Influence of the Organizational Schemes of the Construction Process on the Quality of the Structures Erected Based on Selected Legal Aspects from Russia, Slovakia, and Poland

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Abstract. The roles of the construction process participants may vary in different countries – depending on legal regulations, tradition, the accepted practice. In this article the basic acts defining and regulating the roles of the construction process participants in Russia, Poland and Slovakia are presented. Based on these, the basic duties of the parties are discussed together with pointing the differences in these national systems. As there are some possible organizational schemes widely applied for construction processes their influence on the quality of the structures erected is described and discussed.

1. Introduction
The natural sequence of the phases of a construction process defines the parties engaged in it. Parties to a construction and engineering contracts cooperate to fulfil following tasks: defining the needs, creating the concept, finding the right place for the object, secure financing, designing the structure, execution of works, quality control and management, closing the project and initial operation and maintenance. Generally, the parties can be described as:

- investor (a client),
- contractor,
- designer,
- inspector (an engineer).

Their involvement in the construction process and their responsibilities may differ depending on tradition, national legal systems, accepted practice in the national economic system and in the construction industry of a certain state [1]. They may differ also according to the procurement model used by a client e.g. a design can be ordered by a client or by a contractor. For the historical reasons, each state has its own legal system, even if a state is a part of a federation or a union.

Most of the legal matters concerning a construction process in Slovakia and Poland are regulated by national civil codes and construction codes [2], [3], [4], [5], while there are civil code and urban planning
code which influence a construction process the most in Russia [6], [7]. The typical parties in Russia are presented in figure 1.

Figure 1. The typical organization scheme of a construction process in Russia

The sole role if an Investor is to provide money with no other responsibilities. The Construction developer is the landowner. Their role is to secure a building permit and to bear the full legal responsibility.

The Building owner (Customer, Client), in the operation phase of erecting a building, is a person who manages the construction entrusted to him. A Customer may be a legal entity or an individual who is authorized by the Investor to implement the project or is an Investor himself. The Building owner organizes the relations and activities of contractors, on behalf of the Investor or Developer. These activities include performing engineering surveys, creating a project design and executing construction works. The Customer can receive authorization from a Developer to perform their functions for the period of construction (the period of authority determined by the contract) or the roles of a customer-developer can be combined in one party. To combine these two roles, a Customer must be a legal entity, they must be the landowner or be a lessee. In the Civil Code, the role of a customer correlates with the role of a developer in the Urban Planning Code. It is the person who has the right to the land plot, can first receive a building permit, then – to put it into operation, and after the end of construction – to register the right of ownership. This implies one of the requirements of the Civil Code to the customer about the timely provision of land for construction. The Customer, as an entity which intends to carry out the construction (or reconstruction) of an architectural object, must be in possession of an architectural design executed according to the set of architectural planning goals.

This design must be carried out by a licensed architect (Designer). In this regard, the customer selects the designers and determines the technical goals. As a rule, a Customer enters into a contract with the general Designer, who then, if necessary, attracts subcontract designers and surveyors. At the same time, the issues of obtaining approval and permission of the relevant authorities to conduct surveys and design work are among the tasks of a Customer.

In most cases, for the direct execution of construction tasks, a Customer enters into a contract with the General contractor, and that, in turn, through subcontract agreements. If necessary, this may involve the subcontractors in the process. In such a classical scheme, many customers are dissatisfied with the fact, that they do not know which construction company will ultimately do the construction works. To address this problem several methods can be used:
assigning specified scope of work to a General contractor (with no rights for subcontracting them),
- agreeing with a list of subcontractors,
- direct subcontracting.

Slovak and Polish legal systems recognize the following four participants of the construction process:
- investor (client),
- inspector (construction supervisor, engineer),
- designer and a contractor (represented by a construction manager in Slovakia, in Polish system the party is a construction manager himself/herself without specifying which party hires this person – it can be a general contractor as well).

There are two typical organizational schemes [8] in Slovakia and Poland – see figure 2.

Figure 2. The typical organization scheme of a construction process in Slovakia and Poland (the contract type: build based on the project provided by a Client)

A design can be provided by the Client or the task of preparing a design is assigned to a General contractor as a part of their duties specified in the contract clauses (this system is called “design and build” – see figure 3). Applying that, it doesn’t affect any legal requirements assigned to the aforementioned parties. Then, General contractor is responsible for the design and is obliged to follow all legal requirements pertaining to the design.

Since the main duties of the parties of a construction process specified in the legal systems of Slovakia and Poland are nearly the same, they are presented without wide discussing some minor differences in these two systems. The issues of safety and health protection, as well as, keeping the record of activities in the construction site – despite the fact that they are extremely important – are omitted as not important for the purpose of the paper.

The Client is obliged to provide a design of the structure, to organize the execution of construction works, to hire an Engineer as a technical supervisor. There is a two-level technical control in Poland by introducing obligatory hiring of an Engineer and certified Construction manager (for advanced structures; e.g. a 4-storey block of flats is an advanced structure). Slovak Investor has to hire experienced General contractor or an Engineer (in case of executing the construction works by an Investor themselves).

The Designer’s duties are: providing a consistent with the standards design and ensuring that erecting structure is built in accordance with the design and technical principles. Slovak Designer has more supervising responsibilities than a Polish one (as an Engineer is not an obligatory position in the Slovak system).

The General contractor’s (construction manager’s) duties are the widest. This party is responsible for all aspects arisen during construction works execution. Technical matters, scheduling, organizing the whole construction site, coordinating subcontractors and many other matters are assigned to a General contractor.
Figure 3. The typical organization scheme of a construction process – type “design and build” – in Slovakia and Poland

The Engineer – if it is necessary to provide this function – the representative of an Investor, carry mainly control function. The scope of control can be agreed between an Engineer and an Investor. An Engineer provides professional construction services to a Client which is not necessarily experienced in the construction matters. Polish construction code forbids to carry Engineer’s function and Construction manager’s function by the same person.

