certificate may be one measure to meet the challenges mentioned by Kenessey.

One of the concerns with such an individual certificate based on papers and reports is that it can stimulate the individual scientific career. To stimulate the individual career is positive, but one has to consider if this may create a conflict with the tradition for teamwork in NSIs. A part of this teamwork tradition is that statistical publications are published as official statistics, without author's name. The evaluation or peer reviews of institutions NSIs and their product Official statistics, as for example they are performed by the IMF and Eurostat can be seemed as elements in this collective tradition.

In many recent strategic plans for NSIs there are chapters on management of human resources pointing out the need for qualified staff. It seems that such plans are modest in putting forward a strategy to strengthen official statistics as an academic discipline. In a recent strategic document put

together by a Nordic strategy group it is mentioned that "cooperation with the scientific community" is one instrument (Jeskanen-Sundström, H (2001). It could also be mentioned that the topic "Relations between official and academic statisticians " have been discussed by the Conference of European Statisticians from 1999/2000 (Paper by Pilar Martin-Guzman)

There are few examples of complete courses or degrees at universities in official statistics. There are courses in mathematical statistics, and extensions towards applied statistics and relevant courses in statistics and methods for different academic disciplines. There are however some examples of activities in official statistics:

- University of Southampton, University of Greenwich, (UK)
- University of Neuchatel (Switzerland)

We could also mention some activities related, at:

- University in Jyväskylä (Finland) Some plans
- Carleton University in Ottawa (Canada), Some relevant courses
- University of Michigan, Summer school in "Survey Research Techniques" (US)

The importance of professionalism for official statisticians will be dependent on the level of centralisation of official statistics. If official statistics are produced by several bodies, the market for official statisticians will have more than one employer. It can be helpful for the different producer of statistics to have a common professional structure for statisticians. If official statistics are more or less produced by one NSI the system for official statisticians, as a profession is a more internal human management matter.

4. The Norwegian certificate of Official Statistics

In the fall of 2001, Statistics Norway decided to start a pilot project to consider the implementation of a qualification scheme for official statistics – a certificate for official statistics. This decision was a result of an internal process for several years. At an early stage one of the local trade unions put a question to the management group if such a certificate combined with a training programme could be established. A steering group put the final proposal for the pilot project forward, with support from the management. One element from the original proposal from the trade union was to combine the certificate with a rather fixed training programme. The idea of a fixed training programme was left due to an assumption that such a programme would have to last for several years before anyone could meet the requirements. The existing internal training programme (in principle open for all staff) with a flexible mixture of courses, combined with various courses at university or other setting would be a sufficient educational background.

The intention with the qualification scheme and certificate is to improve the statistics production by educating and professionalize competent staff members in official statistics. The scheme will

- secure a career path and development for statistics producers in Statistics Norway (SN) and thereby reduce the turnover among competent young staff members.
- contribute to improvement of the quality of statistics production by selecting staff members who have a good comprehension of the statistical system (legal basis, statistical methods, standards, safety) and different aspects of the production process (data collection, processing, analysis, dissemination)

The qualification scheme is to result in the implementation of a special position in official statistics on a high level. Statistics Norway has a rather extensive research department. In this research department there is a need for highly competent academic staff at doctoral and senior research fellow level. To secure this, the research department has for many years had a system with certificates to senior research fellows following requirements and rules close to standard rules for professors and doctoral certificates at university level. One perspective with the certificate in official statistics has been to make something similar.

The qualification scheme in Official statistics, was announced on Statistics Norway's intranet December 2001 as follows:

STATISTICS ADVISER - a pilot project

We hereby invite staff members to apply to be qualified as statistical advisors on official statistics. The background for this project is a desire to educate and professionalize competent staff members in official statistics. The scheme is furthermore intended to secure a career path for statistics producers in Statistics Norway.

Evaluation criteria

1. General competence equivalent to lower university or college degree is required, i.e. at least of 3 or 4 years duration, dependent on the subject matter. Competence within statistical methods equivalent to 10 credit units, equal to 30 ECTC credits, European Credit Transfer system) is required.
2. Comprehensive knowledge about official statistics and statistics production is required. This comprises knowledge of and experience in planning, implementation, system development, analysis and dissemination of statistics.
3. Knowledge and experience about method, both statistical method and method questions related to topics and subjects relevant to the statistics need to be documented.
4. Insight in the basis for – and knowledge of the total picture of Statistics Norway's work are required, including the legal basis, standards and protection of privacy.
5. Experience and knowledge of implementation of projects are preferred qualifications.
6. Independent, efficient and critical work habits are required as well as good evaluation skills and ability to communicate well, orally as well as in writing.
7. Good results from work with official statistics are to be documented, and it is preferred that the candidate has experience from several areas, including international statistical cooperation and advisement.

