

Do engineering academics in Finland have job satisfaction?

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ABSTRACT: Education and training for engineers in Finland occurs in universities and polytechnics, and this article presents an examination of the job satisfaction derived by academics from both sides of this binary system. The data for this study were drawn from the Changing Academic Profession (CAP) Survey, which has now been conducted in 25 countries since its inception in 2007/2008. The overall result is that engineering academics from polytechnics enjoy a higher overall rate of job satisfaction than their colleagues from universities. About 67% and 62% of polytechnic and university engineering academics respectively described their job satisfaction level as very high or high. This response is similar to the perception of Finnish academics in other disciplines, and of academics in the other countries that participated in the CAP study.

INTRODUCTION

Finland is a nation of 5.3 million people and is much praised for all levels of its education system. The Finnish education system is based on welfare principles including free education for all students studying for a degree. Direct student support is also relatively high, with student grants, rent allowances and subsidised loans being available to most tertiary students [1]. Finland is approaching a situation of universal access to tertiary education.

Finnish higher education is provided through a binary system of universities and polytechnics. For many years Finland had 20 universities under the auspices of the Education Ministry, but a number of institutional mergers occurred during 2009. As of early 2010, there are 16 universities and 25 polytechnics. Engineering was taught to about 59,000 degree students in 2009, with about 35,000 students taught at six of the universities [2] and 24,000 students at 24 of the polytechnics [3]. About 1,300 university teachers and 1,485 full-time polytechnic teachers taught these students [2][3].

The first Finnish university was established in 1640, more than two centuries before Finland's independence in 1917, but the polytechnic sector is a recent innovation, dating back only to the early 1990s. In fact, the massification of Finnish higher education occurred initially because of the establishment of a polytechnic sector [4]. The governance arrangements for polytechnics differ from those for universities, and they were established with the intention of being more directly relevant to labour markets and to provide a boost to regional development [5]. There have also been mergers between polytechnics, and more will follow. In recent years, polytechnics have begun referring to themselves in their English-language material as *universities of applied sciences* [6]. The Ministry of Education and Culture has not embraced the new terminology [7], and the concept in the Polytechnics Act and Decree (351/2003) is that these institutions are *polytechnics*.

THE CAP SURVEY

The Changing Academic Profession (CAP) Survey was initially conducted in 18 countries on five continents during 2007/2008. More countries continue to come aboard. Over 24,000 valid responses were received from academics in all disciplines. The survey questionnaire is based on a common set of questions, adjusted to suit the situation in each country. The CAP survey sought academics' perceptions on many topics, and these can be compared and contrasted within and across national borders against a range of personal and job-related characteristics. These characteristics include seniority, qualifications, languages used, as well as gender and other demographic variables. CAP is by far the largest research project of its type conducted to date, and it is a more comprehensive version of the Carnegie study of academic work in 14 countries conducted in 1992. Quoting from Kogan and Teichler [8], *...the preparatory team for the second international comparative survey on the academic profession to be undertaken in 2006-2007 (coordinated by William K. Cummings and Jürgen Enders) observed significant and more rapid changes of higher education affecting the backgrounds,*

specialisations, expectations and work roles of academics. Increased expectations from society and notably the perception of knowledge as the most vital resource of contemporary societies have both expanded the role of the academy and challenged the coherence and viability of the traditional academic role. The International Centre for Higher Education Research (INCHER) at the University of Kassel in Germany has coordinated construction of the international database.

JOB SATISFACTION AND FINNISH ENGINEERING ACADEMICS

A person's perception of his or her job satisfaction can be defined in several ways and influenced by many factors. In general, high levels of job satisfaction are associated with a positive attitude towards the job, and *vice versa*. Job satisfaction has been understood in a broad sense in this article. For example, Locke's *Range of Affect Theory* is one of the well-known job satisfaction models, and it represents a small part of an extensive literature on the topic. Its main premise is that satisfaction is determined by the gap between what one wants in a job and what one has in a job [9]. This starting point was also identified in the Finnish CAP Country Report [10]. Ali and Akhter cite several studies that have shown that absenteeism and resignation are more likely among dissatisfied employees [9].

