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APŽVALGINIAI STRAIPSNIAI

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STANDARDISATION IN ENGINEERING SURVEYS

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Abstract. Buying, selling and changing goods and services easily in today's world, where economic, social and cultural relations are very complicated, are related to standards that determine the qualities of them. Although there are standards for every kind of goods and services produced in the European Community that we still try to become a member of it, it has not been compiled any detailed study on this subject. Unfortunately, conformity packages, which help us almost in every subject, will force us to work on this subject imperatively.
Since the engineering surveys are also based on technological service and its production, getting a better quality in a production process and the quality of the personnel (surveying engineers, surveying technicians etc), who work in production process, depend on standardisation of the methods and the equipment used for survey. The subject of the qualification and the quality of personnel, who work in surveying sector, determination of standards related to survey methods and instruments have not been developed into consideration in detail. Only some legal regulations have been elaborated until now. Quality problem in the production of goods and services must not change from country to country. This subject is very important and cannot be solved by legal regulations in different countries. Free circulation of goods and services is possible if they are standardised globally.

Keywords: standards, standardisation, standardisation in engineering surveys, ISO standards, FIG Standardisation Committee.

1. Introduction

Free circulation of capital, goods and services is increased globally by free trade agreements and international unions like the European Union. This circulation is not indiscriminate. It is applied conveniently to some legal arrangements. Quality is more important than the arrangements especially in the circulation of goods and services. When the rules of free circulation have been formatted, detailed arrangements concerned with the quality of these goods and services must be taken into consideration. The quality of a good or a service must be of similar standards in global or in national aspect. This is very important for producers and services. Having a steady good position, the international market depends on the quality of the goods and services produced.

Determination and measurement of this quality is a very important topic, which leads us to the standards and the standardisation. It includes the following questions:

a. How will these standards be determined?
b. Under what conditions these standards are to be determined?
c. Who will determine the standards?

The International Organization for Standardisation (ISO), established in Geneva in 1947, is the basic body for facilitating the change of goods and services globally, for developing international standards. Some important international standardisation bodies such as DIN (Germany), BSI (England), AFNOR (France) and ANSI (America) are members of ISO. There are 135 countries that are members of ISO.

Promoting the standardisation and related activities in the world with a view to facilitate international exchange of goods and services, and to develop cooperation in the spheres of intellectual, scientific, technological and economic activities is determined as the mission of ISO [1]. Acceptance of the standards, determined by ISO, is voluntary. Since users and persons who buy services and things, trust the firms, which conform to international standards, this voluntariness became a forced situation nowadays. Trust to the standards is expressed by the declaration of procedures and the controls made by independent bodies. Standards are determined and published in a variety of subjects such as specification of electronic distance meters, sizes of fruit juice boxes in today's world. Being totally 12 524 ISO standards at the end of 1999, they become important for understanding the topic.

The well-known ISO 9000 standards related to the quality management are very important in production processes. Since our profession is a service production, standards such as ISO 9000 and other official standards become increasingly important for our colleagues (surveyors).

Since standardisation activity is becoming more important to surveyors, FIG (International Federation of Surveyors) decided to establish a Task Force on Standardisation in 1997 congress. This established task force on standardisation started to work in earnest in 1998.

FIG maintains relations with 3 technical committees in ISO at present:

- TC 59 Sub-Committee 4 – Dimensional Tolerances and Measurements.
- TC 172 Sub-Committee 6 – Geodetic and Surveying Instruments.
- TC 211 – Geographic Information/Geomatics.

The task-force established in FIG is to give technical support to ISO being related to activities of surveyors. This task is also supported by the FIG members.

2. Standardisation in survey work

The standardisation advantages in producing and presenting things and services are very big for a country in an economic sense. The following outcomes related to economic advantages of the standardisation have been obtained as a result of a research made by The Technical University of Dresden and the Fraunhofer Institute for Systems and Innovations in Germany [2].

