

# Determination of Tuition Expenses According to Thematic Fields and Indices Applicable to them at Higher Education Institutions in Latvia

Jana ERINA

Faculty of Engineering Economics and Management, Riga Technical University  
6 Kanciema Str., Riga, LV-1048, Latvia

and

Ingars ERINS

Faculty of Computer Science and Information Technology, Institute of Applied Computer Systems, Riga Technical University  
1/4 Meža Str., Riga, LV-1048, Riga

## ABSTRACT

The present article aims to identify and update thematic field indices at higher education institutions in Latvia in 2014.

To achieve research results, the authors have initially performed the content analysis of higher education financing in other European countries, as well as analysed the existing higher education financing model in Latvia and the regulatory legislation.

The study has been performed in several stages: 1) considering the expense items per student; 2) developing questionnaires for higher education institutions on the basis of expense items; 3) processing the survey data with statistical data processing methods, 4) on the basis of the survey results, thematic field indices have been defined by means of direct calculation.

Having determined thematic fields and indices applicable to them by means of direct calculation, it has been concluded that: 1) it is possible to determine expenses of each study programme of a higher education institution and each thematic field; 2) higher education institutions have full autonomy; 3) to ensure a high-quality study process it is necessary to systematically upgrade and purchase equipment; 4) determining the thematic field indices by study programmes, the aspects of regional factors should also be taken into account; 5) the number of students differs at various study programmes.

**Keywords:** Higher Education, Latvia, Tuition Expenses, Thematic Fields, Indices.

## 1. INTRODUCTION

In the recent years, higher education has been ascribed an increasingly greater role not only in meeting a broader public interest and promoting economic prosperity, but also in benefitting each individual on the way to improving one's own material and spiritual world. This is

evidenced by research conducted by Johnstone, 2005, and Yang & McCall, 2014, as well as by other authors [1; 2].

The issue of education is also important to those willing to study at higher education institutions in Latvia, and it is demonstrated by a sharp increase in the number of foreign students. However, in this context there is also quite a lot of discussion on the future financing of higher education institutions from the state budget, as well as on the necessity to introduce radical reforms in this area not only in Latvia, but also all over the world [3].

Consequently, taking into account that expense items per student, calculation methodology as well as the determination of tuition expense index value in thematic fields in Latvia specified in the Regulations of the Cabinet of Ministers No. 994 as of 12 December 2006 "Procedures for the Financing of Institutions of Higher Education and Colleges from the Funds of the State Budget" were drawn up in 1996 and did not change significantly and became obsolete, it is necessary to update expense indices for higher education institutions [4]. Based on the above-mentioned information, the authors see the need to make radical amendments to Regulations of the Cabinet of Ministers No. 994, taking into account the current situation and the trends in financing of higher education institutions in Latvia and following the best practices of the countries in and outside Europe.

The present article aims to identify and update thematic field indices at higher education institutions in Latvia in 2014.

To achieve the goal the authors were used quantitative and qualitative methods, including statistical data abbreviation.

## 2. LITERATURE REVIEW

Higher education financing systems are very complex. Therefore, financial systems as an integral part of the

economic system are essentially empirical, a product of the human mind: a set of rules, schemes, arrangement of sequential operations.

Based on the financial systems, higher education financing is characterized not only by autonomy of higher education institutions in relation to the allocation and use of financial resources, it is also considered one of the most important mechanisms based on various funding sources [3]. For example, in the UK, Germany and the Netherlands, the national higher education financing system consists of direct and indirect public funding, as well as financial support for students, crediting system, tuition fees, other funding sources, government funding for R&D and other funding for R&D and funding for capital investments [5-8]. Consequently, on the basis of best practices of other countries, Latvia implements a financing model similar to the one used in the European countries described above; however, financing allocated per student is much smaller.

#### *Current Higher Education Financing in Latvia*

At present, Latvian higher education institutions and colleges are financed on the basis of Regulations of the Cabinet of Ministers No. 994 as of 12 December 2006 "Procedures for the Financing of Institutions of Higher Education and Colleges from the Funds of the State Budget" [4]. However, these are not the only regulations governing the financing of Latvian higher education institutions from the state budget; apart from them, there are a number of other rules and laws, such as:

- 1) The Law on Institutions of Higher Education as of 2 November 1995 [9];
- 2) The Law on Education as of 29 October 1998 [10];
- 3) The Law on State Social Allowance as of 1 October 1997 [11];
- 4) The Law on Value Added Tax as of 29 November 2012 [12];
- 5) Regulations of the Cabinet of Ministers No. 836 "Regulations of Educator's Salary" as of 28 July 2009 (Minutes No. 50, §64) [13];
- 6) Regulations of the Cabinet of Ministers No. 969 "Procedures for Reimbursement of Expenses Relating to Official Travels" as of 12 October 2010 (Minutes No. 52, §25) [14].