Job satisfaction is a widely discussed issue, and an important one for higher education institutions and it is important for university management to be aware of the causes and potential causes of dissatisfaction. The academic workplace has become a globalised one, and states need to be careful that the relative attractiveness of a national workplace does not lead to a movement of academic staff away from the profession, or to the profession in another nation. The potential for this to occur in Finland is perhaps greater in Finland than elsewhere, because a new act of parliament to regulate universities came into force from 2010, ushering in the most radical reform agenda in several decades [11]. Among others, major changes to university governance, funding arrangements, and the status of university staff mean that Finland is entering a period of less organisational certainty than in the past. Academic staff reactions to the new situation will not emerge for some time.

THE SAMPLE

The Finnish sample produced 1,452 useable questionnaires, of which 1,199 specified their discipline. It is unclear why so many respondents (253) failed to identify their discipline. Perhaps some academics felt unable to select the nearest field to their current academic department because they worked in multi-disciplinary centres or units. The overall discipline-based sampling was relatively successful as far as engineering was concerned. About 16.6% of Finland's approximately 7,700 university teachers were engineering teachers in 2008, compared with 13.5 per cent of respondents to the CAP survey. Equivalent figures for polytechnics were 25.2% and 22.0%, respectively. The results from survey respondents are therefore close enough to be representative.

Table 1: CAP Survey - Respondents to the Finnish Survey by discipline and institution type.

Discipline	Universities	Polytechnics	Not Stated	Total
Engineering	127	57		184
Humanities, Social Sciences, Law, Business and Economics	394	111	1	506
Medical & Health	126	51		177
Life & Physical Sciences; Agriculture	292	40		332
Total for this article	939	259	1	1,199
Not stated	176	75	2	253
Total Sample	1,115	334	3	1,452
Engineering % of CAP Total	13.5%	22.0%	0.0%	15.3%
*Engineering % of all Academics	16.6%	25.2%		

Source: Based on CAP Survey Question A2: *Please identify the academic discipline or field of your current academic unit, except*
 *Ministry of Education [2][3].

USING CAP TO IDENTIFY ACADEMIC JOB SATISFACTION

The CAP survey provides a wide range of options for examining academics' job satisfaction, in this instance, Finnish engineering academics. This article considers a number of questions from the CAP Survey as indicators of job satisfaction, including:

- whether academics have considered leaving their current position;
- academics' perception of the quality of their work environment (classrooms, laboratories, technology and information technology, and office space);
- whether they would recommend an academic career to young people or become an academic themselves (if they could have their time over);
- perception of the attitudes of senior management; and
- changing conditions, job stress and overall job satisfaction.

Career Change?

One potential indication of academic job satisfaction is the extent to which they are seeking a career change. Table 2 summarises responses relating to whether academics are considering a move from their current job. It can be seen that a higher proportion of university engineering academics have considered a job change across the board, although the difference between university and polytechnic responses was not great for two of the options. In response to seeking a management position at the same institution, 13.2% of university engineering academics and 11.8% of those at polytechnics had done so. For seeking an academic post at another institution within Finland, the corresponding figures were 17.4% and 13.7%. However, engineering academics from universities are much more likely to consider academic jobs abroad (21.5%, c.f. 2.0%), or leaving higher education completely (61.2% c.f. 31.4%). The CAP survey suggests, therefore, that nearly two-thirds of university engineers have thought about leaving the sector, and nearly one-third of polytechnic engineers.

Table 2: CAP Survey: No. and % of engineering academics - Finland. Perceptions about job change by sector.

