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OUTCOMES OF THE PERFORMANCE-BASED FUNDING OF THE UNIVERSITIES OF APPLIED SCIENCES IN FINLAND

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Abstract

The Ministry of Education and Culture administers 23 universities of applied sciences (UASs) in Finland. Since 1994, the ministry has developed performance-based funding and steering methods to achieve its aims to enhance quality and performance of the UASs. In this paper, the outcomes of the performance-based policies are discussed. The analysis are based on annually collected performance indicators for all Finnish UASs. The results of the study indicate that performance-based funding has considerably increased efficiency of the UASs. For example, students pass today more courses during an academic year and are more likely to graduate in four years than a decade ago. Although the results are encouraging, the current performance-based funding has also received some criticism. The current model concentrates heavily on quantity and efficiency metrics. This has raised some concerns over quality of education. The findings of the study suggest that increased efficiency has had neither negative nor positive effect on quality measured by student satisfaction and employment. However, further studies and more data over a longer period are still needed before final conclusions can be made.

Keywords

University Funding, Performance Evaluation, Efficiency, Higher Education, Public Funding

1. Introduction

The Finnish higher education system consists of universities and universities of applied sciences. Universities of applied sciences are regional higher education institutions with tight connections to both working life and regional development. According to the legislation, the task of the universities of applied sciences is as follows:

"Universities of applied sciences shall provide higher education for professional expert jobs based on the requirements of working life and its development; support the professional growth of individuals and carry out applied research and development, that serves universities of applied sciences education, supports the world of work and regional development, and takes the industrial structure of the region into account. In executing these tasks, universities of applied sciences shall promote lifelong learning." (UAS Law, 2014).

The difference between universities and universities of applied sciences can be described as follows. Universities focus on scientific research and education based on it. Universities of applied sciences, instead, offer a bit more practical education responding to working life needs. In addition, the focus of research, development and innovation at universities of applied sciences is not on basic but on applied research and development (Finnish Ministry of Education, 2018).

There are all in all 25 universities of applied sciences in Finland and all of them operate as public limited companies. Totally, 23 of them operates under the mandate of the Ministry of Education and Culture (later the ministry), and two operates under the mandate of the Ministry of the Interior. (Finnish Ministry of Education, 2018). This paper concentrates only to the 23 UASs in the Ministry of Education and Culture's administrative branch. In 2017 they had together 127 700 undergraduate and 12 100 graduate students and the number of achieved bachelor’s and master degrees were 23 100 and 2 700 respectively. (Vipunen, 2018).

The ministry has a long tradition to develop performance-based methods to achieve its aims to enhance quality and performance of the UASs. The aim of the paper is to find out how the performance-based funding of the UASs has affected to both efficiency and quality of education. The structure of the study is as follows. Section 2 describes how the funding model for the UASs has developed from the establishment of the UASs in 1991 onwards. The focus

here is on introduction and development of performance-based metrics and methods to steer the UASs. Section 3 presents the values and trends of the indicators used in the study. Section 4 discusses the findings of the study and the final conclusions are provided in Section 5.

2. Steering and funding of Finnish universities of applied sciences

Although the Finnish universities of applied sciences are publicly owned, they have autonomy and freedom of education and research. They are independent legal entities and make independent decisions on matters related to their internal administration. However, the government has two major control methods for them. First, an operating license granted by the government is required to establish and manage a university of applied sciences. Second, the state provides the core funding for the universities of applied sciences. So, there are no tuition fees for Finnish or EU students. Although UASs have additional sources of money, the core funding is essential to operations of the UASs as it represents 75 – 90 per cent of the total revenue of the UASs. (Koivisto, 2017).

In connection with annual budget formulation, Finland's parliament decides on the amount of core funding to the universities and universities of applied sciences. The ministry then further allocates the core funding for each UAS according to a financing model. The ministry has developed and modified the financing model over the years in order to develop the higher education and science system and to promote the government's higher education and science policy targets. This section shortly describes the development of the funding model over the years.

