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**DEPARTMENT OF "BUSINESS, INVESTMENTS, REAL**  
**ESTATE"**



**KRASIMIRA HRISTOVA HRISTOVA-BOCHEVA**

**MARKET, PRICES AND PRICING**  
**IN CONSTRUCTION**

**ABSTRACT**

**for the acquisition of an educational and scientific degree "doctor"**  
**in professional direction 3.8. "Economy"**  
**Doctorate program**  
**"Economics and Management (Construction and Real Estate)"**

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The dissertation consists of 202 pages, of which:

- Preface - 4 pages
- Main text (three chapters) - 161 pages
- Conclusion - 2 pages
- Appendices - 21 pages
- List of used sources - 111 titles
- List of electronic sources (websites) - 25
- Tables – nr.24
- Figures – nr.22

The defense of the dissertation will take place on 13.01.2023 at 14:00h in hall 1. of the University of Economics - Varna at a meeting of the Scientific Jury, appointed with Order № ПД-06-188/03.11.2022г. of the vice rector of the University of Economics - Varna.

Defense materials are available to those interested on the website of the University of Economics - Varna, [www.ue-varna.bg](http://www.ue-varna.bg)



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# **MARKET, PRICES AND PRICING IN CONSTRUCTION**

**AUTOREFERATE**

**for the acquisition of an educational and scientific degree "doctor"  
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"Economics and Management (Construction and Real Estate)"**

**SCIENTIFIC ADVISER:  
Assoc. Prof.Dr. Petko Genchev Money**

**SCIENTIFIC JURY:**  
1. Prof. Dr. Rumen Nikolaev Kalchev UE-Varna  
2. Prof. Dr. Yordanka Hristova Yovkova UNWE-Sofia  
3. Assoc. Prof. Dr. Todor Stoyanov Raichev UE-Varna  
4. Assoc. Prof. Dr. Georgi Shinkov Zabunov UNWE-Sofia  
5. Assoc. Prof. Dr. Dragomir Zhelchev Stefanov

**REVIEWERS:**  
1. Prof. Dr. Rumen Nikolaev Kalchev UE-Varna  
2. Assoc. Prof. Dr. Georgi Shinkov Zabunov UNWE-Sofia

**VARNA**

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The dissertation work were discussed at an extended meeting referred for defense by the Department of "Business, Investments, Real Estate" at the University of Economics - Varna.

The author is a part-time doctoral candidate at the Department of "Business, Investments, Real Estate" at the University of Economics - Varna. Researches and development were carried out at the same university.

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# **I. GENERAL CHARACTERISTICS OF THE DISSERTATION PAPER**

## **1. Relevance of the topic**

The emphasis in the formation of construction products prices is no longer only on calculation of costs for construction and installation works, but also on utility of the product for the client (investor). The trend of pricing in construction is in the direction of adding value to the manufactured product, as well as determining all expenses, resp. the total price of the construction product. This also applies to the price during the life cycle of the construction product. It is necessary to approach holistically, i.e. to calculate the price not only for carrying out a construction activity, but to determine the price of a product that benefits the whole society and is valued by it, from the very birth of the idea, to its construction and beyond. Prices are a reflection of what the client pays for the construction production. They are an active tool in the hands of the construction company when the market is sensitive and reacts to the formed prices.

In the modern economy the client of construction production (including research and design production) consider it from the point of view of the advantages that they receive during its consumption. The utility criteria and the degree of satisfaction of their needs are in the basis of the purchase choice.

The managers of the construction enterprises more and more often face the question of how to form their own pricing policy and strategy, to make them more competitive and retain longer on the market.

The relevance of the present research is determined by the importance of construction in the economy and the increased interest of all clients (investors) in the price and pricing of construction products.

## **2. Object and subject of research**

The object of the dissertation research are construction enterprises in Bulgaria. Given the specifics of the activity of these enterprises and the dependence of their profit on the pricing, it is appropriate to study these processes through a representative sample of enterprises with different territorial scope, type of activity and size from the construction sector on the territory of the Republic of Bulgaria.

The subject of research are the market, the prices and the pricing of the first stage - creation of research and design production and second stage - creation of construction products with intermediate and final consumption.

## **3. Purpose and tasks of the study**

The purpose we set is to conduct a theoretical and practical-applied study of prices and pricing in the context of the functioning of the construction market and, on this basis, to offer guidelines and opportunities for their improvement in construction enterprises in Bulgaria.

The tasks through which the set purpose will be realized are:

1. To examine the main theoretical issues and clarify the concepts of the market, prices and pricing in construction. On this basis, to propose a new concept of pricing based on the value of the construction production.
2. To analyze prices and pricing in the creation and realization of construction production with intermediate and final consumption, incl. by questionnaire study with a methodology proposed by the author.
3. To propose an advanced pricing model in construction enterprises based on the value of the construction production.
4. To outline the possibilities for improving prices and pricing based on a pricing strategy in construction enterprises to increase their sustainable development and competitiveness.

#### **4. Dissertation research thesis**

The thesis that the author maintains in the dissertation is that despite the trend of more and more companies in the Construction sector to move from cost to market and value-based pricing, they are experiencing difficulty in implementing this approach and concept.

This gives us grounds to outline the guidelines for the improvement and implementation of a competitive price strategy by construction enterprises based on the value of the construction production in the conditions of a dynamic economic environment.

The focus of the research is on improving the management of pricing in construction enterprises, through the relevant tools - a concept of the value of the construction product, an advanced pricing model, the use of software products, a competitive pricing strategy.

#### **5. Research methodology**

The main research methods that were used to achieve the stated goal and tasks, consistent with the topic of the present dissertation work, are: method of induction and deduction, method of analysis and synthesis, systematic approach, method of comparison, representative method and method of the survey (computer assisted web interview ).

#### **6. Limitations of the study**

In the dissertation, restrictions are imposed, which arise from the current legislation, statistics and the perception by construction companies of information about prices and pricing as a company secret.

The defined purpose, object and subject of the dissertation also determine its scope, which is limited to the problems related to the pricing process. The development examines issues related to the choice of price strategy and methods, the interaction between the client, designer and contractor regarding the creation of value through the construction product, as well as the possibilities for improving these processes from the point of view of construction companies.

## **7. Information used in the research**

The research information is provided by Bulgarian and foreign sources related to prices and pricing, data from national and European statistics, specialized Bulgarian and international organizations in the field of construction and pricing, regulatory documents, as well as the author's own studies.

## **8. Approval**

The dissertation work was discussed at meetings of the Department council of the Department of "Business, Investments, Real Estate". Parts of it have been published in the indicated 3 publications (1 article in a refereed journal and 2 scientific reports) in specialized scientific journals, which include some of the author's main theoretical and practical conclusions and recommendations for improving prices and pricing in construction enterprises.

## **9. Content of the dissertation**

The dissertation consists of:

### **Introduction**

### **Chapter One**

## **THEORETICAL BASICS OF THE MARKET, PRICES AND PRICING IN CONSTRUCTION**

1.1. Prices and pricing in the system of economic categories .



1.2. Modern concept of prices and value-based pricing in construction.

1.3. Factors affecting prices and pricing in construction.

## **Chapter two**

### **RESEARCH OF MARKET, PRICES AND PRICING IN CONSTRUCTION AT MACRO AND MICRO ECONOMIC LEVEL**

2.1. The Bulgarian construction market in the context of functioning of the European construction market.

2.2. Regulatory framework and analysis of prices and pricing in construction in the research and design stage.

2.3. The prices and pricing in the stages of creation and realization of construction products in the context of the use of software products.

