FACTORS AFFECTING THE CONSTRUCTION DEVELOPMENT IN THE EUROPEAN UNION

doc. Ing. Eva Jankovichová, Ph.D., Ing. Miroslav Ščepka

ABSTRACT

The Construction industry plays a key role for governments in both growing and mature economies. The sector creates new jobs, drives economic growth, and provides solutions to address social, climate and energy challenges. The construction industry has important linkages with other sectors, so that its impact on GDP and economic development goes well beyond the direct contribution of construction activities. Most factors, which influence and drive change in the sector, will affect the sector in the years to come. Most of the driving forces mentioned are external factors, which are changing the framework conditions.

The main aim of this article is to point out the impact of important factors on the development of the construction sector in EU.

Key words: *construction development, SWOT analysis, digital construction*

1 INTRODUCTION

The construction sector is characterized by many small enterprises and high labour intensity; it is also highly dependent on public regulations and public investments. Thus, policymakers frequently use the sector as a trend indicator – a cyclical stabilizer of macro – economic trends, which are restricted in periods with economic expansion and stimulated in periods of recession.

Most sub-sectors of the construction sector face a high level of competition, yet they are still strongly home-oriented. Several drivers will increase competition in the sector, such as the strengthening of the internal market by including service activities (the proposed EU directive on services in the internal market), EU enlargement, and a greater degree of market internationalisation for construction materials. Competition, however, does vary between different sub-sectors and from one EU country to another.

1.1 Impact of important factors on construction development

The development of construction in the European Union is affected by several factors that are the consequences of globalization. Among the most important are:

► productivity - in construction, it is in the long run lower than productivity in production,

► demography - the aging population and the threat of lack of skilled labor,

- renovating existing homes, adapting to the aging population = new opportunity for builders,

- transfer ownership of companies to the younger generation = opportunity and threat at the same time,

► the enlargement of the European Union - increasing competition,

- the possibility of companies entering new markets,
- migration of the workforce,

► technological development - establishment of a European Technology Platform for construction to focus on:

❶ Wise Construction (Intelligent Buildings) - focused on innovation and research.
❷ Building the Future - aimed at achieving the Lisbon objectives: a knowledge-based economy, sustainable growth, high quality of life, employment, international competitiveness and security.

❸ Innovation Strategy - focused on the application of e-strategies in construction.
❹ Strategic Alliances, which represent a new grouping mechanism for companies where all partners are involved in the project with information technology connections - use of information and communication technologies in construction,

► electronic commerce in construction,

► focus attention on research and development as a key factor in obtaining a competitive advantage in international business,

► endeavoring for environmentally sustainable growth of construction,

► internationalization and globalization of the construction materials market,
► know-how in the construction industry, the development of vertical integration,

► company affiliation, various forms of partnerships and acquisitions,

► new ways of financing - PPP projects (Private-Public-Partnerships),
► legislation and regulation focused mainly on the continuous improvement of work safety and the so Green construction,

► changing qualification requirements for construction workers - knowledge and training in the use of new technologies,

- OHS education,
- training of communication skills and teamwork, language skills. [1]

1.2 SWOT analysis of construction sector in EU

The more are crashed the trade barriers and the more countries that participate in world trade, the more the world enters into a period of increasing competition. Moving towards globalization in the construction industry presents threats at the same time. Opportunities mainly relate to the expansion trend in international trade in construction that pushes businesses in less developed countries to adapt to international standards, which ultimately should lead to increased competitiveness in terms of quality, cost and timing of projects. The second side of the coin poses threats to prepare for competition on domestic and international markets.