2.1 Original core funding model for UASs

The first universities of applied sciences were established in 1991 when a trial for a new kind of education started. Five years later the government gave a permanent status for the first nine UASs (Yhansokan, 2018). The original funding of the UASs was very straightforward. The only metric used was the number of students and the money was distributed to every UAS based on average efficiency. In this model, the unit price or money for each student was calculated as follows: First, the total costs from all UASs were collected. Second, this sum was dividend by the number of degree students in all UASs in order to get the unit price. The funding of each UAS was then the multiplication of the unit price and number of degree students in the UAS.

The ministry had a power to limit the number of students in each discipline during the negation process between the ministry and the UAS. (Funding law, 1998)

Obviously, the original model did not pay enough attention to efficiency and graduation of the students. Therefore, the ministry modified the model in 2005 and a new metric – number of degrees – was added to the model. The number of attending students was still the most important metric with a weight of 70 per cent and the remaining 30 per cent of the funding was based on the annual number of degrees done in the UAS. (Funding law, 2005). The ministry used this revised model for a decade before a major reform in funding took place in 2014.

2.2 The early forms of performance based funding

Already in 1994, the ministry started to evaluate performance of the UASs and to provide small rewards for efficiency and effectiveness for the best performing UASs. During the first years, the criteria varied a year after year (Räty et al., 2008). In 1997, the ministry started a more systematic approach to develop the performance based funding and it created the first of many working groups with an aim to develop more sophisticated methods to reward UASs for efficient and effective operations. In their memo, the working group divided the efficiency and effectiveness metrics into two categories: general and centers of excellence metrics. The ministry was responsible for developing and evaluating the general metrics and Finnish Education Evaluation Centre created the methods to select the centers of excellence (Finnish Ministry of Education, 1998).

A year later, a second working group started its work and suggested the following efficiency and effectiveness groups and metrics for UASs. These metrics were used during a four-year period from 1999 to 2003 (Räty et al., 2008):

- Operational and economic efficiency – measured with group size, drop-out rate, and time to graduate
- Effectiveness – measured with employment and number of applicants.
- International operations – measured with student, staff and faculty exchange
- Gender equality – measured with both students and faculty gender distribution
- Ability to adapt to changes – the working group did not suggest any metrics to this dimension.

The next step is the performance based metric development started in 2002 when the ministry started a new project to renew the performance metrics. The outcome of the project

introduced the following categories and metrics to evaluate the performance of the UAS (Finnish Ministry of Education, 2003):

- Development of teaching and teaching methods - measured with student feedback, faculty education and development, student exchange and studies abroad, education provide with a foreign language and amount of online learning
- Number of applicants and flow of studies – measured with number of applicants, dropout rate, share of students gaining at least 45 ECTS, gender distribution, graduates in four years.
- R&D and connection to the working life– measured with number of thesis done for a company, revenue from service operations, share of R&D costs, number of R&D personnel.
- Regional effectiveness –Open University studies, employment area of the graduated students, employment and unemployment.
- Ability to adapt to changes – the working group did not suggest any metrics to this dimension.

Three years later, the next modifications to the model took place and the new working group suggested the following additional metrics: number of entrepreneurs, productivity, number of degrees done by international students, number of publications, and studies done in R&D projects. (Finnish Ministry of Education, 2005). The modified metrics were used during a three-year period from 2007 to 2009. Even after that the ministry, made a minor modifications to the performance evaluation criteria but the principles remained the same until a major reform was done in 2014.

2.3 Development of current fully performance based funding model

During the first two decades, the ministry clearly put a lot of effort in developing performance evaluation methods and metrics for the UASs. During that time, the performance metrics, however, had only a minor financial role. For example, the performance based funding was only 2 M€ in 2012 compared to 941 M€ of core funding (Finnish Ministry of Education, 2015). The situation changed dramatically in 2013 when the ministry started the UAS reform.

The reform created both a new law and a funding model for the UASs. According to new rules, the ministry provides core funding for the UASs based on quality, effectiveness and scope of operations as well as other education and R&D policy objectives. The new funding model had

the following three metric groups: Education, Research and Development (R&D) and Strategic funding (UAS law, 2014). Table 1 shows the metric groups and their indicators with relative weights. The model supports the national university education and science policy objectives and the profile of the UASs in the Finnish university education system. At the same time, it also aims to encourage the universities of applied sciences to strategic development.

