

# Logistics Education and Students' Expectations

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Nowadays logistics education has a stable position on the education services market. However, the question arises - how did it look before? What is more, customer requirements as well as competition cause that universities search for new solutions and they aim to meet herein requirements. Hereby paper presents a description of logistics education in Poland especially at academies and refers it to results of survey conducted among students.

**Keywords:** logistics education, academic syllabus, students expectations

## 1. INTRODUCTION

Dynamic growth of logistics<sup>1</sup> importance has been a visible trend in last years in Poland thus a profession of logistician is cherished and specialists are wanted. People well educated in logistics can find a good job in this domain. However education of good staff requires also a lot of experience.

The condition of logistics education has been improved considerably, because boosted interest in this course and other related is shown by candidates to universities. The term "logistics" became more important, famous and distinguishable. The start-up of new fields of studies, courses, creation of new education forms and instructing programs undoubtedly proves that the number of people professionally related to logistics increased too. Another evidence of growing interest in logistics is the fact that more and more academies want to introduce a logistics course to their educational offer. Adoption to new trends and market demand determinates structure of these solutions. Moreover customers'

requirements concerning education quality are new challenges for logistics education concepts. Fulfillment of these requirements forces universities to implement new solutions on education market. It became necessary to create new majors, specializations and innovative teaching methods, and care about education quality and research base. Universities have extended their educational offer for logisticians. The number of high schools and postsecondary schools educating logisticians has increased as well. Therefore process of modification of logistics education is conducted in a continuous manner in numerous institutions [4].

The main objective of hereby paper is to evaluate education of logisticians as it is supposed to provide them with opportunity to find a good job in the future. Expectations of students at Poznan University of Technology regarding education issues are introduced and analyzed.

## 2. LOGISTICS EDUCATION IN POLAND

Education is necessary for every manager in order to enable application of hi-tech solutions in domain of enterprise logistics management. However continuous education is not always possible because of lack of time and number of duties. Thus it is worth to invest in young people's

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<sup>1</sup> "Logistics is a method of supply chain management in enterprise and between enterprises understood as planning, implementation and control of product flow including information and finance flows [1]".

education and also educated logisticians can be employed in companies in the future providing their success.

More and more firms are looking for experts in logistics. Not only professional qualifications are valued, but experience too. Profession of logistician is popular, because enterprises are forced to apply principles of logistics in their everyday activities. In Poland in order to acquire logistics knowledge one can start from a basic professional title – logistics technician or forwarding agent. Next stage is education at university where one can obtain a title of Engineer, Bachelor's degree or Master of Science. At Polish colleges knowledge on logistics can be deepened by doctoral studies.

Economic growth and progress in logistics services sector has already existed in Poland for a few years. It has caused a rapid development of logistics education. Growing demand for logistics staff has caused that more and more universities have started up subjects and specializations related to this domain. However market required also specialists with secondary education therefore upper secondary schools have been developed. Education of logistics technician and forwarding agent technician has been already conducted in Poland for a few years. The quantity of logistics education centres has been increasing continuously. The reason is the fact that schools that started the education in 2007-2009 struggled with plenty of problems. In connection with lack of knowledge and experience in this domain a small number of teaching aids existed and many concerns were related to syllabus. Teaching system still requires some regulations and level of education must be developed. However an improvement process is a continuous one since only then measurable advantages can be achieved [4].

Presently an interest in professional education in the area of logistics in Poland is prominently extensive. Scientific evolution guarantees 576 secondary and postsecondary schools. There is significant growth relatively to year 2007, because then there were 120 schools, which offered education in profession of logistics' technician and forwarding agent's technician. However 474 schools offered education in profession of logistics' technician and 163 schools giving education of forwarding agent's technique at the

end of 2009. Total number of graduates from logistics subjects was 2129 that year. Most of schools are public. From year to year an importance of logistics is greater and a number of initiatives related to this area is growing too. Poznan University of Logistics has been holding Polish-wide Logistics Olympiad for three years encouraging broadening knowledge acquired at post-secondary schools. The quantity of universities participating in the Olympiad has increased to about 42 establishments since 2008, and number of participants has reached a bumper level of 3644 persons [4].