Strengths	Opportunities
■ Increased focus on R&D among the large construction companies ■ Growing specialization in many firms has created highly knowledgeable and competent companies within specific construction fields	■ Growth markets in new Member States, China, India and others ■ Demographic changes leading to new markets developing ■ Environmentally sustainable development, including waste management ■ Off-site construction (pre-assembly) ■ Embedding ICT in construction products and processes to improve efficiency and

	effectiveness ■ Virtual prototyping for design, manufacture and operation ■ New market segments in BOOT activities (Build-Own-Operate-Transfer)
Weaknesses	**Threats**
■ Low productivity ■ Weak industry image among customers and potential new workers ■ Problems with health and safety in terms of accidents and physical strain on employees ■ Problems with undeclared work ■ Little interest in further education and training among small construction companies ■ Low level of R&D investment among SMEs construction companies ■ SMEs lack marketing, ICT and management skills	■ Many European markets with stagnating growth, if any growth at all ■ Increasingly globalized engineering sector ■ Recruitment and retention of ageing workforce in some low-skilled professions ■ Inter-European price-based competition represents a threat to employment in some EU countries

Tab. 1 SWOT analysis of construction sector in EU [2]

2 MARKET TRENDS: SUPPLY CHAIN INTEGRATION AND DIGITAL CONSTRUCTION

The trend we have seen over the last few years is that the recovery of the local construction markets in Europe has not exactly led to a likewise increase of M&A (mergers & acquisitions) in the construction sector. In search for more revenue and profits the EU construction sector showed a significant increase in international and diversification transactions from 2012 until 2015. M&A activity over 2016 seems to break with these trends.

Compared to the total of 144 transactions in 2015, the number of transactions over 2016 has increased slightly, to 149. Both the percentage of cross-border transactions and diversification transactions dropped over 2016 – for the first time since 2012. Although the decline over 2016 is limited, the trend break indicates a renewed focus of European construction companies on local markets and their core business. Local real estate experts have noticed an increased focus on supply chain integration in the construction markets over 2016. This seems in line with the ongoing recovery of local construction markets, affiliated supply chain pressure, and construction companies focusing on increasing their revenues and profit margins in their core business on local markets. With growth being projected for most EU construction markets, we expect an increased **focus on supply chain integration** in the coming year.

Another noticeable trend is the **increased application of digital construction** across Europe. Now, as markets recover and demand for construction increases, the use and development of new technologies in the construction sector is finally growing. The pattern of the digital construction trend seems about the same in most EU construction markets: mainly larger construction companies are investing in

digital construction. As continuing growth is projected in the construction sector, we expect digital construction, and foremost BIM, to finally mature in the following years.

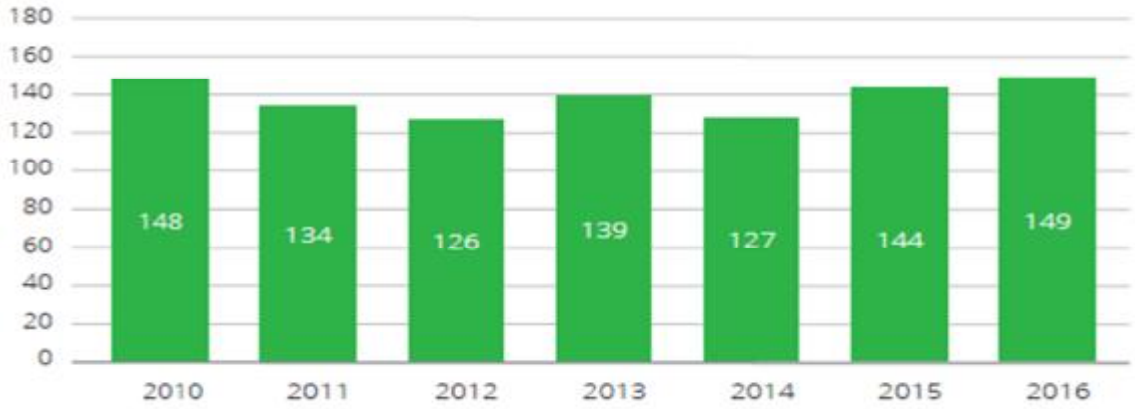

Fig. 1 Number of transaction in the construction sector [3]

2.1 Trend I: Supply chain integration

The European Construction market has witnessed a significant increase of cross-border and diversification transactions over the last five years. The trends of diversification and internationalization by European construction companies are primarily attributed to the search for revenue and profit due to the poor conditions on local markets.