Considered a move to:	University	Polytechnic	Total	University	Polytechnic	Total
	No.	No.	No.	%	%	%
To a management position in your institution	16	6	22	13.2%	11.8%	12.8%
To an academic position at another institution (internal)	21	7	28	17.4%	13.7%	16.3%
To an academic position at another institution (external)	26	1	27	21.5%	2.0%	15.7%
To a position outside higher education	74	16	90	61.2%	31.4%	52.3%

Source: Based on CAP Survey Question A14: *Within the last five years, have you considered a major change in your job?* (Various responses).

Whereas consideration of the first three changes could be seen as an indication of natural movement within higher education, the fact that over 60% of university engineers have considered working outside higher education could be of concern.

Work Environment

Physical infrastructure and conditions can have an impact on job satisfaction. To test the impact of this on the attitudes of Finnish engineering academics, Figure 1 summarises Finnish engineering academics' responses to CAP Survey question B3: *At your institution, how would you evaluate each of the following facilities... classrooms, technology for teaching, laboratories, computer facilities, and your office space....* This question was rated on a five-point scale from *excellent* to *poor*, and the Figure shows the distribution of responses by institution type of *excellent* or *good*.

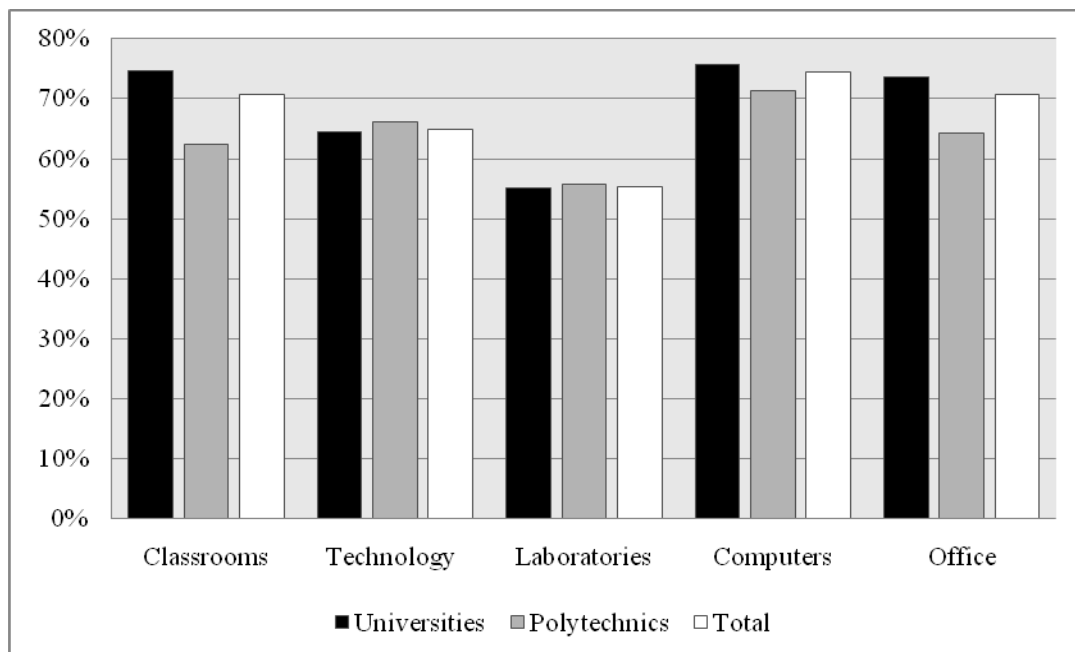


Figure 1: CAP Survey: Responses of *excellent* or *good* to Question B3, concerning physical facilities.

The figure indicates that engineers from both universities and polytechnics had a similar opinion about the quality of laboratory facilities, with slightly more than half believing them to be excellent or good. Across the other physical facilities examined, slightly more university than polytechnic academic engineers believed classrooms, computer facilities and office accommodation to be excellent or good. However, a higher proportion of engineers from polytechnics thought that the technology for teaching was excellent or good. Relatively few engineering academics thought their facilities to be *poor* or *very poor*.

Do It Again?