## **Chapter Three**

### **OPPORTUNITIES FOR IMPROVING PRICES AND PRICING IN CONSTRUCTION**

3.1. Methodological toolkit and practical research of prices, pricing and pricing strategy in construction companies.

3.2. Advanced construction production pricing model.

3.3. Possibilities for improving pricing in construction enterprises based on a pricing strategy in a dynamic economic environment .

**Conclusion**

**Appendices**

**Sources used**

## **II. BRIEF STATEMENT OF THE DISSERTATION PAPER**

### **Introduction**

The introduction outlines the relevance of the topic. The object and the subject of research, the main purpose, the tasks and the research thesis are defined. Research methods and scope limitations are presented.

## Chapter one

### Theoretical foundations of the market, prices and pricing in construction

**First chapter** is devoted to the theoretical foundations of the market, prices and pricing in construction. The essence has been studied and some basic concepts in the field of pricing have been specified, incl. in construction.

**The first paragraph of the first chapter** examines the essence of the market, prices and pricing as part of the system of economic categories.

The positions, opinions and statements of a number of authors and distinguished economists, who over the years have given their definitions of the concepts of price and value, have been analysed. Basically, the nature of price is addressed in two main theories: the labor theory of value and the theory of marginal utility. According to the labor theory of value, the basis of price is the value created by labor, with the result that the price of a product is a monetary expression of its value. In this theory, the concepts of price and value are clearly distinguished, with value being the objective basis of price. According to the theory of marginal utility, price determines utility, the extent of which each market participant determines based on their own subjective perceptions. The summary of the two theories is that in the labor theory of value, price is determined by supply, resp. the value, and in the theory of marginal utility, that the price is determined by the demand, resp. by utility.

Due to the nature of the research, in which one of the main directions is to analyze pricing in construction, the main characteristics of the market are considered. The relationship between prices and the market is extremely complicated and complex. In this plan, the definition for market pricing given by E. Micheva <sup>1</sup> is adopted, namely: "...the establishment of this price level, which is recognized by the market as the only possible under given conditions of production

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<sup>1</sup> Micheva, E. Market, prices and marketing. Sofia: Bulgarian Chamber of Commerce and Industry, 1993, p.85.

and sale and is socially necessary for the extended reproduction of the business entities with the largest market shares'.

Attention is also given to the determination of the price from marketing point of view, which defines it as a value on the part of the consumer, provided to him by the manufacturer. This leads to the examination of prices at the microeconomic level, where they are divided into company and contractual. Company prices, resp. company pricing are the prices and price level determined by a given company (enterprise), which are optimal for it and are consistent with its interests, competition, demand and costs of production and sales. The contractual prices and the contractual pricing reflect the actual conditions in which the relationships between the commercial partners who execute the purchase and sale are carried out.

From the presentation made in the paragraph, the following conclusions are indicated regarding the market, prices and pricing:

1. Price is related to commodity-money relations. Money is a measure of the value of goods and services and turns it into a price. Through the price, value is equated with the value of money, as a commodity-equivalent;

2. Prices are a reflection of the development of production and exchange. Production costs are the basis for calculating the prices of goods and services and determining their lower limit, and the upper limit is determined by the value of the goods;

3. Prices are a criterion for production efficiency and, based on the development of technologies and innovations, indicate the direction of development of a given construction enterprise.

**The second paragraph of the first chapter** is devoted to the modern concept of prices and pricing based on the value in construction.

The essence and specifics of prices and pricing in construction have been clarified and specified. A modern concept of prices in construction, based on the value of the construction production, has been adopted.

In the dynamics of economic processes affecting prices and pricing in general and in the construction sector in particular, we observe their orientation towards sustainable development, maintenance and related costs throughout the life cycle of construction production, the price sensitivity of clients (investors) and the value perceived by them.

In today's economically competitive and dynamic conditions and globalization of markets, the main goal of construction enterprise managers is to create value for both clients and users of construction products. In construction, the main mistake construction company managers make in pricing is that they do not distinguish "actual value" and "client value" or neglect user value research. The reason for this is that the construction company is too "close" to its production <sup>2</sup>. Therefore, the construction practice still requires the understanding that the client is the one who must accept the decisions of the designer and the construction company regarding constructive, functional and aesthetic solutions. What is important in this case is that all three parties (client, designer, construction company) interact correctly and are able to combine their views on the value of the construction production. The actual value is created by the designer and the construction company, but the value for the client is subjective and based on his specific needs, views and criteria for aesthetics and functionality.

Construction companies and specialists who deal with the pricing of construction products must understand the value as a combination of two inseparable and interrelated characteristics - value and utility of the product. The value must be accepted at the beginning of the creation of the construction product, even in its conception - the design, and utility is one of the final characteristics of the construction product - when it is finished.

On the basis of the definition given by Ivan Zhelev for an investment process, which is understood as "targeted activities of the clients, connected with preliminary researches and planning of real investments, design, construction and

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<sup>2</sup> Monev, P. Pricing in construction. Varna: Science and Economics, 2018, p. 29.

commissioning of buildings and facilities"<sup>3</sup>, two main stages can be distinguished in which value can be created. The first stage is research and design - the creation of the investment project, including surveys, drawings of all necessary parts of the project, explanatory notes, details, specifications, etc. The second stage in which value is created is the stage of construction, in which the ultimate goal is the creation of finished construction products for intermediate or final consumption.

The position of V. Blagoev, P. Banchev, E. Marinova<sup>4</sup> was adopted that the product and its properties are evaluated according to its intended purpose and its functional abilities to fulfill this purpose and are divided in four levels. On this basis, it is believed that construction production should also be evaluated in four levels forming its user value: construction production in design, in actual execution, in support and in recognition. The specific features are that the construction product in design is formed in the pre-investment surveys; the construction product in actual execution goes through the design stages (conceptual project, technical project and working project) and then is implemented in reality - in the construction process; the construction product in support is offered with services that are specific to it; construction production in recognition is more difficult to achieve due to the insufficient solvency of a large part of the clients (consumers).

Various authors have been examined who give definitions of the relationship between price and value, as well as the management of pricing by construction companies, respectively the creation of value for the clients (consumers).

The main differences between cost and market approaches to pricing are discussed. The main advantages and disadvantages of both approaches are indicated.

As a result of the research in the paragraph, the author believes that the following main conclusions can be drawn:

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<sup>3</sup>Zhelev, I., S. Hristova, M. Ivanova. Management of the investment process. Varna: Science and Economics, 2016, p.43.

<sup>4</sup>Blagoev, V. Marketing. Principles, segmentation, positioning, analyses, strategies, marketing mix. Sofia: International University, 2003, p. 207; Banchev, P. Marketing. Svishtov: D. A. Tsenov, 2004, p. 311; Marinova, E. Marketing - product, advertising. Varna: Princeps, 1992, p. 111, etc.

1. There is no universal definition of the concept of "construction product price". Bearing in mind the theoretical statements regarding prices and pricing discussed so far, incl. from the point of view of the value, we suggest that the concept of the price of the construction product, in which its value is reflected, should be specified in the following way: a monetary expression of the value of the construction product, perceived and evaluated by the client, created in the stages of design and construction.

At the heart of this definition is the understanding that the price reflects the value that is provided to the client by the designer and the construction company, according to the continuous interaction of all three parties.