Logistics education at colleges is also evolving. In years 2008-2009 the number of universities providing courses for future logisticians ramped up from 61 to 104. Public outposts comprised 33, 6 percentage of all colleges. The number of posts that included logistics education in their offer has grown to about twenty since 2007 (25% of them are public schools). However, a surge of outposts is not always related to a high level of education quality. There were 7 majors concerning logistics education which existed during last years. Universities' offer comprised e.g. Transportation, Management, Management and Production Engineering, Economics, European Studies, International Relations and Finance and Accounting. Recently Logistics course has been introduced, and number of courses focusing within these fields of studies has grown from 8 (year 2007) to 65 (year 2009). Courses introduce only logistics recently, but number of majors has grown within the confines of these directions from 8 to 65. General quantity of majors also related to logistics subject has reached the level of 110 (year 2009/2010). Private schools had less competitive offer in year 2007 because they had 6 majors and it has not changed till now. With regards to number of majors it reached the number of 17 within foregoing period and increased up to 75 in 2009/2010 (including 17 majors with logistics subjects). Developing market of logistical education has caused also an evolution of post-graduate education and it made possible to complete and develop professional competences. The quantity of post-graduate studies related to logistics amounted 36 in 2005, and during the next 4 years increased up to 59. Whereas the number of universities conducting post-graduate studies was 49 in 2009 (involving 30 public schools.). Therefore creation of logistics education market is

required. Development of logistics refers also to skills and knowledge broadening through trainings and courses of various kinds. Such development is possible thanks to European Union funds. This solution provides greater opportunities for this type of education, thus since beginning of 2004 quantity of training agencies has increased from 10 to 116 (year 2008/2009) and number of programmes in proportion to 2004 year has boosted up to 130. Major development of logistical education contributed to uprising of many institutions and entities supporting this domain. It is possible to distinguish standardizing organizations, supporting platforms, business organizations and research and development units [4].

### 3. LOGISTICS EDUCATION AT UNIVERSITIES

The moment when logistics management subject has been introduced on Polish universities at the end of 1990s was critical for logistics as since that time it has become an obligatory major for all students from management and marketing course. Furthermore a dynamic evolution of education in next years in the range of logistics has caused that logistics has been distinguished as an independent field at higher education [5]. Legal regulations for organizational unit conducting this kind of studies have been in force since 1st of October 2007. They are, part of attachment to Resolution of Ministry of Science and Education on 12<sup>th</sup> of July with respect to education standards [6].

Programmes and standards of education offered at logistics courses that are actually binding have been maturing for years. Initially topic of lecture has been selected so that it was more apprehended and attractive for students comparing to other subjects concerning management and it referred to structural transformation and practices of enterprises. And this application of abstract theory of management into particular problems and examples from practice has become a biggest trump of logistics as subject of academic education. Teaching programmes have been also created under influence of labor market slightly opening on logisticians. In many cases graduates have called themselves logisticians in their work places, defining necessary practice knowledge [3].

Logistics education at universities is executed in Poland at three stages – Bachelor degree course or Engineer studies, Master of Science or doctoral studies.

At first stage students acquire general knowledge and skills that are necessary for operational logistics management. They should also become familiar with an essence of modern management of economic entities as well as their logistics operation background. Besides, students must gain mastery of system and process approach in logistics, control rules of information flows, financial means, human and material resources and logistics' customer service. Their knowledge must become practical ability to organize and realize operational activities in logistics domain, the most often at economic objects. Students should also have wide knowledge to streamline logistics management in enterprise functional domain [2] [7].

However, graduates of second degree of studies should own expanded, relatively to studies of first degrees, knowledge and abilities from range of logistics of enterprise production dealing with production and services. First of all master of logistics must know principles of planning, organizing and control of enterprise's logistics processes and their location in supply chain. Additionally they understand what logistics costs and implementation of logistics strategies depend on [2].