Documentation of qualifications

The application should include a supplementary application with curriculum vitae that includes a description of different work tasks. Written documentation on such topics as planning, methods and final concluding dissemination of statistics are to be included. Emphasis will be put on an ability to cooperate. Work distribution for general products should be described.

Evaluation committee

The committee will consider the application, the CV, written documentation on plans, methods and final concluding dissemination of statistics. If necessary the committee will interview the applicants.

Salary and employment status

For the participants in the pilot the salary adjustment will as a result of certification be subject to salary negotiations. The evaluation of final employment status and salary will take place succeeding the pilot.

18 applicants were registered at the closing date for applications. One applicant withdrew the application. An evaluation committee was established and 17 applicants have been assessed.

The evaluation committee was appointed by the Director General in March 2002 – and consisted of: One very experienced statistician from Statistics Sweden, Sweden and 5 senior statisticians from Statistics Norway

The committee had three plenary meetings and in addition communicated via e-mail and telephone.

The committee evaluated the applicants based on:

- Written documentation including plans, methods and final dissemination of statistics.
- Supplementary application with a CV that includes description of different work tasks.
- Statement from line manager.
- Description of work distribution in joint work tasks.

Since the evaluation was a pilot project the committee agreed upon a more detailed definition of some of the requirements explicitly. The committee included the ability to cooperate in criterion 5 (project experience) and criterion 6 (work system), and emphasised the ability to create a positive learning environment and ability to be innovative. This sorted naturally under criterion 7 – about results.

Most of the requirements may to a great extent be evaluated based on applications and CVs, whereas in order to evaluate statistics production and methods, it was necessary to read the written documentation. In order to evaluate the work habits – statements from line managers were also gathered. All criteria were considered in the evaluations, but comments have concentrated on the evaluation of the written work.

The expression " statistical methods"

The committee wanted to comment on the requirements regarding statistical competence, referring to the evaluation criteria 1 and 3 regarding competence in statistical methods:

These criteria were:

1. Assumed competence *in statistical methods* equal to about 10 credit units.
3. Knowledge of and experience in methods are to be documented, both regarding *statistical method* and questions about methods related to topics and subjects relevant to statistics.

Criteria 1 may be achieved by ordinary statistics and method courses at universities and colleges. Course in econometrics is considered relevant. Course in methods at Statistics Norway and otherwise will also be considered.

While evaluating knowledge of statistical methods, documented through work experience, including written work, the evaluation committee relied on the following interpretation and precise definition of the subject area *statistical methods*:

- A general interpretation of *competence in method statistics* means that one masters the statistical language, is able to use statistical methods with competence – and the ability to carry out statistical evaluations. Competence within *statistical methods* is to have a broader meaning than competence within *mathematical statistics*. This means use of mathematics and statistical theory for model building, development and evaluation of statistical methods.
- While evaluating the statistical competence on methods the committee has emphasised methods in relation to qualification as statistical adviser of *official statistics*. The basis has therefore been that the requirement pertains to statistical method competence in official statistics. This implies that while evaluating the applicants' competence within statistical methods – the following themes have been relevant:
 - a) Planning data collection
 - b) Evaluation of data quality; sample uncertainty and skewness.
 - c) Evaluation of error sources
 - d) Specific uncertainty measurements such as standard errors and confidence intervals
 - e) Statistical methods in statistical analyses.
 - f) Special requirements for official statistics such as for instance requirement for documentation (meta-data), as part of a comprehensive statistical system, release and protection of privacy.
 - g) Evaluation of when further method competence should be considered.

5. Evaluation

Approximately 50 per cent of the applicants qualified and received the certificate. For some of those with a negative result, the reason that was mentioned by the committee was that the candidates had too little experience. For others (the majority) the reason for the negative result was linked to lack of documented competence in methods, both theoretical statistics and other elements mentioned in the criteria.

Statistics Norway is at present evaluating the certificate process. The angles for this evaluation are both the certificate as an instrument for the employer (head of sections etc), and the certificate as a target for young employees.

The evaluation has not ended, but so far the impression is that it is worth continuing with this certificate. There are some questions that need to be answered, such as:

- Certificate without integrated courses and tests – will the certificate then be too dependent on the actual working conditions for each individual. Will the certificate show or be a proof of the intellectual capacity of the employee?
- The qualification level – if the level is very low, many applicants will ask for evaluation and much work has to be done by the committee. The screening effect will also be vague. If the level is too high – the "carrot" effect is vague for those employees who are in the risk group for leaving (1 - 2 years of experience)
- The concept of official statistics and evaluation criteria.

Official statistics have to be published on an impartial basis by Statistical Institutes, but in practice produced by a team of individuals. To guarantee that official statistics are produced according to strictly professional considerations – including scientific principles and professional ethics – it is fair to say that there are demanding quality claims for the staff. It is to be hoped that the pilot project with the certificate in Official statistics can motivate the staff to qualify in accordance with these quality requirements, and that the management at Statistics Norway will give sufficient resources for the adequate training programme.

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