- The benefit to the German economy from standardisation amounts to more than US $15 billion per year.
- Standards contribute more to economic growth than patents and licences.
- Companies that participate actively in standards work have a head start on their competitors in adapting market demands and new technologies.
- Transaction costs are lower when European and International standards are used.
- Research risk and development costs are reduced for companies contributing to the standardisation process.

The following parameters and standards can be taken into consideration when determining the standards related to a surveying firm.

2.1. Standards of surveying instruments and office equipments

These standards can deal with surveying instruments and office equipments, which belong to a surveying firm, such as total stations, distance meters, theodolites, levels, hydrography ships, sonar, photogrammetric aircraft and its camera, satellite receiver, computer, printer, plotter, scanner and software etc. The following interrogation can be performed when determing these standards:

- Do technical specifications of the instruments belong to a surveying firm able to determine standards?
- Are calibration and test of the instrument performed periodically?
- Are the software used by the firm adequate to precise and accurate outputs?

2.2. Standards dealing with survey methods and evaluation techniques

Different studies are to be performed by FIG, FIG members and other important bodies [3–14]. Then these studies must be put together and a convenient surveying method and evaluation techniques must be determined on a project base. Regional conditions must be taken into consideration in this determination. The results must be accepted as ISO standards.

2.3. Continued education and certification of the personnel

Survey works are performed by the cooperation of engineers, technicians etc. A person, who has got an engineering diploma and lacks some experience, is not accepted as sufficient in joining an order in some countries. Only the engineer's title is not sufficient for performing a survey project. After some years and some proficiency tests, a person must get a licence to perform survey projects. Every member of the surveying personnel must go to a professional course periodically. He must learn new survey methods and techniques. He must be certificated periodically by professional bodies. Such bodies are brought into existence by universities and professional chambers in local or global sense.

A continued education is to be taken into consideration. Think of a person, who has got a diploma in medical science and has not obtained enough experience, and we think that we are a patient of his. Nobody wants to think of the result of this situation. We can also think of a situation in an engineering project. Think of an engineer, who does not possess enough experience and imagine that he works in a tunnel project. No doubts, there will be faults in the direction and level of the tunnel.

Education quality is different from country to country. This is also a problem in global sense. Quality of a professional education of a university must be credited by independent bodies periodically. Nobody should get the engineer title easily. Because he will contract not only locally.

3. Conclusions

There are a lot of rules called standards related to many topics in our life. We have to understand the importance of the standardisation in nowadays world. If we want to develop our country and our firms economically, we must think of our profession globally. We are not alone in the world. If someone wants to get

more economic income, he has to realise the meaning of standardisation and he has to form all things up to be present standards on the global market. As a result, if we want to get a share from this market, we have to take a global position related to standardisation.

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INŽINERINIŲ TYRINĖJIMŲ STANDARTIZAVIMAS

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Paslaugų ir prekių pirkimas, pardavimas bei keitimasis jomis nūdienos pasaulyje būtų paprastesnis net esant komplikuotiems ekonominiams, socialiniams, kultūriniams santykiams, jei būtų taikomi bendri kokybės standartai. Nors Europos Sąjungoje, kurios nariais mes vis dar ketiname tapti, yra kiekvienos prekės ar paslaugos standartas, detalių tyrimų šiuo klausimu neatlikta.

Kadangi inžineriniai tyrinėjimai taip pat yra technologinės paslaugos, tai geresnė produktų kokybė priklauso nuo gamybos kokybės ir personalo kvalifikacijos, t. y. nuo metodų ir įrangos standartizacijos lygio. Personalui, kuris dirba matavimų sektoriuje, keliami kvalifikaciniai reikalavimai bei matavimo metodų ir prietaisų standartai nėra pakankamai tobuli. Iki šiol parengta tik keletas teisinių aktų. Prekių ir paslaugų kokybės problema ta pati visose šalyse. Tai reikšminga ir negali būti išspręsta remiantis vienos valstybės teisiniais aktais. Laisva prekių ir paslaugų rinka įmanoma tik esant globaliems jų standartams.

Prasminiai žodžiai: standartai, standartizacija, inžinerinių tyrinėjimų standartizacija, ISO standartai, FIG Standartizacijos komitetas.