2. Some of the main characteristics of the construction product which add value to the client and which play an important role in concluding a contract for the realization of the construction product are: the favorable impact on the environment, health and safety, creativity, innovation, guarantees, value for money and time, price and quality. It is of particular importance that these valuable characteristics are created and reflected in the construction production.

3. Pricing based on value is the beginning of the process of creating added value of the construction product.

4. The concept of "Value of construction production" will develop and occupy an increasingly large place in economic relations in the construction sector.

**In the third paragraph of the first chapter**, the factors affecting prices and pricing in construction are presented.

The specific features and characteristics of prices and pricing in construction are outlined, and on this basis, an advanced classification of the factors influencing them is proposed.

On the basis of some definitions by specialists in this field, a definition of "price-forming factors in construction" has been derived: phenomena, forces, reasons, regularities and conditions that determine the level and movement of the prices of construction products and determine the nature of the process of their formation.

Classifications of price-forming factors by various authors were examined, including: Y. Vladimirova, S. Klasova, V. Pehlivanov, A. Zayler , V. Galabova, P. Monev, and others. The studied classifications are conditional in nature. This is caused by the fact that the same pricing factors fall into two different groups according to a given attribute. However, their characteristic features do not change - multiplicity, multi-relatedness, interconnectedness. The most common in practical pricing are factors such as: demand, resp. the users; the supply, which finds expression in the quality and life cycle of the product; profit, competition, financial and credit instruments (VAT, excise duties, customs duties), international prices, etc.

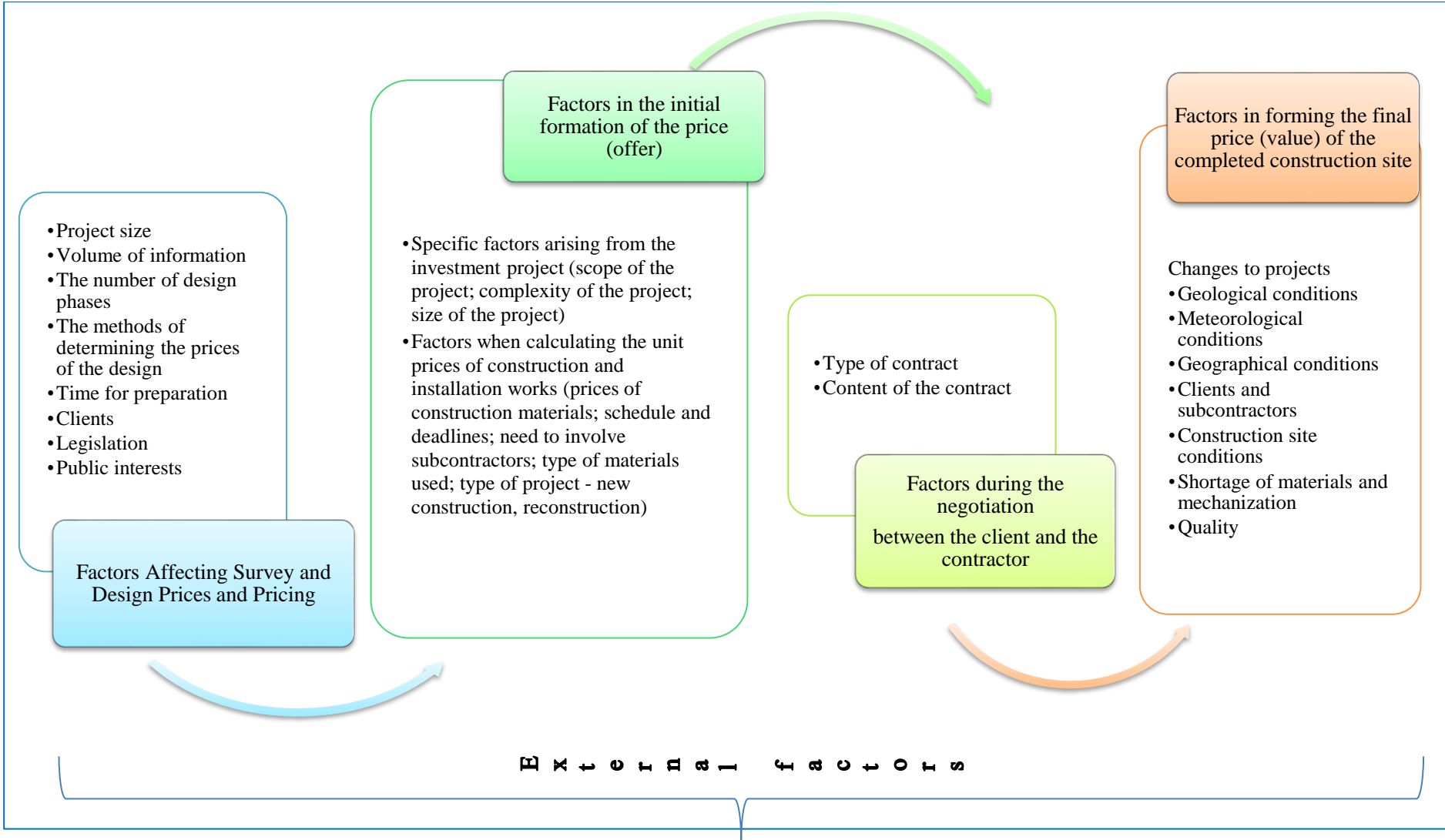
A classification is proposed based on the construction pricing process, as well as the structure of the investment process, which also determines the composition of the construction pricing system. It is divided into two stages:

First stage: Investment research and design.

Second stage: Construction (creation of construction production).

The pricing process in construction is in accordance with the indicated stages. Based on them, we propose that the pricing for the participants in the construction process should be in the following logical sequence:

1. Initial formation of the price of the construction object (offer price);
2. Price negotiation process between the client and the contractor (the construction company) of the construction;
3. Formation of the final price of the completed construction site (See Fig. 1).



**Fig.1 Classification of pricing factors in construction**

*Source : Developed by the author*



The first group are factors influencing prices and pricing in the stage of research and design :

- The number of phases of the specific investment project.

- The methods by which prices of research and design works are determined in design practice. According to the this criteria the following pricing factors can also be derived influencing the cost of research and design works:

1. All expenses, which are included in the cost of research and design works;

2. Cost of construction and installation works;

3. Others factors - the complexity and uniqueness of the designs object, as well as the hourly rate of the designers and the personnel involved in the design.

- Reputation of the designer

- The availability of ready project documentation

- The time invested in the development of the specific project

- Clients

- The interests of society

- The legislation

- Climatic conditions

The second group of factors influencing the initial formation of the price (offer) of the construction product:

1. Specific factors originating from the investment project

- Scope of the project (drawings, explanatory notes, specifications)

- Complexity of the project: degree of complexity of the designed structure, use of modern technologies, specialized equipment and specialized construction methods

- Size of the project

2. Factors affecting the calculation of unit prices:

- A factor related to construction materials pricing

- Schedule and timings deadlines
- Need to involve subcontractors
- Type of used materials and terms of delivery
- The type of the project - new construction, improvements, reconstruction, modernization or renovation

The third group of factors are factors during the negotiation between the client (investor) and the construction company

- Type of contract
- Content of the contract

The fourth group of factors are those influencing the formation of the final price of the completed construction production. In this group are involved specific factors during construction. Such as:

- Changes to projects during construction
- Unknown or unforeseen geological conditions
- Weather conditions
- Geographical factors
- Factors related to clients and subcontractors
- Construction site conditions
- Shortage of materials and mechanization
- Quality

Fifth group pricing factors are the external, uncontrollable factors .