Studies of third degree can be conducted by organization entities of universities with authorization to give an academic degree of postdoctoral PhD, or at least two authorizations to give degree of PhD in two different disciplines. Doctoral studies last for four years and can be full-time or extramural. Such studies enable to acquire advanced logistics knowledge. Besides students are prepared to self-reliant and creative scientific work and obtaining a PhD degree [2].

In conclusion it should be noted that graduate logistician should be familiar with logistics technologies in area of different branches of transportation and warehousing and be able to manage inventories implementing fundamental concepts in the field. Besides, continuous enhancement of qualifications plays an important role to maintain a position on the job market. Degree of master and professional experience are

often not enough because people applying for the managerial positions must possess an occupational certificate. So it is worthwhile to pay special attention to development through continuous rising of qualifications and professional abilities.

In order to check if logistics students are satisfied with the choice and studies' possibilities survey was conducted among them in 2011. Research comprised 48 of respondents at full time studies on 2<sup>nd</sup> degree, 1<sup>st</sup> year, and logistics major. The objective of the survey was to get an opinion on logistics education and students' expectations. Survey result is presented hereunder.

## 4. RESULTS OF RESEARCH

### 4.1. STUDENTS EXPECTATIONS CONNECTED WITH EDUCATION OF LOGISTICIANS

Students have different expectations concerning classes that they participate in at logistics major. They result inter alia from a willingness to undertake a job in this profession. The main students' expectations in terms of education of logisticians refer to: a prospect to get an attractive and well paid job (26.2% indications), deployment of interest concerning logistics (interesting subject) (15.4%), acquiring of new, specialist knowledge (13.9%) and peculiar up-and-coming profession (8.5%) and market demand for logisticians (5%) as well as enhancement of creative thinking (5%) and continuous development of logistics (4%). However, other expectations are: syllabus, a new field of studies, prestige, and willingness to acquire a Master of Science degree, all of them are 22 % of indications.

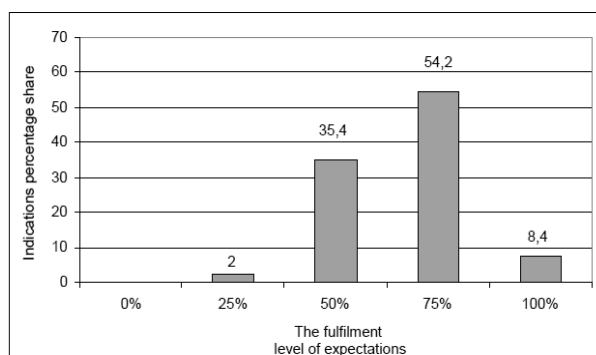


Figure 1. The fulfillment level of expectations by the education programme.

Own study based on research

Students' answers exhibit that they want to be well paid but in compliance with their interest. Work should be a pleasure not a worry. The most important is the fact that students study Logistics course because they want to acquire and deepen specialist knowledge and their education expectations are met in 83.33%.

The results of the survey are presented in the above mentioned chart showing that 2% of students have evaluated that programme of classes in 25% fulfilled their expectations, whereas 100% has been chosen by 8.4%. The most respondents i.e. 54.2% have marked 75%. Whereas programme has been met in 50% by 35.4% of answerers. Generally it can be said that programme of classes has fulfilled students' expectations. This is satisfactory, that there were no 0% indications.

### 4.2. STRENGTHS AND WEAKNESSES OF LOGISTICIANS' EDUCATION SYSTEM

Polish education system of logistician has been evolving for a few years. However each school probably follows a programme in its individual manner. Update of education programmes is executed in relation to progress in this domain. However, the system will always have defects and advantages, which is indicated in next answers by respondents. Thus the most important weaknesses of Polish education system of logistician, according to answerers comprise:

- small amount of practical classes (21.1% of indications)
- bad selection of people that conduct classes (9.2%)
- insufficient focus on foreign languages (7.7%)
- small amount of classes with specialist software (7.1%)
- lack of cooperation with entrepreneurs (6.3%)
- many subjects not related to logistics (6.3%)
- small amount of research practice and internship (5.6%)
- too much theoretical knowledge (5.6%)
- mismatched program of classes (4.9%)
- lack of excursions to enterprises (4.2%)
- bad adoption of studies to real conditions (4.2%)

- weak access to literature – in Polish language not enough (3.5%)
- others (14.3%).