Meanwhile, market conditions on the European continent recovered in the past two years. While construction volumes grew, sharply increased subcontractors' prices continued to put pressure on operating margins. This so-called supply chain pressure results from the increased demand for construction associated with the challenge to attract sufficient labor and subcontractors with the right capabilities and capacity. Even though margins in the local construction sector have increased over 2016, supply chain pressure continues to be an issue in most European construction markets.

2.2 Trend II: Digital construction

Despite many construction companies across Europe have defined their focus on digital construction as a core vision for their future, few of them have structurally implemented digital construction into their business over the past few years. The economic downturn has meant construction companies scarcely invested in the development and adaptation of new technologies. Now, as markets recover and demand for construction is on the rise, the development and implementation of new technologies in the construction sector is finally growing.

One of the widespread innovations involves the use of drones. In Spain drones are used to supervise projects in less accessible areas.

The use of a technology known as Building Information Modelling (BIM) has particularly increased. BIM is a digital representation of a construction project and allows for the construction process to be simulated in all phases. It is an emerging technological shift within the Architecture, Engineering, Construction and Operations (AECO) industry. In a country like Finland the digital construction market matured quite fast.

The pattern of the digital construction trend seems about the same in most EU construction markets: mainly larger construction companies are investing in digital construction. As continuing growth is projected we expect digital construction, and foremost BIM, to finally mature in the following years. The question will be whether the smaller construction companies will be able to benefit from this trend or whether their inability to invest now means they will lose ground later on. [4]