- Economical factors
- Political factors

The above-mentioned in relation to the influencing factors on prices and pricing in construction, gives reasons for the author to draw the following main conclusions:

1. The classification of pricing factors in construction, which is proposed in the present development aims to support the study of factors in the formation

and change of prices in construction by construction company managers and pricing specialists.

2. The pricing practice shows the need for such classification and study of pricing factors in construction. It is required by the need of pricing specialists in this area to collect information on the formation of construction production prices.

3. Based on the proposed classification of pricing factors, the managers of the construction enterprises and their pricing specialists should choose the most appropriate pricing factors. This will help the selection and implementation of successful pricing policy and strategy for the construction company.

## **Chapter two**

### **Research of the market, prices and pricing in construction at a macro and microeconomic level**

**The first paragraph of the second chapter** is devoted to research and analysis of the Bulgarian construction market in the context of functioning of the European construction market.

The number of construction enterprises in Bulgaria, as well as the number of employees in the "Construction" sector, was studied. The number of construction companies according to their size is shown. These indicators provide information on the competitive environment and the size of the markets in which construction companies are located.

Enterprises are also presented according to the main types of construction, incl. in construction design. For the studied period (2015 - 2020), the most enterprises are engaged in construction of buildings (an average of 44% for the period), after that residential and non-residential construction (an average of 40% for the studied period), infrastructure construction (an average of 12% for period) and design (average 4% for the studied period). For the considered period, only the number of enterprises engaged in infrastructure construction

showed a decline, with a slight increase observed in the last two years of the period (by 91 in 2019 compared to 2018 and by 142 in 2020 compared to 2019), but without reaching the levels of 2015.

The change in the number of enterprises in the "Construction" sector in countries of the European Union (EU) and other European countries for the period 2016-2020 is also presented. In Bulgaria, there is a positive growth in the number of enterprises in the "Construction" sector, with the highest (3.31% compared to the previous year) occurring in 2019. Despite this positive trend, in 2020, according to Eurostat data, enterprises in the sector grew by 2.31% compared to 2019, which places the country after countries such as Estonia (3.98%), Croatia (4.72%), Cyprus (3.33%), Malta (19.13%), Portugal (4.36%), Romania (10.33%) and others.

Tables and figures summarize data on the revenues of construction companies in Bulgaria from construction and installation works, new construction and improvements and current repairs. The data are for total value (in million BGN ) for construction and installation works and separately, divided by revenue and for construction and installation works by main types of construction, such as: residential, non-residential and civil construction.

An increase in revenues from construction and installation works is observed from 2017 until 2020 with nearly 25% which before that (in 2016) was preceded by a decline (BGN 6,668 million compared to 2015). This decline in revenue is reflected in non-residential and civil construction which are significantly decreased by 29.1% and 54.6% (See Appendix 2). For the same year revenue from residential construction shows growth of 33.1% compared to 2015. The smallest increase in revenue from construction and installation works, compared to the previous year, is observed in 2019 (by 8.5% compared to 2018), and the largest – in 2020. (39.1% compared to 2019). The revenues from non-residential construction in 2020 are decreased by 9.5% in 2020 compared to 2019, which is equal to BGN 402 million.

There are data presented on the concluded contracts in the "Construction sector" for the period 2017-2021. The number of contracts and the value at which they are concluded are presented by main types of construction (engineering, energy, plumbing infrastructure and construction of buildings), as well as in general for the sector. From the data in the table, a trend of increasing the number of contracts in general for the sector is apparent. Biggest increase in number of concluded contracts is observed in 2021, compared to 2020 - by 14% or 481. Despite the increase in the number of contracts, the value on an annual basis decreases in the last two years of the observed period. After a sharp increase of 199.1% or by 5,755 million BGN in 2019, compared to 2018, in 2020 it marked a drop of 46.1% or 3,987.4 million BGN compared to 2019, and in 2021 by 23.7% or 1,105.1 million BGN compared to 2020. At the end of the period (2021), contracts increased by 39.9% or 1120 contracts compared to the beginning (2017), and the value for which was concluded by 49.2% or 1,172.5 million BGN compared to 2017.

To stay competitive and to win advantage and positions in the construction market, Bulgarian construction companies must consider the following main trends in the sector <sup>5</sup>:

- The development of construction technologies in order to improve the efficiency of work processes;
- Prefabricated construction;
- Building Information Modeling-BIM;
- Investments in infrastructure;
- Software for managing construction processes and, in particular, pricing software;
- Better equipment regarding healthy and safe working conditions;
- "Green" construction, etc.

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<sup>5</sup> <https://www.transparencymarketresearch.com/construction-market.html> (as of 01.09.2022)

Although digital technologies are entering the construction sector more difficultly and slowly compared to other industry sectors, they are expected to play key role in transforming the way different construction objects are designed, built, maintained and operated. These new technologies compel interested parties of the construction market to adopt new construction practices. The integration of digital technologies remains key to increasing the safety , sustainability and productivity of construction sites.

The growing dangers regarding the environment and ecology and the adoption of "green" construction stimulate the activities in the construction market. The energy regulations set by the European and World regulatory authorities stimulate the entry of new enterprises in construction market which are specialized in this type of construction.

Innovations in the field of construction materials also have a significant impact on costs, resp. on prices and pricing in construction, as well as on the sustainability and quality of the implemented processes. The production of such materials, as well as the optimization of already existing ones, also contributes to a large extent to the development of the construction market

Based on the analysis of the construction sector by main economic indicators, we summarize:

1. Regarding the type, construction market is segmented mainly in: design of buildings and facilities with a relative share of about 4%; infrastructural and civil (public works) construction (bridges, roads, railways, water supply and sewerage, etc.) – relative share 12%; construction of buildings with a relative share of 44%, and residential and non -residential construction, with a relative share of 40%.

2. The construction enterprises which are established in the market are facing strong competition due to the appearance of more and more construction enterprises in the period under consideration. In six years, construction

enterprises have increased by 1,930 or nearly 10%. Enterprises with 0-9 employees prevail, as in 2020 they are 18,026, which is nearly 85% of the total number of enterprises in the "Construction" sector.

3. Working in a highly competitive environment stimulates enterprises in the sector to build buildings and infrastructure adapted to changing social and economic needs, as well as to meet challenges like energy security and change of the climate. Also, competition leads to the attraction of quality labor in the sector, which in turn makes it attractive to work (employees for the period under study increased by 6,655 or nearly 5%), as the opportunities for career development, good pay and safety at work are increased.

4. To be competitive, the participants in the construction market aspire to optimization of the price-quality ratio of construction products, as well as to the creation of individual and unique construction projects reflecting the value for the client (investor) and society.

5. The European construction market is affected by policies such as these related to environmental protection, energy efficiency, safety of labor, taxation and public procurement.

6. Despite the slowdown and decrease of some indicators of the construction market in the last year of the considered period, a positive development trend is observed in the sector. Some of the factors driving this development are: technological development; input of high-quality raw materials.

**In the second paragraph of the second chapter**, the normative basis of prices and pricing in construction at the research and design stage in Bulgaria and other developed countries is presented and analyzed.