Weaknesses must be overcome to improve the system of logistics education.

However, regarding strengths of Polish education system of logisticians following issues can be mentioned:

- well qualified lecturers (21.4% of indications)
- a great number of project and laboratory classes (17.3%)
- a big range of discussed questions (9.2%)
- interesting classes (8.2%)
- classes based on practice in industry (8.2%)
- a lot of theoretical knowledge (5.1%)
- additional lectures conducted by university (5.1%)
- access to software connected with logistics field (3.1%)
- a wide range of literature (3.1%)
- others (16.2%).

The fact that the strongest side of Polish education system are well qualified lecturers who always gives assistance is worth to be mentioned. Besides practical projects, laboratories and exercises are introduced more often instead of theoretical classes. They are practical and interesting and students are involved in work during classes.

#### 4.3. THE DEGREE OF COMMITMENT IN CLASSES CONDUCTED AT LOGISTICS MAJOR

It is possible to engage students in classes when there is a good system of motivation and marks as well as a good climate in the group.

Students were asked to indicate their degree of engagement in classes and what it resulted from. Their commitment has also been dependent on classes. According to a survey 29.15% of students have pointed their engagement in occupation at 100% level, whereas 64.6% of students have indicated 75% commitment (see figure 2). Sole individuals have pointed 50% and 25%.

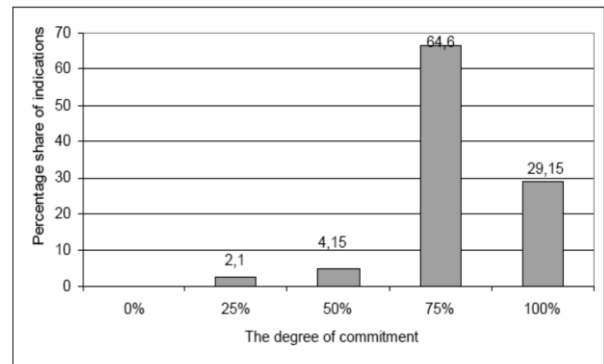


Figure 2. The degree of students' commitment in classes;  
Own study based on research

The degree of such high engagement in classes resulted from various determinants. Following issues have been mentioned the most often:

- interest (18.6%)
- type of classes – the manner of their conducting (12.4%)
- wish to gain knowledge and to improve qualifications (11.5%)
- interesting studies (11.5%)
- teacher's approach and involvement (8.8%)
- active participations in team classes (7.1%)
- willingness to learn logistics matters (5.3%)
- method of information handed down (3.5%)
- others (21.3%).

Students have also pointed how much they are able to get round to classes, willingness to get a good note, check of knowledge within classes.

#### 4.4. The level of interest in classes

Classes on Logistics field of study are compliant with students' interest (fig.3). It can be stated that hundred-percent interest has been pointed by 22.9% of students, and 60.4% of them have indicated interest at level of 75%. Remaining group of answerers i.e. 16.7% have indicated 50% level. None has pointed level of interest at 0% or 25%.