Monthly salary of academic staff is determined on the basis of Regulations of the Cabinet of Ministers No. 836 "Regulations of Educator's Salary" (as of 28 July 2009, Minutes No. 50, 64 §) and Annex 1 to the Regulations of the Cabinet of Ministers No. 836 on "The Lowest Monthly Salary Rates of Educators, Heads of Higher Education Institutions, Their Deputies and Heads of Structural Units" (Regulations of the Cabinet of Ministers No. 704) [13; 15].

Moreover, in accordance with the amendments to the Law on Institutions of Higher Education (as of 2 November 1995) concerning the proportion of persons holding a Doctoral degree elected to academic positions, in order to determine the base expenses per student taking into account academic staff remuneration, it is recommended to use different proportions of academic positions from the specified proportions of academic positions of the above-mentioned Regulations of the Cabinet of Ministers No. 994 "Procedures for the Financing of Institutions of Higher Education and Colleges from the Funds of the State Budget" (12 December 2006 (Minutes No. 66, 24§)) [9;4].

On the basis of Annex 1 to Regulations of the Cabinet of Ministers No. 994 "Procedures for the Financing of Institutions of Higher Education and Colleges from the Funds of the State Budget" as of 12 December 2006 [4], in order to allocate the state budget funds, it is necessary to take into account the following 30 thematic fields and their indices: law, humanities, information and communication sciences, business and administration, teacher education and educational sciences, personal services, transport services, computer science, mathematics and statistics, civil engineering, ship management, engineering sciences, agriculture, forestry and fishing, manufacturing and processing, sports organization and management, life sciences, environmental protection, architecture, arts, teacher education programmes for obtaining a qualification of visual arts or music teacher, pharmacy, health and social care, veterinary medicine, medical treatment, civil defence, music, choreography, arts programmes "Audiovisual Media Arts" and "Design", dentistry, military security.

### **3. METHODOLOGY**

In order to determine and update the tuition expense indices for thirty thematic fields of Latvian higher education institutions, within the research methodology the study has been performed in several stages:

- 1) The authors have examined in detail base items and expenses per student (1st level professional (college) study programmes; academic and professional Bachelor study programmes; higher education study programmes, including academic and professional Master study programmes, professional study programmes for applicants holding an academic/ professional Bachelor degree; Doctoral study programmes);
- 2) Based on the authors' previous studies and industry expert method, the authors have developed a questionnaire for higher education institutions. The questionnaires have been sent to a total of twenty-one state higher education institutions and colleges, eighteen of which participated in the survey and the results have been found valid;

3) The survey results have been processed using statistical methods of data processing, thus determining expenses of each thematic field for different study programmes and levels based on the data files submitted by higher education institutions (experts of higher education institutions) for variable expenses and by independent industry experts – for fixed expenses;

4) Based on the requirements for the calculation of expenses per student, the indices of the thematic fields have been determined by means of direct calculation.

Based on the authors' previous studies on the financing of higher education institutions in Latvia, the questionnaire included the following variables: N1 – salary per student a year, N2 – the employer's national social security contributions, N3 – expenses related to business trips/official travels per student a year, N4 – service fees, N5 – materials, energy resources, water and equipment, N6 – the purchase of books and magazines, N7 – the purchase of equipment and upgrading expenses.

Thus, on the basis of the above-mentioned and developed regulations, in 2014 the expenses per student were determined as follows:  $N1 + N2 + N3 + N4 + N5 + N6 + N7$ .

#### 4. RESEARCH RESULTS

*The calculation of variables per student:*

1. N1 – salary per student a year:

The academic staff salary was determined on the basis of Regulations of the Cabinet of Ministers No. 836 "Regulations of Educator's Salary" as of 28 July 2009 [13] as well as taking into account the proportion of academic positions by various study levels according to the expert assessment:

1) College study level (position proportions – expert assessment): Professors – 3%, Associate Professors – 5%, Assistant Professors – 30%, Lecturers – 37%, Assistants – 25%.

2) Bachelor study level (position proportions – expert assessment): Professors – 20%, Associate Professors – 20%, Assistant Professors – 35%, Lecturers – 15%, Assistants – 10%.

3) Master study level (position proportions – expert assessment): Professors – 40%, Associate Professors – 30%, Assistant Professors – 30%, Lecturers – 0%, Assistants – 0%.