The regulatory framework in Bulgaria for investment research and design is represented by "Regulation No. 4 of May 21, 2001 on the scope and content

of the investment projects" <sup>6</sup>, which applies to all sites for which an approved investment project is required when a building permit is issued. In it, the researches are defined as pre-project (pre-investment) and volume-spatial.

For pricing purposes, it is very important to accurately define the criteria which research and design activities are creative and which are not, as well as to define the scope of the research and design and what opportunities can be provided through this product.

The regulatory framework for pricing research and design production in the country is presented by the "Methodology for determining the amount of fees for providing design services in spatial planning and investment design" <sup>7</sup>.

Article 6 of the Methodology specifies four methods by which to determine the cost of the design service, namely:

1. Based on a calculation of the individual elements of the cost price.
2. As a percentage of the building value of the site.
3. Based on an algorithm for processing essential natural indicators of dimensionality and complexity of the designed object or its section (part);
4. By evaluation of direct labor costs at designers' hourly rates.

A comparative analysis was made between the four listed methods for determining the costs of the design service.

Countries that have a developed investment market and have great experience in the field of R&D pricing were considered, namely: Germany, Italy, Canada, the USA, etc.

"Fees of engineers and architects" ( Honorarordnung for Architekten und Ingenieure (HOAI <sup>8</sup>) is a statutory scheme for calculating the amount of fees for architects and engineers in Germany. It is mandatory for all legal entities and

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<sup>6</sup> Ordinance No. 4 of May 21, 2001 About the scope and content of the investment projects. // Pron. DV. No. 51, 2001; final \_ DV. No. 44, 2017.

<sup>7</sup> Methodology for determining the amount of fees for providing design services in structural planning and investment design. //SG No. 17, 2008; last \_ amended, No. 46, 2018. For brevity, we will call it just the Methodology.

<sup>8</sup> Verordnung über die Honorare for Leistungen der Architekten und der Ingenieure ( Honorarordnung for Architekten und Ingenieure ), in force from 01.01.1977; final \_ Art . 1 VO vom 2. Dezember 2020.



individuals who provide architectural and engineering services, but not if these services are agreed as an addendum in a general contract for the execution of "turnkey" construction.

The fee for the main types of research and design work is determined based on the value of the construction site in accordance with the fee zone to which it belongs. Through the established amounts of design fees, the aim is to guarantee the quality of the projects, and based on this, the factor of competitiveness should be the quality, not the price. The scheme and its elements do not contradict the principles of a free market in the European Union.

In Italy, the prices of research and design works until the beginning of 2012 are determined by a normative document "Order for determining the fees of architects in Rome and the provinces" <sup>9</sup>. In this document, four methods for determining the price of research and design works are regulated for use, namely: as a percentage of the size of the construction works; according to natural indicator unit; by time worked; by a method taking into account professional criteria.

Typically, fees are set in percentage (%) or monetary amount. In cases where the design has to be done in a shorter time than necessary, the value is increased by 15%.

As of 24.01.2012, this normative document has been canceled and the parties freely agree on the prices of research and design works.

In Canada, there is an Institute of Canadian Designers (Canadian design-build institute (CDBI <sup>10</sup>)), which offers best practices to support design development. The Institute's priority is to provide guidelines and recommendations for the successful provision of design services. Proposals regarding the prices and pricing of research and design works have also been

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<sup>9</sup> ORDINE DEGLI ARCHITETTI DI ROMA E PROVINCIA. // No. 14, 1949, revoked  
<sup>10</sup> <https://www.cca-acc.com/best-practices-resources/cdbi/> (as of September 1, 2022)

developed. They are presented in the "Guide to the Calculation of Designers' Fees" . A fee is offered to each designer, based on 50% of the acceptable cost estimate. In addition, it is recommended that the fee amount be based on the complexity of the project as well as the level of detail contained in the design brief.

In addition, the Royal Architectural Institute of Canada<sup>11</sup>, offers an Architectural Design Pricing Guide<sup>12</sup> to help architects identify the scope of their services and their pricing. According to this guide, there are three general pricing methods for research and design work: Fixed price; Time base; Percentage cost.

In the US, there is the Design-Build Institute of America <sup>13</sup>, which is the only organization that defines, educates and promotes best practices in design. Employers choose design-build (here design and build in one) to achieve the best value, meeting objectives in terms of planning, cost and quality. The Institute aims to provide education, training, networking and advocacy for all participants involved in the construction industry (architects, engineers, specialists, contractors, consultants, lawyers, business development professionals, students and teachers).

Based on the analysis presented in the paragraph, the following conclusions are drawn:

1. When determining the price of the service they offer, designers are guided by the market situation and the economic situation. The status of competitors is also monitored. Thus, in an effort to be more and more competitive, they offer higher quality research and design output to the clients.

2. When creating the regulatory framework for the pricing of research and design production in Bulgaria, some methodological approaches applied in

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11 <https://raic.org/> (as of September 1, 2022)

12 Royal Architectural Institute of Canada . A Guide that Determining Appropriate Fees for the Services of an Architect . Ottawa , Ontario . 2019. Available at: [https://raic.org/sites/raic.org/files/nov2020\\_2019\\_fee\\_guide\\_en\\_web\\_4.pdf](https://raic.org/sites/raic.org/files/nov2020_2019_fee_guide_en_web_4.pdf) (as of 09/01/2022)

13 <https://dbia.org/> ( as of September 1, 2022)

other countries with significant experience in the pricing of design and construction were borrowed .

3. By introducing methods for pricing research and design works, the Chamber of Engineers in Investment Design and the Chamber of Architects in Bulgaria prevent monopolization, unfair competition and unequal status in the market of research and design works in Bulgaria.