Table 1: *Metrics of the new funding models (Finnish Ministry of Education, 2015).*

Metric group and its indicators	Model of 2014	Model of 2017
Education		
Number of Bachelor's degrees	46 %	40 %
Number of students with 55 ECTS/year	24 %	23 %
Number of employed graduates	3 %	4 %
Number of credits in open university	4 %	5 %
Student feedback	3 %	3 %
Number of vocational teacher's degrees	2 %	2 %
Student international mobility	3 %	2 %
R&D		
External R&D funding	8 %	8 %
Number of Master's degrees	4 %	4 %
Number of publications	2 %	2 %
Faculty and staff international mobility	1 %	1 %
Other	*	
Strategic funding		5 %
Area specific funding		1 %

** In the 2014 model the strategic funding was implemented with special project funding*

The change in funding was huge, and it could have reduced the funding of some UASs up to 20 per cent. Therefore, the ministry included a+/- 3 per cent limit to the annual funding change for transition time (Finnish Ministry of Education, 2015). This gave UASs the possibility to adapt their operations to the new working environment.

The development of the model did not end here but in September 2014, the ministry appointed a working group to analyze the outcomes of the reform and to make recommendations for modifications. The working group finished its work a year later and the ministry accepted its recommendations to the model. The most important modifications were in relative weigh of Bachelor's degrees and assigning a fixed share for strategic funding as can also be seen in Table 1 above (the third column). These modifications took an effect for allocating basic funding to the UASs from 2017 onwards. (Finnish Ministry of Education, 2015).

The current funding model distributes the money to each UAS as follows. The total sum of core funding for the Finnish UASs comes from the national budget accepted by the Finnish parliament. For example, in 2017 it was 779 917 000 Euros (Finnish national budget, 2016). This sum is allocated for each metric of the model separately. For example, all UASs together will receive 311 966 800 Euros (or 40 per cent of the total sum) based on the number of Bachelor's degrees. The share of each UAS depends on its relative performance in each metric during an earlier three-year period (in year 2017 these years are 2013 – 2015). For example, if all UASs are able to provide 100 000 Bachelor's degrees during the three years and one of them has done 10 000 degrees, the UAS will receive its relative share (31 196 680 Euros or 10 per cent) based on this metric. Same logic is used for other metrics, except strategic and area specific funding.

3. Data collection and results

As stated in the previous section, the ministry has developed performance-based funding and steering methods to achieve its aims to enhance quality and performance of the UASs. In this section, the outcomes of the policies are analyzed based on annually collected performance indicators for all Finnish UASs. The latest performance data of the Finnish UASs is publicly available on a web site www.vipunen.fi. Vipunen is the education administration's reporting portal jointly managed by the ministry and the Finnish National Board of Education (Vipunen, 2018). However, the continuous development of the metrics described earlier means that both collected data and methods have changed over the years. Therefore, we do not have continuous data sets in Vipunen for all metrics. In order to get data for a longer period of time, other data sources including an earlier student satisfaction survey – called OPALA - is used here.

3.1 Quantitative performance metrics

In this paper, the following two quantitative metrics are used to evaluate performance of the UASs. They are students graduating on time and students gaining at least 55 ECTS during an academic year. Both of these indicators are a part of the current funding model and they together represents 63 per cent of the core funding. Therefore, they have a great importance for the UASs.

In Finnish UASs the estimated study time for full time students varies from 3,5 to 4,5 years depending on the degree (for example, 3,5 years or 210 ECTS in business, 4 years or 240 ECTS in engineering and 4,5 years or 270 ECTS in maritime administration). Unfortunately, there is no data available, which takes in to account these different lengths of studies. Therefore,

a simplified ratio is used here. The graduation ratio used in the study is calculated by dividing the number of degrees of one year by the number of new undergraduate students four years earlier.

Another quantitative method to evaluate efficiency of the UAS is number of courses or credit points student are able to do during an academic year. This data is available from the year 2005 onwards because before that UASs collected the same data but the limit was only 45 ECTS. Figure 1 shows development of both efficiency metrics.