4) Doctoral study level (position proportions – expert assessment): Professors – 90%, Associate Professors – 10%, Assistant Professors – 0%, Lecturers – 0%, Assistants – 0%.

Thus, on the basis of above-mentioned position proportions and Regulations of the Cabinet of Ministers No. 836 as of 28 July 2009 [13], average annual salary

of academic staff was established (salary established in the Regulations multiplied by position proportions).

According to the expert assessment, the average number of students per member of academic staff is 19 (for college, Bachelor and Master study programmes), but for Doctoral study programmes – 10 students. Thus, annual salary of academic staff per student was determined by the average annual salary of academic staff divided by the number of students according to the study level.

In turn, the average monthly salary of non-academic personnel in comparison to the salary of academic staff is two times smaller (expert evaluation), observing the principle – the number of members of non-academic personnel per member of academic staff is 1.5 (expert evaluation).

2.N2 – the employer's national social security contributions:

According to the Law on State Social Allowances, the rate of mandatory national social security contributions in 2014 was 23.59% [11]; thus, the mandatory national social security contributions is determined by the calculations of N1 – salary per student a year.

3. N3 – expenses related to business trips/official travels per student a year:

Expenses related to business trips/official travels were determined by the mean values of expert conclusions (higher education institutions). The following indicators were included in the expenses: daily allowance; the average length of the trip, days; accommodation costs for one trip, average per day; traveling expenses for one trip; registration fee for one trip abroad or in Latvia. As a result, the annual business trip related expenses per student according to the level of studies were determined.

4. N4 – service fees:

Annual telephone service expenses per student:

1) Fixed monthly charge for one phone, including local calls and short messages, was determined on the basis of expert conclusions (higher education institutions).

2) Number of students per phone – expert assessment – 50 students.

3) The average price for one minute long international call (calls from Latvia, calls from a foreign country to Latvia and abroad, receiving calls abroad) – expert assessment (higher education institutions).

4) Annual use of phone, in days, min – expert assessment – 240.

5) Length of conversations per day, in minutes – expert assessment – 20.

Total communications service expenses:

1) Average annual post service expenses per student – expert conclusions (higher education institutions).

2) Average annual Internet service expenses per student – expert conclusions (higher education institutions).

Annual real estate tax per student:

1) Mean value (standard rate for 1m<sup>2</sup> of land housing university buildings) of real estate tax for 1m<sup>2</sup> per student – expert conclusions (higher education institutions).

2) Per student (m<sup>2</sup>) – expert assessment – 6.

3) Average number of building floors – expert assessment – 4.

Annual renovation expenses per student:

1) Routine repairs of 1 m<sup>2</sup> – expert assessment – 20.00 EUR.

2) Capital repairs of 1 m<sup>2</sup> – expert assessment – 2.00 EUR.

3) Emergency repairs of 1 m<sup>2</sup> – expert assessment – 1.00 EUR.

Annual maintenance expenses per student:

1) Average monthly maintenance expenses for 1 m<sup>2</sup> of premises, including equipment located in it, per student – expert conclusions (higher education institutions).

Average annual E-learning environment provision and maintenance expenses per student:

1) Average annual E-learning environment provision and maintenance expenses per student – expert conclusions (higher education institutions).

Annual administrative expenses per student:

1) Annual administrative expenses (% from the total amount) – expert assessment – 8%.

Other services:

1) Other services (% from the total amount) – expert assessment – 8%.

5. N5 – materials, energy resources, water and equipment:

Consumed electrical power:

1) Price of 1 kWh electrical power – according to the current rates of JSC Latvenergo.

2) kWh needed for lighting of 1 m<sup>2</sup> – expert assessment – 0.01.

3) Annually premises must be lighted 6 hours per day, 20 days per month, 6 months per year, h – expert assessment – 720.

4) kWh needed for 1 hour running of one computer – expert assessment – 0.1.

5) Annually needed hours for running one computer: 4 hours per day, 20 days per month, 12 months per year, h – expert assessment – 960.

Heating (7 months):

1) Monthly heating tariff per student annually, on average for 1m<sup>2</sup> – expert conclusions (higher education institutions).

Annual water supply expenses per student:

1) Average annual water consumption per student – expert conclusions (higher education institutions).

2) Price of 1 m<sup>3</sup> of water – according to the current rates of Rīgas Ūdens (Riga Water).

Annual sewerage expenses per student:

1) Average annual sewerage usage per student – expert conclusions (higher education institutions).