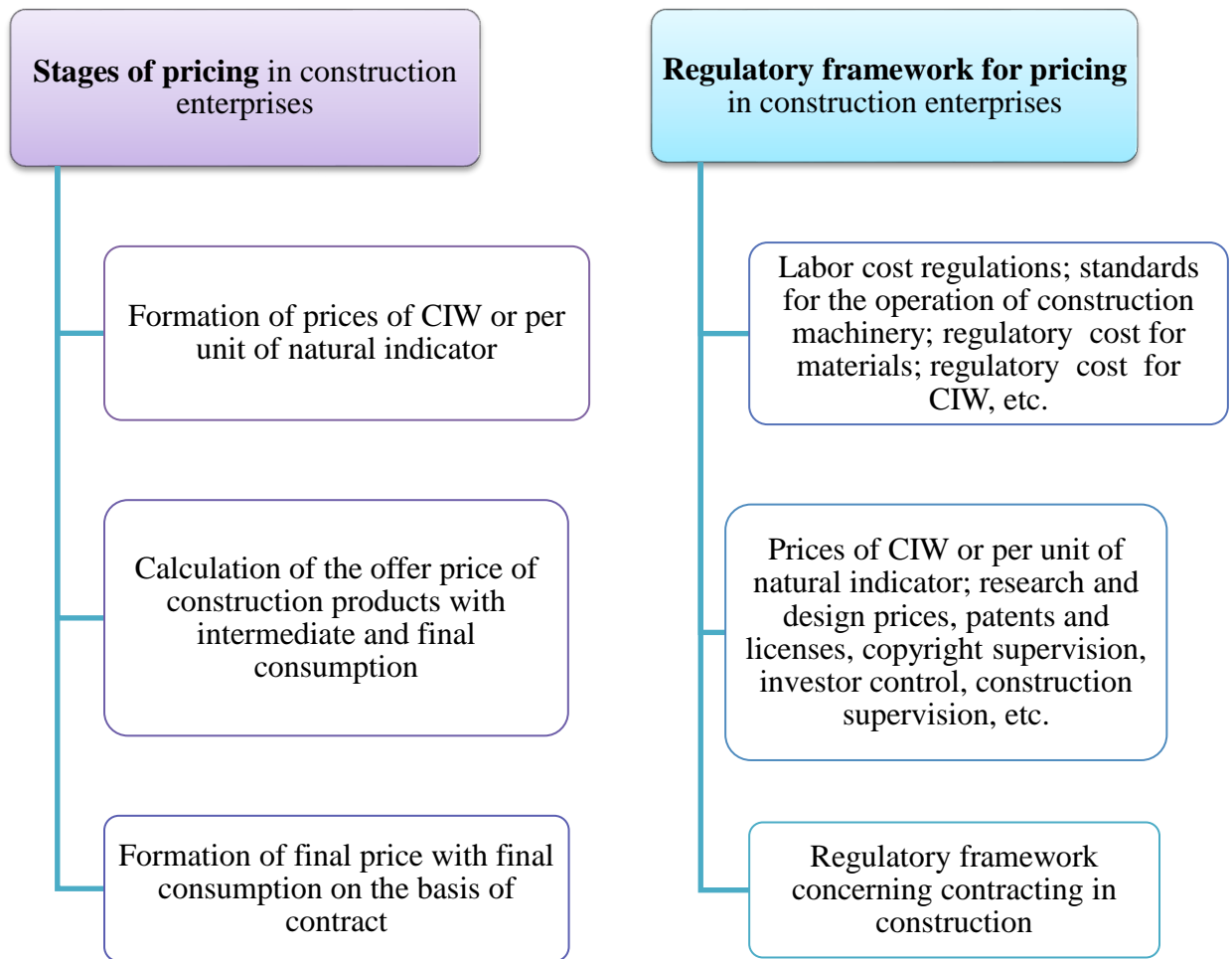
4. Despite the existence of different methodologies for determining the prices of research and design works, in many European countries there is a tendency to gradually eliminate this type of regulation in pricing. The minimums are removed and there is a shift to recommended prices (Austria, Belgium, Denmark, Italy, etc.) or free negotiation (Great Britain, Ireland, Sweden).

5. International practice shows that it is much more effective to determine the cost of research and design works through a combination of different methods, rather than just one. For example, it is more appropriate to use one method for one phase of the project and a different method for another phase.

**The third paragraph of the second chapter** presents the ways of determining prices and pricing at the stages of creation and realization of construction products in the context of the use of software products.

The regulatory framework for pricing in construction is mainly grouped according to the main pricing stages in enterprises (See Fig. 2.).

To the regulatory framework of the first stage, in addition to the regulations indicated in the figure, enterprises also add: the hourly wage or the so-called tariff rate by specialties and qualification levels; the prices of machinshifts (machine hours); the prices of building materials, as well as finished products and structures; the regulatory expenses for organization and management, etc.



**Fig.2. Regulatory framework for pricing in construction enterprises**

*Source: Developed by the author*

At the second stage, the developed transport schemes and tariffs can be added; standards for delivery and storage costs, for winter and temporary construction, for unforeseen costs; regulatory cost for repair and reconstruction (if this is possible), as well as the database supporting the software compilation of the price of construction products.

All these elements of the regulatory framework for pricing in construction lead to the larger complexity, compared to the regulatory framework in the others sectors from the sphere of production. Above all however, the market and market relationships are the natural regulators and the determining factor for the

scope and content of the regulatory framework for pricing in construction enterprises.

In order to perform the activities of forming both unit (analysis) prices and offers, construction companies use specialized construction pricing software products. They are perceived as a means of faster and more accurate calculation of the value of a given object, as they contain a certain database with norms and prices for individual elements.

In Bulgaria, software products for pricing in construction that are mainly used, are developed by Bulgarian companies with many years of experience in this field. The most commonly used software products have similar functional characteristics, mainly adhering to the maintenance of a database of regulations, the possibility of compiling individual (analytical) prices, quantity-value accounts, acts of completed work and schedules. The strive to update software products gives users confidence that the database and tools are updated according to market conditions. The possibility of integrated work with Microsoft products (the most commonly used operating system) gives freedom to users (construction companies) regarding the formatting and sharing of the created documents with their clients.

Internationally, the use of pricing software products is more widespread and a large number of products exist in this area. They come in many varieties and can range from providing simple spreadsheet templates to an online collaboration software product with diverse features that optimize many more pricing-related processes in the enterprise. Some software products are created for individual companies specializing in more specific areas of construction and performing individual parts of the project as subcontractors - electricity, water supply and sewerage, heating, ventilation and air conditioning, etc. Other software products are intended for general contractors or those without a specific focus.

Based on the considered functional characteristics of Bulgarian and foreign software products for construction pricing, we indicate following findings and differences:

1. Internationally, the trend is towards using cloud (web based) software products for pricing in construction, while in Bulgaria they are still used locally, installed on the user's server system. The local installation limits the work to a certain number of users, and also the price which the enterprises have to pay for the software license is higher without giving possibility to choose only the necessary functions from the relevant software.

2. In Bulgarian pricing software products there is no system for receiving the drawings and specifications directly from the designers through the software as well as feedback again through this system to clarify some details or omissions in the projects.

3. Many foreign construction pricing software products have a feature that generates subcontractor inquiry forms, then makes it easier to compare several different subcontractors for the same job.

4. While in Bulgarian software products it is possible to apply prices of materials from invoices or to integrate the software product itself with an accounting software and thus to obtain information about the prices of materials, in foreign ones it is possible for material suppliers to provide up-to-date prices and terms of delivery.

5. One of the distinctive functions of foreign software products for pricing in construction is the customer contact management system, which in Bulgarian is absent or found only in ERP software products.

### **Chapter Three**

#### **Opportunities to improve prices and pricing in construction**

**In the first paragraph of the third chapter,** a methodological toolkit is presented and a practical study of prices, pricing and pricing strategy in construction enterprises is carried out.

The purpose of the survey is to collect information that would enable the determination of the characteristics of prices, pricing and pricing strategy of construction enterprises in the conditions of a complex and dynamic market.

The survey includes basic indicators in this field - characteristics of the price system in the construction enterprises under research, the pricing process of construction products with intermediate and final consumption, incl. the software products used, the offer and final prices of construction products, the evaluation of the price strategy used by construction companies.

Based on the results obtained and the conclusions drawn, recommendations are formulated for improving the pricing process in construction companies in Bulgaria and forming and implementing a competitive and effective pricing strategy. The indicators are determined using the current regulatory framework in the country.

The survey covers the period February 2022. – April 2022 and was conducted through a survey (computer assisted web interview) realized in electronic form. It is oriented entirely to managers of construction enterprises, heads of tender (price) departments and construction pricing specialists. For this purpose, a survey was distributed in electronic form via Google Forms on a random basis to acting construction enterprises from the register of the Chamber of Builders in Bulgaria (CBB) and other active construction companies registered under the Commercial Law.

Micro, small, medium and large construction companies from all administrative and territorial units (ATU) in the country are surveyed, carrying out different types of construction as main activity. 101 respondents answered the survey.

Based on the results of the conducted survey in this paragraph, the following conclusions are made:

1. Construction enterprises are oriented more to the non-price methods of competition which suggests modern and quality construction carried out by qualified workforce and the use of quality and certified construction materials.