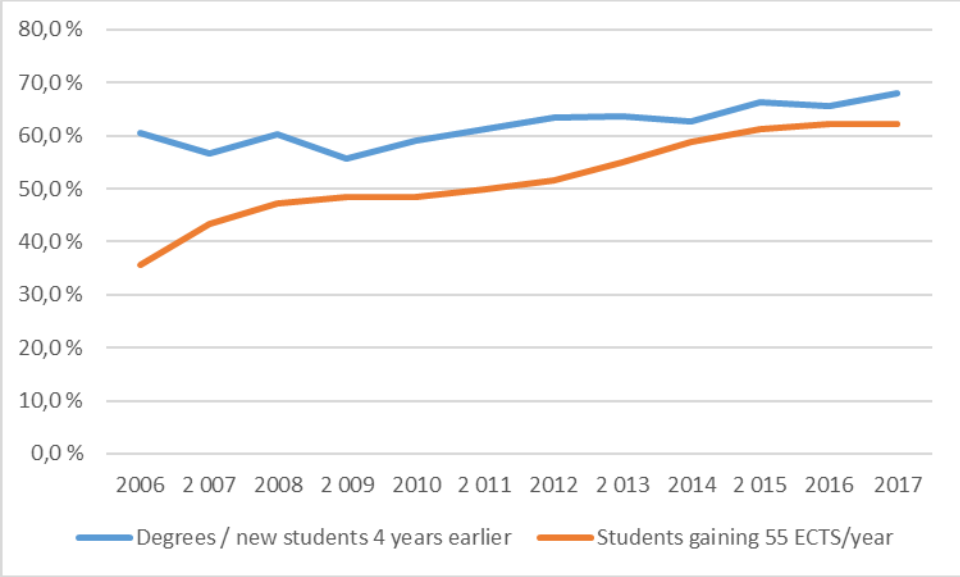

Figure 1: *Annual statistics on student graduation and gaining credit points (Vipunen, 2018)*

3.2 Quality evaluation

The performance based funding model has receives some criticisms for concentrating too much on quantity and too little on quality of education (e.g. Karhunen 2007; Toukoniitty 2015). As we all know, measuring quality is often difficult and reliable quality metrics are hard to create. In this paper, two quality metrics are used and they are the outcomes of student satisfaction surveys and the employment statistics.

The current funding model measures student satisfaction with a national survey – AVOP - at the graduation time. The UASs use the findings of the survey to improve their institutional processes and practices. In addition, the ministry use them nationally for performance-based monitoring and funding. All graduating degree students from universities of applied sciences are requested to fill out the questionnaire just before the graduation (AVOP, 2018). Unfortunately, this survey was in its current form carried out first time in 2015, so there is no earlier AVOP data available. However, before the introduction of AVOP the ministry used another satisfaction

survey called OPALA. Although both of them measured the student satisfaction at the graduation, it is highly important to understand that they had many differences between them. The differences were not limited only to the questions used but also in the scales. The Likert scales used in OPALA and AVOP are 1 – 5 and 1 - 7 respectively. Although there are obvious risks to use results of two separate surveys, the normalized student satisfaction ratings are reported in Figure 2 below.