2) Price of 1 m<sup>3</sup> of sewerage – according to the current rates of Rīgas Ūdens (Riga Water).

Annual teaching aids and inventory expenses per student:

1) Average annual purchase costs of teaching aids and materials per student – expert conclusions (higher education institutions).

2) Average annual inventory (furniture) purchase costs per student – expert conclusions (higher education institutions).

3) Average annual office supply purchase costs per student – expert conclusions (higher education institutions).

6. N6 – the purchase of books and magazines:

Annual book purchase costs per student:

1) Number of books needed for one student per year – expert conclusions (higher education institutions).

2) Average price of one study book – expert conclusions (higher education institutions).

3) Average lifespan of books (time of active use of information and data), years – expert conclusions (higher education institutions).

Annual magazine purchase costs per student:

1) Number of magazines needed for one student per year – expert conclusions (higher education institutions).

2) Average price of one magazine – expert conclusions (higher education institutions).

3) Average lifespan of a magazine (time of active use of information and data), years – expert conclusions (higher education institutions).

Average annual data base subscription expenses per student – expert conclusions (higher education institutions).

7. N7 – the purchase of equipment and upgrading expenses

Equipment upgrading expenses:

1) The purchase of equipment for one student per year – expert conclusions (higher education institutions).

2) Equipment upgrading expenses (% from the total amount of equipment purchase expenses) – expert assessment – 10%.

On the basis of expenses per student by study programmes and study levels acquired through direct calculations, as a result:

1) The total joint index of each study programme by study level was determined (college, bachelor, master, doctor):

$$tji = T_b^{\text{field}}_{2014} / T_{b2014}, \quad (1)$$

where

tji – joint index of the study level;

$T_b^{\text{field}}_{2014}$  – expenses per student in 2014 based on the study level;

$T_{b2014}$  – base funding per student in the prices of 2014 (by taking the cheapest study programme expenses as the basis in the prices of 2013).

2) Study level indices have been illustrated according to the Regulations of the Cabinet of Ministers [13] and the research previously conducted by the authors: college studies – 0.9; Bachelor studies – 1.0; Master studies – 1.5%, Doctoral studies – 3.0:

$$sli = T_{bkk2014} / T_{blk2014}, \quad (2)$$

where

sli – study level index;

$T_{bkk2014}$  – joint index of the study level in 2014 calculation;

$T_{blk2014}$  – study level indices according to the Regulations of the Cabinet of Ministers and previous researches.

3) On the basis of joint index and study level indices, the levelling of indices was conducted and average study thematic field index was determinate.

Thus, on the basis of the methodology elaborated by the authors and the results of the surveys about calculations of expenses per student for the thematic fields of studies by study levels, having determined thematic field indices, the following results were acquired (see Table 1).

Table 1

Expenses per student (EPS) for thematic fields and their indices

Field and Index	Expenses per student, EUR			
	College	Bachelor	Master	Doctor
Law (1.013)		1,860.28	2,714.67	5,419.84
Humanities (1.024)	N/A	1,898.43	2,712.69	5,426.34
Social and Behavioural Sciences (1.014)	N/A	1,860.76	2,721.14	5,426.21
Information and Communication Technologies (1.097)	N/A	2,105.61	2,713.41	5,595.27
Business and Administration (1.049)	1,734.73	2,015.36	2,723.51	5,501.97
Teacher Education and Educational Science (1.500)	2,435.59	2,713.50	4,082.03	8,158.67
Personal Services (1.501)	2,451.92	2,710.85	4,076.90	8,147.31
Transportation Services (1.502)	2,445.70	2,719.82	N/A	N/A
Computer Science (1.903)	3,103.31	3,448.03	5,168.32	10,317.88
Mathematics and Statistics (1.903)	3,100.70	3,441.57	5,164.33	10,336.47
Civil Engineering (2.497)	4,063.98	4,518.31	6,778.40	13,579.79
Ship Management (2.503)	4,077.55	N/A	N/A	N/A
Engineering Sciences (2.899)	4,720.68	5,247.73	7,863.78	15,746.47
Agriculture, Forestry and Fishing (1.897)	N/A	3,432.08	5,155.59	10,299.62
Manufacturing and Processing (1.898)	3,097.18	3,433.93	5,150.07	10,304.67
Sports Organization and Management (1.905)	N/A	3,447.87	N/A	N/A
Life Sciences (2.900)	N/A	5,241.36	7,879.24	15,751.94
Environmental Protection (2.899)	N/A	5,239.89	7,858.45	15,758.97
Architecture (3.607)	N/A	6,526.60	9,792.50	19,585.98
Art (3.597)	5,858.13	6,504.45	9,773.23	19,539.36
Study Programmes for Teachers of Visual Arts or Music (3.594)	N/A	6,507.91	9,750.15	N/A
Pharmacy (3.596)	N/A	6,515.23	9,758.32	19,508.09
Health and Social Care (3.597)	5,862.36	6,501.95	9,778.24	19,520.80
Veterinary Medicine (5.065)	N/A	N/A	13,791.28	27,418.49
Medicine (4.494)	7,317.55	8,135.64	12,195.77	24,417.19
Civil Defence (4.496)	7,318.40	8,144.25	12,193.17	N/A
Arts Programmes “Audiovisual and Media Arts” and “Design” (4.491)	N/A	8,119.42	12,211.42	24,370.13
Dentistry (5.032)	8,274.96	9,054.38	13,565.02	27,404.26
Music, Choreography (4.494)	N/A	8,139.66	12,190.50	24,401.03