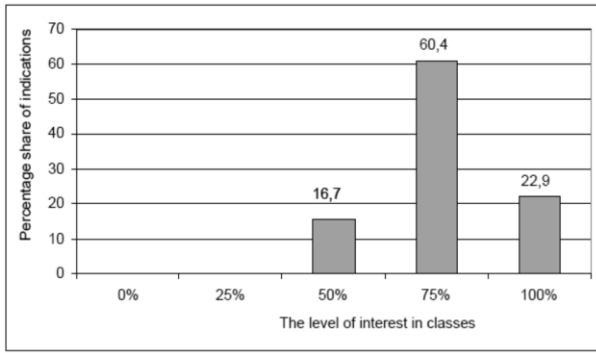


Figure 3. The level of interest in classes; Own study based on research

Interest in classes and teaching material depend on various factors. The most often mentioned are listed as follows: interest in the subject (23.9% of indications), the conducting method and quality of studies (15.6%), projects (case studies) (11.9%), teacher's engagement (10.1%), the method of information providing (6.4%), practicality of classes (6.4%), team work (5.5%), desire to gain knowledge and solve problems (5.5%), application of creativity (4.6%), wish to undertake a challenge (1.8%), jointly with getting a good note (1.8%), others (6.5%).

High level of interest resulted first and foremost from a large engagement of students in their work executed during classes. Students have also pointed practicality and usefulness of studies and how many novelties arise during classes. (Fig. 4).

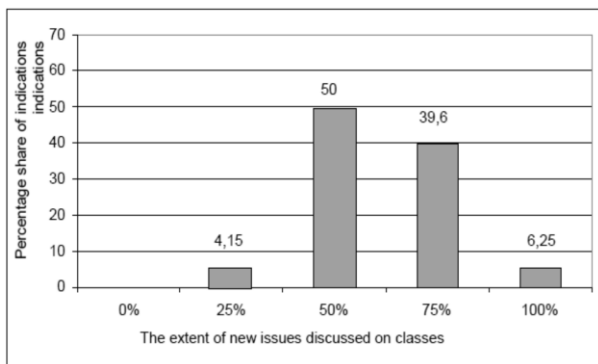


Figure 4. The extent of new issues discussed during classes; Own study based on research

**4.5. IMPACT OF PARTICIPATION IN CLASSES TO IMPROVE LOGISTICS SKILLS**

Students should improve their professional abilities in the course of education which is the

main foundation of studies. Active participation in classes has raised logistics capabilities among participants. In survey answers mostly have indicated fifty-percent and seventy five-percent improvement of herein abilities (fig.5). Therefore 18.8% of students have ascertained 50% growth, but majority of them i.e. 66.7% have chosen answer of 75%. The smallest number of persons has marked an answer in the survey – 25%. On the other hand 8.3% of respondents have improved their logistics abilities in one-hundred percents. None of interviewees has chosen an answer of 0%.

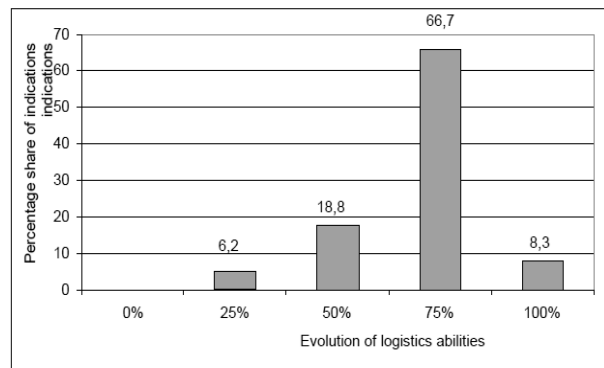


Figure 5. Evolution of logistics abilities; Own study based on research

The classes have improved student logistics abilities and qualifications. However it is important to answer the question in which areas. Received answers are the following:

- team work and creative thinking 24.4%
- solving of problems and their prediction 15.6%
- knowledge of planning, organization and control of logistics processes in a company and their location in the supply chain 13.9%
- acquiring new knowledge in order to upgrade logistics management in these enterprise domains 12.8% of indications
- acquiring new knowledge related to management matters 11.1%
- identification of system and process approach applied in logistics 8.9%
- ability of implement logistics strategies 5.5%
- recognition of logistics customer service 5%
- identification of logistics costs 2.8%,

According to participants the ability of team work and creative thinking is especially developed

during classes (24.4%) as well as joint prediction and solving of problems (15.6%).

#### 4.6. THE UTILIZATION LEVEL OF KNOWLEDGE AND SKILLS IN THE FUTURE WORK

Knowledge and skills acquired during classes will be of assistance in future professional work.