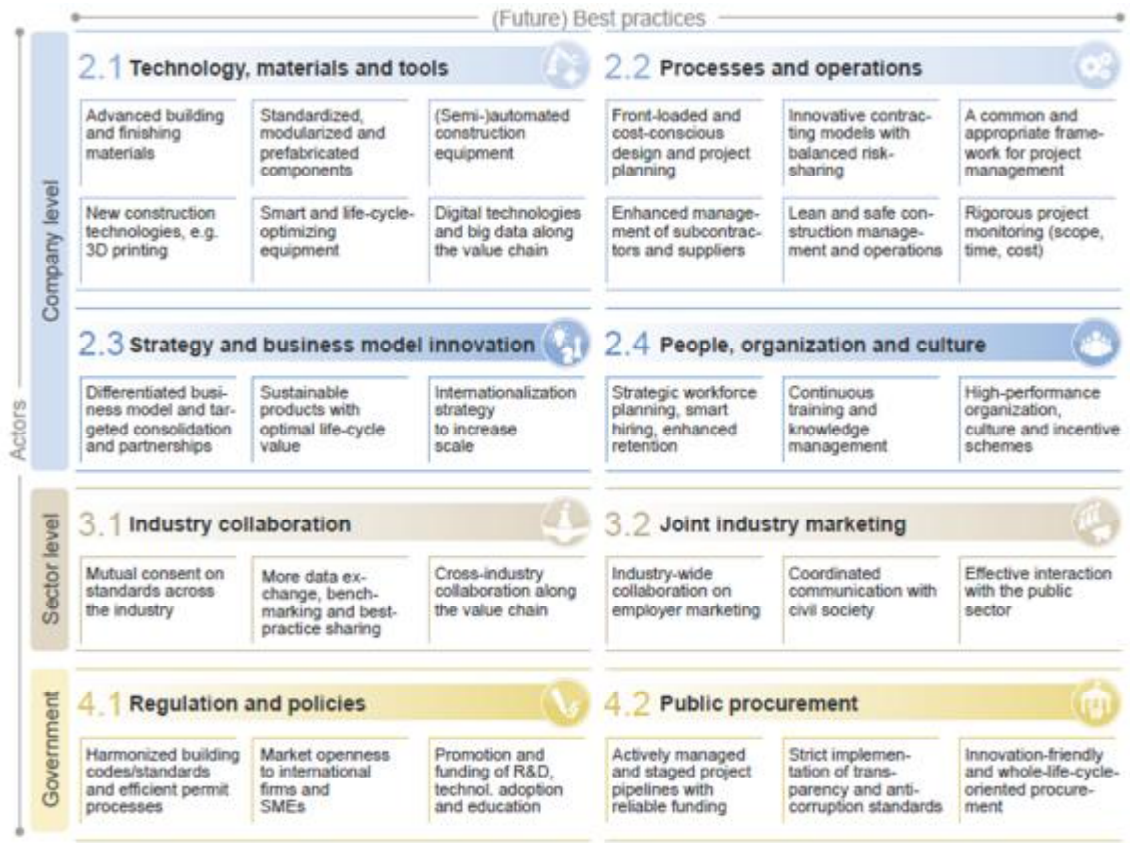

Fig. 2 Industry Transformation Framework [5]

3 CONCLUSION

Forces driving change from within the sector are mostly the use of new technologies and organizational changes to adapt to the external drivers of change. Several factors will play a significant role in improving the sector's competitiveness in the future, such as the use of ICT in materials and buildings (intelligent buildings), for presentation internally and externally (visualization), for communication with customers and among the partners within a construction project, and for process control (monitoring and tagging activities, materials and equipment). In procurement as well as during the construction process the use of e-business improves information sharing and virtual collaboration.

The transformation of the economy and society into advances in technology and rapid digitization is the onset of the so called 4th Industrial Revolution. This process is presented as a great opportunity for all economic actors, but it also points to certain risks associated with changing employment trends, increasing income inequality and increasing dependence on IT. [6]

The Fourth Industrial Revolution will bring about system changes that require engagement; we will have to think about new ways of cooperation across the public and private sectors. As the rate of change will continue to accelerate, we must maintain transparency for all stakeholders to consider the risks and benefits of each new shift. Communities and individuals need to be educated and equipped with the ability to use technology to contribute to a better world. We must not only focus on technological progress and economic prosperity, but also on the impact they have on people, society and the environment. [7]

Literature

[1] Processed by: European Foundation for the Improvement of Living and Working Conditions, 2005. *Trends and Drivers of Change in the European Construction Sector.* Mapping report p. 16. Available at: http://www.eurofound.eu.int

[2] JANKOVICHOVÁ, E. et al. (2016): *Construction Economics I.* Brno: Tribun EU, 2016, p. 14, ISBN 978-80-263-1129-4.

[3] *Construction Monitor*. 2016-2017: Growing opportunities in local markets. DeloitteNetherlands. March 2017, p. 07. Available at: https://www2.deloitte.com/content/dam/Deloitte/pl/Documents/Reports/pl_European_construction_monitor.pdf

[4] *Construction Monitor*. 2016-2017: Growing opportunities in local markets. Deloitte Netherlands. March 2017, pp. 11-12. Available at: https://www2.deloitte.com/content/dam/Deloitte/pl/Documents/Reports/pl_European_construction_monitor.pdf

[5] *Shaping the Future of Construction. A Breakthrough in Mindset and Technology*. Word Economic Forum; The Boston Consulting Group, May 2016, p. 09.

[6] PAUHOFOVÁ, I. – STANĚK, P. (2016): *Adaptation Processes and Pulsing Economy*. Košice: Equlibria, Ltd., 2016, p. 7, e-ISBN 978-80-7144-268-4.

[7] SCHWAB, K. (2016): *Beware of the Fourth Industrial Revolution*. World Economic Forum. In: SME Journal, Vol. 24, No. 252, October 10, 2016, p.12.