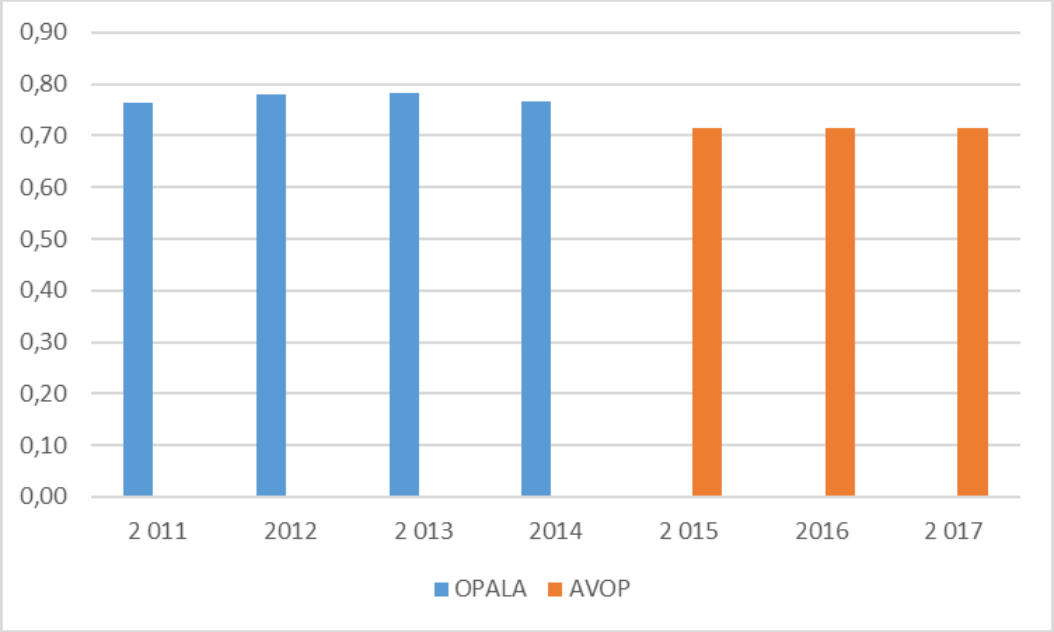

Figure 2: *Student satisfaction survey results (OPALA, 2015; Vipunen, 2018)*

Another view to the quality of educations can be obtained from the labor markets. If we accept a general assumption that high quality education opens more employment opportunities than a poor one, the employment rates could offer us some weak signals on quality of education. Table 2 shows the unemployment rates of the UAS graduates a year after the graduation in 2011 – 2016 as well as the general unemployment in Finland and inflation rate.

Table 2: *Share of unemployed graduates after a year from graduation (Vipunen, 2018)*

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Unemployed graduates	7,1%	5,4%	5,3%	6,1%	7,5%	8,8%	9,6%
General unemployment	8,3%	7,8%	7,9%	8,1%	8,3%	9,4%	8,7%
Inflation	1,2%	3,4%	2,8%	1,5%	1,0%	-0,2%	0,4%

4. Discussion

According to the quantitative data, students pass today more courses during an academic year than ten years ago. The change has been quite notable. In year 2006, only 35,7 % of the students gained 55 ECTS or more during an academic year. The same ratio has been over 60 % during the last three years. Similarly, the ratio between bachelor's degree in a certain year and a number of students starting their studies four years earlier has increased almost 10 percentage points during the same period.

The qualitative data used in this study is far more limited than the quantitative one. Thus, we must be very carefully before making any bold statements. The results of the study show that there is no remarkable change in student satisfaction or in graduate unemployment rates during the last seven years. Both of these findings can be considered as weak signals indicating that there is neither clear positive nor negative change on quality of education in Finnish UASs during the that time. However, it is worth mentioning that there has been fluctuation in graduate unemployment rate and it peaked and passed the general unemployment rate first time in 2016. With limited data it is far too early to say if that was unique event or beginning of a new trend. However, this area must be carefully followed in the future.

5. Conclusions

The universities of applied sciences became a part of Finnish higher education system in 1991. Only three years later the Ministry of Education started to develop performance-based control methods to enhance efficiency and quality of the UASs. The findings of the paper indicate that the ministry has succeeded in its attempts to increase efficiency. The share of students earning at least 55 ECTS credit points in an academic year has gone up some 15 – 20 points during the last decade. Similarly, more students are graduating in four years today than a decade ago. On the other hand, the findings of the study are not showing similar development in quality of education. The results of the national student satisfaction surveys or employment statistics are indicating neither positive nor negative quality changes.

There are also limitations to this study. First, it cannot be ignored that the quality data was available only for much shorter period than the quantitative data. Second, the study was

limited only to one country. Therefore, the results cannot be generalized to other countries. Both of these limitations clearly points out the areas of future research. We must develop better quality metrics to evaluate the quality of higher education and collect data with same method for a longer period. Similarly, international study would provide us more reliable results and offer us possibilities to benchmark the countries and systems against each other.

Although further studies are still needed, the results of the study clearly indicate that the Finnish UASs have substantially improved their efficiency. However, the ministry's aims to develop the higher education and science system and to promote the government's higher education and science policy require not only efficiency but also quality improvements. Therefore, the findings of the study suggest that in the future both the ministry and the UASs should shift some of their focus from efficiency development to quality of education.

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