Students who choose hereby subject, and furthermore a specialty of studies must simultaneously specify their future profession. In case of students who want to be involved in logistics at their work the knowledge acquired during studies is useful (Fig. 6).

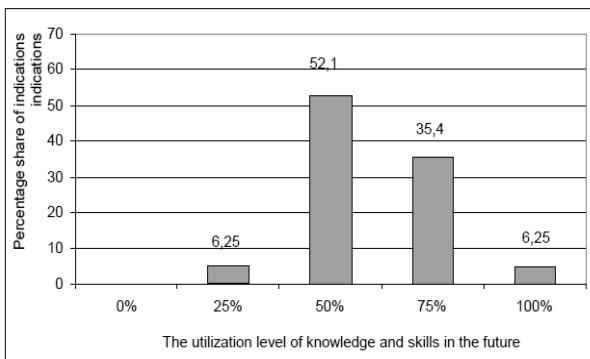


Figure 6. The utilization level of knowledge and skills in the future.

Own study based on research

The majority of respondents i.e. 52% have answered that knowledge and abilities can be useful in their future professional work. A bit fewer number of students (35.4%) have identified that the utilization level of their knowledge is 75 percent, but 6.25% of students have indicated a level of 25% and 6.25% of respondents have identified the level of 100%. Nobody has recognized that knowledge and abilities will not be useful in their work.

The fact is that students improve their knowledge in certain extent, but influence of studies, which have the biggest share in it, is as follows:

- inventory management (14.4% of indications)
- traditional and the state of art manufacturing systems (11.2%)
- production and service management (8.8%)

- design of logistics processes and systems (8%)
- production and logistics organization in automobile industry (8%)
- project management (7.2%)
- marketing of logistics services (4%)
- planning of logistics processes (3.2%)
- supply chain management (3.2%)
- business English (3.2%).

#### 4.7. PROPOSED MODIFICATIONS OF CLASSES DURING STUDIES

It is possible to introduce changes in program of study, so that system of education would be even better and more effective. It would attract students not repel them. Respondents proposed alterations of classes at Logistics major that comprise as follows:

- more practical classes
- more subjects based on software required in logistics
- more foreign language classes
- more visits of students to enterprises
- changing of few teachers or bigger involvement in conducted subjects
- more laboratories
- modification of some subjects connected with logistics
- ordering of subjects.

Students have also indicated: possible modification of schedule, more projects and less lecturers, selection of subject by students, different subject area of some classes, adjustment of subject's hours to project size and possible test of knowledge in real conditions etc.

## 5. CONCLUSION

Development of logistics services, as well as logistics operations in manufacturing, trading and service companies can be conducted efficiently only when they have proper staff equipped with competences, knowledge and abilities.

So, education system that copes with this task must supply to labor market people, who will be educated adequately to market needs. In that case it is necessary to perform an indepth analysis of education in this range. Besides one should take into consideration education changes in higher

education system and prepare an offer of logistics education customized to current and future market demand based on observations and analysis of students' education results. Universities are evaluated by an environment by means of its offer that enables to develop its philosophy and strategy.

With regards to logistics an introduction of such field of study has just enhanced students attention to hereby specialty, because earlier it had not been properly exposed. Entrepreneurs are also looking for employees and they are likely to choose graduates in this major. However the success of these job hunting will not depend on name in their diploma but on what they will learn. Each university has a strong side of its programme which makes their graduates famous and it probably makes enterprises hire them. Presently education of students is in line with this how logistics is perceived by practice and it relies on adjustment to businessmen expectations

However, the approach may change and importance of scientific aspects of logistics will increase but then, graduates will adjust their actions to the changes they face.

Summarizing, research results indicate surprisingly good educational results of classes conducted. Students also assert that after graduation they will have greater prospects to find a job – this is opinion of 85% of respondents. Besides, students after logistics studies receive a thorough education thanks to which they outflank the others on the job market and they are appreciated by future employers.

Primarily students acquire state of the art knowledge on logistics systems and skills that can be utilized in their future professional work.

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