N/A – not available

## 5. CONCLUSIONS

Based on the thematic field actualization through direct calculations conducted by the authors and determination of thematic field indices, it has been concluded that through direct calculations it is possible to determine study programme and thematic field expenses for each higher education institution, however, mean values of higher education institutions do not completely correspond to the common tendencies of each thematic field of studies.

Likewise, based on the fact that there is a complete autonomy in higher education institutions, each higher education institution independently plans expenses related to the study processes; as a result, each higher education institution has different expenses for the same expense items.

In order to ensure high-quality study process, as well as the possibility to master a particular study programme, a systematic upgrade and purchase of equipment is needed depending on the field and offered study programme, that is the reason why such dramatic differences between study thematic fields exist. In this regard, technological equipment needed to ensure high-quality study programmes as well as their exploitation expenses should be taken into account.

Determining thematic field indices by study programmes, the aspects of regional factors should also be taken into account, which is also confirmed by the survey of higher education institutions. For example, the same expense items are lower in some regions than at higher education institutions in other regions and Riga.

Different number of students in each study programme should also be taken into account. For example, for mastering certain study programmes apart from studies in groups, individual tutorials should also be organised.

## 6. REFERENCES

[1] D. B. Johnstone, "Higher educational accessibility and financial viability: The role of student loans". **In World Report on Higher Education: The Financing of Universities II International Barcelona Conference on Higher Education**, Global University Network for Innovation (GUNI) Barcelona, Spain, May 2005, pp. 24-25.

[2] L. Yang, B. McCall, "World education finance policies and higher education access: A statistical analysis of World Development Indicators for 86 countries". **International Journal of Educational Development**, Vol. 35, 2014, pp.25-36.

[3] T. Estermann, E. B. Pruvot, "Financially Sustainable Universities II". **European universities diversifying income streams**. Brussels: EUA, 2014, Vol. 98.

[4] **Procedures for the Financing of Institutions of Higher Education and Colleges from the Funds of the State Budget**. Retrieved from <http://likumi.lv/doc.php?id=149900>.

[5] **Directgov**, the UK government's digital service: Student finance. Retrieved from <http://www.direct.gov.uk/en/EducationAndLearning/universityAndHigherEducation/StudentFinance/index.htm>.

[6] A. Schwarzenberger, **Public/ private funding of higher education: a social balance**, Hannover: HIS Hochschul – Informations – System GmbH, 2008.

[7] **Higher Education Funding Council for England: Publications**. Retrieved from [www.hefce.ac.uk](http://www.hefce.ac.uk)

[8] **OECD IMHE-HEFCE Project on International Comparative Higher Education Financial Management and Governance**. Financial Management and Governance in HEIS. Amsterdam: Organisation for Economic Co-operation and Development (OECD), 2003.

[9] **The Law on Institutions of Higher Education**. Retrieved from <http://likumi.lv/doc.php?id=37967>.

[10] **The Law on Education**. Retrieved from <http://likumi.lv/doc.php?id=50759>.

[11] **The Law on State Social Allowances**. Retrieved from <http://likumi.lv/doc.php?id=45466>

[12] **The Law on Value Added Tax**. Retrieved from <http://likumi.lv/doc.php?id=253451>.

[13] **Regulations of Educator's Salary**. Retrieved from <http://likumi.lv/doc.php?id=195578>.

[14] **Procedures for Reimbursement of Expenses Relating to Official Travels**. Retrieved from <http://likumi.lv/doc.php?id=220013>.

[15] **The Regulations on Human Resources and Employment**. Retrieved from <http://likumi.lv/doc.php?id=252264>