2. In small and micro construction enterprises, the manager (the management) deals with pricing while in medium and large enterprises there is an independent tender (price) department, which is a prerequisite for better quality pricing and winning more offers.

3. In market research, most construction companies research the factors that influence prices and pricing, confirming the importance of their research.

4. Most construction companies develop their own standard costs or successfully adapt ready-made standards for labor, machinery and building materials for the purpose of their pricing.

5. Still few enterprises reflect the value for the client in the price of the offered construction product. This necessitates working in the direction so that the value, embedded in the projects, to be achieved in the process of creating the construction product and, if possible, increasing it by the builder.

6. A large part of small and micro construction enterprises do not use a specialized software product for pricing, which suggests compensating for this disadvantage by looking for opportunities to implement such.

**In the second paragraph of the third chapter,** an advanced model of construction product pricing is proposed.

The considered basic theoretical propositions, as well as the practical experience of construction enterprises in Bulgaria in the field of prices and pricing in construction, enable their improvement to be implemented through an advanced model for the formation of the offer and the final price of construction sites.

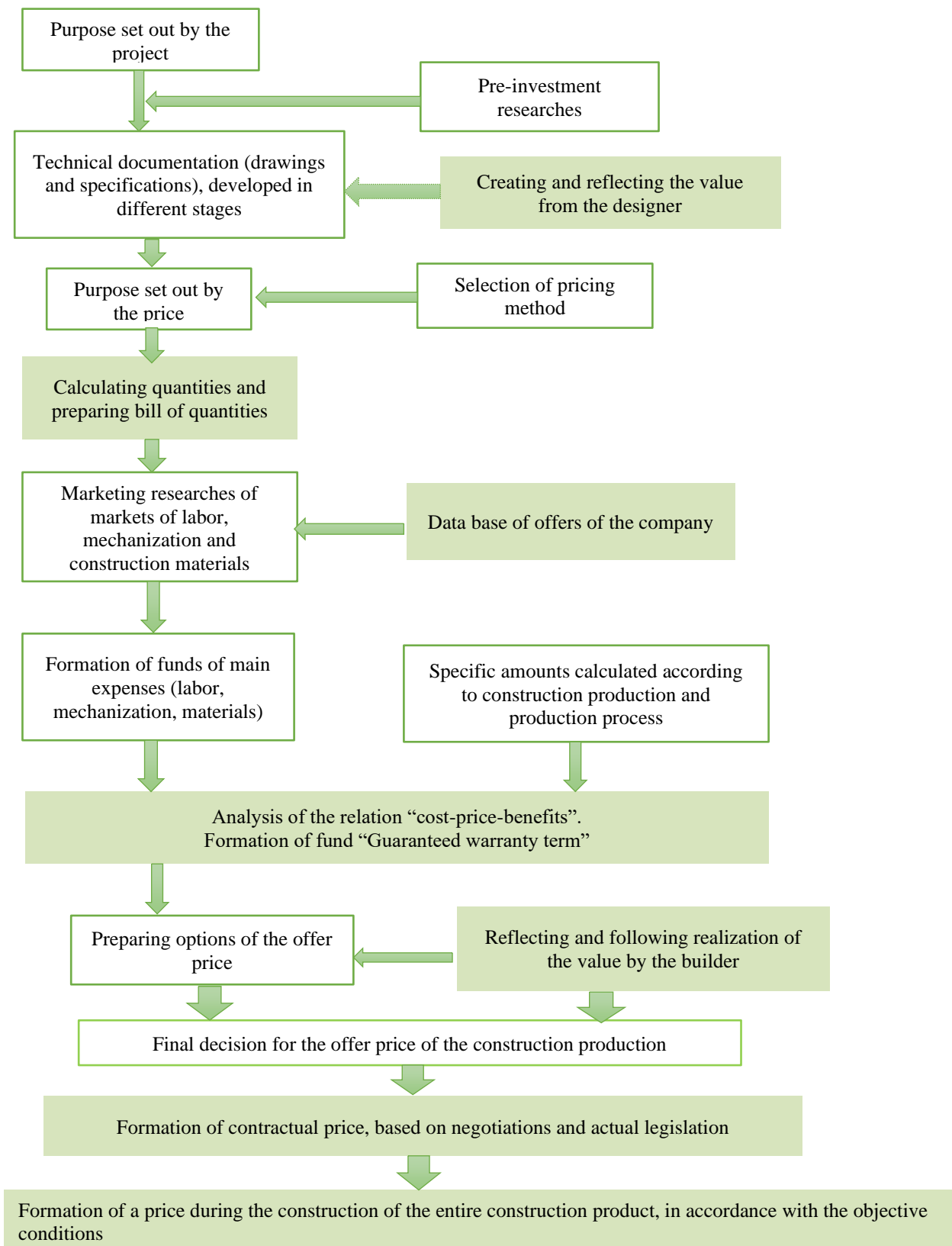


In the practice of many developed countries, the results of the models are usually necessary for construction projects to receive approval and to be included in business plans, budgets and other mechanisms for financial planning and follow-up. The pricing process is developed and supplemented during the design and construction stages. In the design process, a budget program of the project is initially prepared, then the design drawings and the documentation for them are prepared, and on this basis the offer price is determined. During the negotiation process, the prices of the services that will be carried out before the construction are determined, thereby determining the optimal price of the construction product. If necessary, the price is changed when there is a change in the client's requirements or corrections are made to the project. For the purposes of bidding, the unit prices of the construction and installation works are calculated in detail and, if necessary, changes that have occurred regarding the conditions of the client and the regulatory requirements for design are reflected.

Based on the classic pricing model, as well as P. Monev's model and supported propositions an advanced construction product pricing model is offered to be implemented by construction companies. The model offers improvements which should be included in the main pricing process that is used in practice. (See Fig.3).

The emphasis in the proposed advanced model is the creation and reflection of value at the research and design stage on the part of the designer and at the stage of creation of the construction product, on the part of the builder.

Value should not be regarded only as an abstract concept. It is manageable, so are the costs of creating the construction product. For pricing purposes, it is necessary that the value of the construction production be measured, analyzed, evaluated and to look for ways to create additional value. One way to do this is to use a value - based pricing approach.



**Fig.3. Advanced construction product pricing model**

*Source : Developed by the author*

The benefits of this model are the following :

- It combines the advantages of the cost and market approach to pricing based on value of construction production.
- It suggests ease of use with pricing software products.
- It is combined with market methods and allows competition to be observed.
- It enables businesses to anticipate unforeseen events, such as competitive threats, technological changes, and on-site maintenance.
- It makes it possible to offer construction products with a greater price (value) and to take into account the requirements of the clients.