Slovak and Polish regulations do not distinguish the party which provides the construction process financing. They enforce the ownership of the land or the owner’s rights to the Investor. Considering that and allowed in Russia combining the functions of Developer and Building owner, it can be said that organization of a construction process is quite similar in these three states (Russia, Slovakia, and Poland).

2. The influence of an organizational scheme on quality

Even if an assumption about the honesty of each company is true, to provide the required level of quality of a structure, an Investor usually hires an Engineer. This party provides services based on professional, construction knowledge and wide experience gained on building sites in his portfolio. It gives one more level of control of the construction process, the structure being erected. An Investor lack’s the required personal and technical capabilities to effectively manage the construction process and needs to rely on the professional capabilities of contracted parties. Designers have the main impact on the functionality of the building, however, the quality of the construction works lays mainly in the ambit of a Contractor and/or an Engineer. Designer’s duties concentrate on design and on the consistency of the structure being built with his design and technical standards. Based on above-mentioned statements the impact of the parties of construction process on the quality of the structure (quality of works being executed) can be ranked – see figure 4.
It is clear that an Engineer acts on behalf of an Investor but then, the influence is indirect. When the construction works are ordered together with the design – one party acts jointly as a Contractor and a Designer, the Engineer’s services become even more important for a Client.

3. Findings and discussions
The modified scheme is analysed with defined End-user of the building and End-owner of the completed building in the operation phase. The demand for quality differs for an End-user and an End-owner. The difference can be explained in these three scenarios:

- The Investor builds a building and rents it to third parties. The companies are the End-users but the Investor is still the End-owner of the building.
- The Investor builds the building for its own purposes. The Client then is simultaneously the End-owner and the End-user.
- The Investor builds the building and sells its parts to third parties. These new End-owners are also the End-users. After the last part of the building is sold, the Investor has no rights to a building nor to the land.

In each of these scenarios, the demand for building quality varies for the client. The demand for the quality, was analysed in a matrix in which the construction quality is split into three factors, with three scenarios of End-owner and End-user relation, it is presented in figure 5.

| Possible Client’s goals | Life-long efficiency | Life-long durability | Impressive visual effect | The level of inclusion of goals in the Client’s strategy |
|-------------------------|----------------------|----------------------|--------------------------|---------------------------------------------------------|
| End-owner: Client       | HIGH                 | HIGH                 | MODERATE                 | The level of inclusion of goals in the Client’s strategy |
| End-user: Client        |                       |                      |                          |                                                          |
| End-owner: Client       | MODERATE             | HIGH                 | HIGH                     |                                                          |
| End-user: External      |                       |                      |                          |                                                          |
| End-owner: External     | LOW                   | LOW                  | HIGH                     |                                                          |
| End-user: External      |                       |                      |                          |                                                          |

Figure 4. The levels of the direct impact of the parties on quality of construction works

Figure 5. The levels of inclusion of possible goals in the Client’s strategy
When a Client remains the End-owner as well as the End-user he values the life-long efficiency [9] of the building and life-long durability of the building [10]. The aspect of aesthetics is important for presentation towards customers and partners. Life-long efficiency of the building loses its importance for the End-owner if End-users are responsible for the facility management or the contract states that running costs for facility management provided by the owner are paid by the End-users. It loses the importance even more, if the End-owner aims to sell the construction by parts or as a whole to the End-users. In this case, the life-long durability of the structure is also a low-priority, as far as the building doesn’t show signs of the defect within the warranty period and all related flaws are observed.

Obviously, the legal mechanism is in place to prevent sub-par construction practices (such as national construction inspections and final building approval by a building office) but these can be circumvented. From the contracting point of view, the combination of Client and a Contractor role gives most opportunity for the foul play. The worst case is when the roles of a Client and a Contractor are combined. In that case, according to organization schemes presented in figures 1, 2 and 3, all control functions become dependent (directly or indirectly) on one entity. Can the potential End-owner negotiate the price of the part of the building to the level reflecting the real quality of the property?

There are several problems with assessing the quality of the building (especially newly built one) by a prospective End-owner. They are as follows:
- a prospective End-owner wasn’t a party of a construction process,
- many works have been covered by other consecutive works,
- a prospective End-owner’s rights to check the documentation of a construction site are limited,
- a prospective End-owner in most cases is not a construction professional,
- the effect of lowered quality of works usually can be observed after the period longer than warranty period.

One of the solutions is hiring the professionals to prepare the technical due diligence [11], [12]. For a private person, it is expensive and the real value of the technical due diligence appears when it is prepared after an infant stage of building usage. The other solution is to examine the End-owners of properties developed by the same company in other locations than considered. It is to realize that the information gathered in this way will be more about a general approach of a certain developer to quality issues than about the quality achieved at a considered property.

4. Conclusions
Traditionally recognized parties of the construction process are a subject of law regulations in analysed states. The construction law systems have been introduced also to ensure that the newly built structures meet requirements of safety, durability, sustainability, etc., as well as, requirements of investors who finance the construction processes – to ensure the quality of erected structures. As every business activity – also in the construction industry – is based on monetary rewards for the goods or services sold, unfair “savings” can appear, resulting in lowered quality. Extending the analysis of construction organizational schemes by – proposed in the article – End-user of the building and End-owner, allowed for finding some typical scenarios (extended organizational schemes) conducive to abuse. They finally lead to lowered quality of the structures. The variety of ordering methods in the construction industry should make investors, end-users and end-owners consider the – presented in the article – the impact of the extended organizational scheme of a construction process on the quality of the considered building.

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