One test of job satisfaction is to see if current academics are willing to recommend their academic lifestyle to young people, and whether they would follow the same career path themselves, given their time over again. On this front, results are not positive, particularly from university respondents. Nearly 29% of university engineering academics believed that *this is a poor time for any young person to begin an academic career in engineering*, compared with 19.3% of engineering academics from polytechnics. However, only 17.6% of academic engineers from universities would choose a career other than their present one, but it is double the rate of polytechnic respondents. It is also clear that many engineering academics in Finland suffer from stress by virtue of their occupation: over half of those from universities, and over one-third of those from polytechnics.

Table 3: CAP Survey: No. and % of engineering academics - Finland: Perceptions about career by sector.

I <i>strongly agree</i> or <i>agree</i> that :		University	Polytechnic	Total
This is a <i>poor time</i> for any young person to begin an academic career in engineering#	No.	36	11	47
	%	28.8%	19.3%	25.8%
If I had my time over again, I would <i>not</i> become an academic*	No.	22	5	27
	%	17.6%	8.8%	14.8%
My job is a cause of considerable <i>personal strain</i> *	No.	64	20	84
	%	51.2%	35.1%	46.2%
<i>Overall (approx) *</i>	No.	125	57	182

Source: Based on CAP Survey Question B5: *Please indicate your views on the following...* (Various responses).

*Excluding *not stated* cases of 7, 4 and 4 respectively for these questions.

Perceptions about Senior Institutional Management

Table 4 summarises academics' responses to a range of questions about the relationships between themselves and senior management/administration. Many of these attributes have the capacity to have a direct impact on academic motivation and, therefore, job satisfaction. Good communication, collegiality, academic freedom and the perception of adequate and efficient support are all favoured attributes. Of the attributes shown in the table, the perception of administrative inefficiency comes out strongly. Only 12.8% and 12.0% of university and polytechnic academics, respectively, believe that *the administration is not cumbersome*.

Table 4: CAP Survey: No. and % of engineering academics - Finland. Perceptions about the institution by sector.

Attribute		University	Polytechnic	Total
There is good communication between management and academics	Strongly Agree /Agree	39	11	50
	% of Total	33.3%	22.0%	29.9%
There is collegiality in decision making	Strongly Agree /Agree	34	10	44
	% of Total	29.1%	20.0%	26.3%
<i>Administration is not cumbersome*</i>	Strongly Agree /Agree	15	6	21
	% of Total	12.8%	12.0%	12.6%
There is a supportive attitude towards teaching	Strongly Agree /Agree	23	11	34
	% of Total	19.7%	22.0%	20.4%
Top-level administrators provide competent leadership	Strongly Agree /Agree	48	15	63
	% of Total	41.0%	30.0%	37.7%
<i>Academic involvement is adequate*</i>	Strongly Agree /Agree	34	22	56
	% of Total	29.1%	44.0%	33.5%
The administration supports academic freedom	Strongly Agree /Agree	25	7	32
	% of Total	21.4%	14.0%	19.2%
Total (approx):		117	50	167

Source: Based on: CAP Survey Questions E4: *At my institution there is....* (various responses), and E5: *Please indicate your views on the following issues...* (various responses).

*These questions have been reverse coded from the wording in the original questions to standardise all the attributes into positive statements.

Rather more respondents strongly agreed or agreed that there was competent leadership (41.0% and 30.0%, respectively), and lower proportions perceived good communication, collegiality in decision making and adequate

involvement by academics, etc. However, perhaps the main point to note is that in none of these cases was that the proportion of academics strongly agreeing or agreeing was far short of 50%, even if some neither agreed nor disagreed with the attributes shown.

For Better or Worse?

Table 5 is based on responses to CAP Survey Question B7: *Since you started your career, have overall working conditions in higher education... improved or declined?* Few engineering academics believed working conditions to be much improved now, compared to when they started their career, but taking responses *much improved* and *improved* together, about one-quarter of engineering academics, whether from universities or polytechnics acknowledged an improvement. At the other end of the scale, about one-third of university engineering academics believed things had deteriorated, as did over 40% of polytechnic engineering academics.