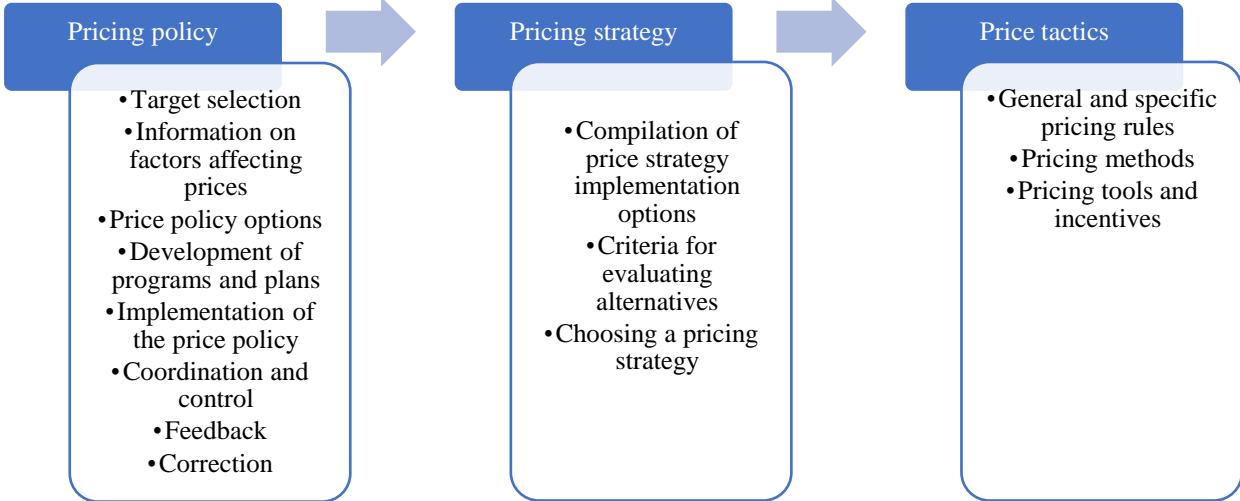
Based on the proposed advanced pricing model, the following recommendations are offered for construction company managers and pricing professionals:

1. To strive for continuous search for more effective solutions related to pricing management improvements.
2. To use software products for pricing, which provide an opportunity for faster and correct compilation of price offers.
3. To differentiate their prices according to the types of objects and clients, complying with their needs and understanding of value.
4. To carry out continuous communication with the designers both during the preparation of the offers and, if possible, already at the design stage, in order to avoid more mistakes and to respond to the maximum extent to the needs of the clients.

**In the third paragraph of the third chapter** are presented the possibilities for improving the pricing in the construction enterprises on the basis of pricing strategy in a dynamic economic environment.

The pricing process is an integral part and directly dependent on the overall management of the construction enterprise. In every management activity, including in the field of pricing, price policies, strategies and tactics are

formed (Fig. 4), which are part of the general economic policy and are related to the marketing activity of the enterprise. To achieve successful and profitable management, pricing strategies are developed that define and systematize the elements of prices and pricing.



**Fig.4. Technology of pricing in construction enterprises**

*Source : Developed by the author*

Construction enterprises do not use only one pricing strategy in their activity. Basically, they combine different pricing strategies and adjust them depending on the market conditions, the object for which they are pricing and the client to whom they will present their offers. It can be said that construction companies strive for the combination of pricing strategies, which is the right approach for more efficient and competitive pricing.

Of the enterprises that participated in the survey, 70.3% indicated that they use the calculative method of pricing alone or in combination with other methods. Less often, enterprises use methods that relate the price to the quality of the construction product (50.5%) and methods oriented to demand and supply (16.8%). Only 2% of the enterprises indicated that they use mathematical-parametric methods and none of them - statistical methods of pricing. The survey results show that construction pricing is still largely cost-oriented and much less oriented to market-based pricing methods.

Following market, social and economic trends, as well as the disadvantages of cost - based strategies, construction companies should be directed to market oriented pricing strategies.

Construction companies are in a highly competitive and fast changing market environment. In such conditions, the creation of value for the clients of construction production is of particular importance, the pricing decisions will be structured optimally, which in turn will lead to maximization of profit.

From the analysis made in the paragraph, several main conclusions are made

1. Most construction companies use a combination of the main pricing strategies – cost-based pricing, demand-based pricing, and competition-based pricing.

2. A large part of the construction enterprises participating in the survey still use the cost method of pricing and much less market-oriented (related to supply and demand).

3. Part of the enterprises give a high rating of the indicator "clients" as an external factor in their choice of price strategy, which shows that they aim their prices to comply with the requirements of the clients.

4. Among the internal factors influencing the choice of a price strategy, the application of the "price-quality-benefits" concept is highly rated, which shows an aspiration to match the prices with the quality of construction products and reflect the value and benefit for the client.

5. There is an attitude of the surveyed construction companies towards changing the price strategy and methods adopted by them.

At the end of the paragraph, the following main conclusions and recommendations are drawn, which will be useful for improving the process of pricing of construction products:

1. Adopting the thesis<sup>14</sup> of a pricing approach that is built on a pricing strategy that uses value-oriented pricing and a source of profit, we consider it appropriate for construction enterprises to adapt their pricing to such a value-oriented strategy in order to be successfully integrated and applied in practice. It should be combined with a cost- and market-oriented approach to pricing.

2. Adoption and integration in the construction enterprises of a concept of a continuous pricing process during the exploitation of the finished construction product until the end of the warranty period agreed between the contractor and the client. This concept interacts very closely with value-based strategy.

3. Development of software products for pricing based on the advantages of similar products developed abroad. In this way, construction companies save time in preparing their offers by making them as accurate as possible. Also, with their help they can manage relationships with designers and clients as well as their offers more effectively.

Using value-based pricing requires more than a general understanding of the elements of an effective pricing strategy. This implies a careful development of the organizational structure of the enterprise and its systems, the individual skills of pricing specialists, as well as a culture in this regard. These elements form the foundation upon which the value-based pricing pyramid rests and must evolve in accordance with the construction company's pricing strategy.

## **Conclusion**

The results obtained from the survey performed in the dissertation give reason to the author to believe that the pricing of the construction product should be based on its value. Construction companies in Bulgaria rely more on strategies based on cost approaches and pricing methods as more secure.

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<sup>14</sup> Nagle, T., Hogan, J. and Zale, J. The Strategy and Tactics of Pricing: A Guide to Growing More Profitable, 5ed., Boston, Mass.: Pearson, 2011.

### **III . DISSERTATION CONTRIBUTIONS REFERENCE**

The theoretical studies and the practical studies made on their basis allow to summarize the following more important points of contribution in a theoretical and practical-applied plan:

1. The nature and specificity of prices and pricing in construction has been clarified and these concepts have been refined. The dissertation develops the concept of prices in construction, based on the value of the construction product.

2. The specific features and characteristics of prices and pricing in construction are outlined and, on this basis, an advanced classification of the factors affecting them is proposed.

3. Based on a study of the construction market in Bulgaria and other economically leading countries and by using the survey method (according to a methodology developed by the author) with a wide range of business entities in construction, the state of this market, prices and pricing in them, incl. and the use of software products in this field are analyzed.

4. An advanced pricing model was developed, based on the market approach to pricing in construction enterprises and the value of construction production, and on this basis, guidelines were formulated for improving the pricing strategy in construction enterprises.

### **IV . DISSERTATION PUBLICATIONS**

#### **Reports**

1. Hristova, K. Factors affecting prices and pricing in construction. Construction entrepreneurship and real estate: Collection of reports from the

29th International Scientific and Practical Conference, Varna: Science and Economics, 2014, 328 - 339.

2. Hristova, K. Quality as a value in the price of research and design production. Construction entrepreneurship and real estate: Collection of reports from the 30th International Scientific and Practical Conference, Varna: Science and Economics, 2015, 479 - 491.

### **Articles**

1. Hristova-Bocheva , K. Formation and realization of a competitive pricing strategy of construction companies in a dynamic economic environment. Economics and Computer Science: [Electronic] scientific journal, Varna: Knowledge and Business , 8, 2022, 1, 41-53., ISSN(online) 2367-7791