Table 5: CAP Survey: No. and % of engineering academics - Finland. Perceptions about changes in overall working conditions by sector.

Change	University	Polytechnic	Total	University	Polytechnic	Total
Much Improved	5	2	7	4.0%	3.5%	3.8%
Improved	29	12	41	23.2%	21.1%	22.5%
Neither	49	20	69	39.2%	35.1%	37.9%
Deteriorated	31	13	44	24.8%	22.8%	24.2%
Much Deteriorated	11	10	21	8.8%	17.5%	11.5%
Total	125	57	182	100.0%	100.0%	100.0%

Source: Based on CAP Survey Question B7: *Since you started your career, have the overall working conditions in higher education improved or declined?*

As mentioned earlier, from 2010 Finnish universities are subject to a new Universities Act, which could have introduced *reforms* that might not be palatable to the academic workforce [11]. For example, before the Act's passage, university personnel enjoyed a civil service relationship with the government. Now their contractual arrangements are directly with universities. It is too early to see if academic staff will perceive the new arrangements as detrimental, but it must be remembered that the CAP survey predates the new Act.

CONCLUSIONS

What can be concluded about these responses to the CAP survey? Perhaps the main thing is that things could be better, even if engineering education in Finland is not likely to self-destruct in the near future. An obvious next question is how does engineering in Finland compare with other disciplines, and with engineering higher education in the rest of the world. Table 6 provides a partial answer. Overall, 63.4% of engineering academics in Finnish higher education rated their overall satisfaction as *very high* or *high*, with this overall rating being higher in polytechnics than universities. Compared with all disciplines in Finland, this result is slightly lower. Overall, 67.4% of the total Finnish sample rated their overall satisfaction as *very high* or *high*.

Table 6: CAP Survey: No. and % of engineering and all academics - Finland and other countries. Perceptions about overall satisfaction by sector.

	Finland			All Disciplines	All CAP Countries	
	Engineering				Engineering	All Disciplines
Overall satisfaction	University	Polytechnic	Total			
1. Very High	10	13	23	205	452	3,754
2. High	68	25	93	758	1,656	11,303
3. Neither high nor low	34	12	46	334	817	5,955
4. Low	11	4	15	103	216	1,727
5. Very Low	3	3	6	28	67	619
Total	126	57	183	1,428	3,208	23,358
% Very High or High	61.9%	66.7%	63.4%	67.4%	65.7%	64.5%

Source: Based on CAP Survey Question B6: *How would you rate your overall satisfaction with your current job?*

Compared with the worldwide sample, it can be seen from Table 6 that the variations are not great. A slightly higher proportion of engineers around the world rated their overall satisfaction as *very high* or *high*, and this result was just slightly better than for all disciplines.

All these things considered, a majority of higher education engineers rated their *overall satisfaction* as positively. As shown in Table 6, 61.9% and 66.7% of engineering academics from universities and polytechnics respectively responded that their overall satisfaction level was *very high* or *high*.

It therefore seems that the engineering teachers and researchers in Finnish higher education are quite happy with their work. However, this interpretation requires consideration of two factors that are likely to have affected the results presented in this article.

First, the Finnish technology sector has been a beneficiary of many national programmes under which education has also been expanded. This has meant improvements in the physical infrastructure for engineering and technology. Second, Finland has three universities specifically focussed on technology (located in the Helsinki region, and in the regional cities of Lappeenranta and Tampere). Their engineering academic staffing profiles include a large number of staff with a primary orientation towards research, and with only a minor involvement in teaching. Their capacity to influence the content of engineering academic work is considerable.

How satisfied do engineering academics need to be? The answer to that question is that they need to be sufficiently content to ensure that they are willing to continue in work to educate a professional and knowledgeable engineering and technology workforce. Technology is the key to Finland's continuing success.

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