

DEVELOPMENT OF INFORMATION BUSINESS AND FEATURES OF PRICING

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Abstract

This article outlines the key aspects of the information industry, the development of the information and communication technologies market, and pricing processes that play an important role in the business of information products and services. There are also important aspects such as price fixing approaches, its stages, the factors that affect it, and the base price algorithm which were highlighted in the article. It also describes key aspects of price determination models, methods, and strategies in order to make further developments in the sector.

Keywords: Information Technology, IT-market, information product, IT-service, innovation economy, economic growth information business, IT expenditures, information products price, pricing methods, pricing strategies, models of pricing

INTRODUCTION

Information and Communication Technologies (ICT) play an important role in the development of innovation, production and competitiveness of the country, diversification of the economy and entrepreneurial activity, as well as improving the living standards of the population. The close link between ICT development status and economic growth in the country set the task of introducing effective development mechanisms of information business (Kundishora, 2014; Begalov, 2013).

To understand all the system of economic relations that change and arise under the influence of information technology, the theory of value and prices for information products, services need further development at all (Van Grembergen, 2017).

The price was and remained the main tool that ensures the increase of production efficiency, as well as the harmonization of the interests of market relations approaches. Based on the identification of the essential features of pricing, determining the price structure, price proportions, a basis is formed for analyzing the functioning of the information market, opportunities and prospects for the development of the information economy (Begalov & Zhukovskaya, 2016).

This, in turn, necessitates the creation of theoretical prerequisites for the further development of a practical pricing mechanism for information products and services. Information is currently the same market product as any other product. The production, trade and provision of information products and services are called information business (Rowley, 2016).

The most common information products and services are: microelectronic components, computer hardware, software, telecommunications equipment, consulting services, information services, etc. The assessment of the information business is based on the same indicators as the valuation of any business entity. As the main indicator of efficiency is used income from sales (Musaliev, 2006).

METHODOLOGY

The study was conducted in Uzbekistan and it targeted the IT business market and economics of the country overall. The type of research that used in this study is qualitative research. Qualitative researchers aim to gather an in-depth understanding of information business and formation of price for information products and services. The research investigates decision making process of price formation. Besides this, the researcher will also examine open statistical data to make insights into IT market and growth of economy of the country. Along with open statistical data, interviews with the respondents and a few experts in this field was also conducted.

The primary data was collected using questionnaires and interview schedules while secondary data was collected through document analysis. Moreover, given recommendations on using tested functions of formation of prices for the information products and services.

Information business is oriented not only to the production of information products, but also their implementation on the market. Information market - a set of economic entities that offer customers computers, communications, software, information and consulting services, as well as maintenance of hardware and software (Tabach & Croteau, 2017).

Participants in this market are enterprises for the production of computers and data transmission facilities, organizations engaged in the development of software products, the

creation and operation of information resources (databases), telecommunications services as whole (Trantopoulos et al., 2017).

The information market is divided into two segments: the information technology market (IT market) and the telecommunications market (TLCmarket). The IT market includes: computer hardware, software, office hardware and IT services. TLC-market is considered as a following: communication services, end-user communication equipment and communication-network equipment (Naumov, 2016).

IMPACT OF INFORMATION TECHNOLOGY ON ECONOMIC GROWTH

According to the Ministry of Information Technologies and Communications of Uzbekistan, in the first quarter of 2017, the volume of services rendered by enterprises operating in the system of information technology and communication development amounted to 1.61 trillion soums. This is a 12.5% increase compared to the same period in 2016.

In January-March 2017, the share of exports of industry enterprises increased by 3.3% to \$ 28.92 million compared to the same period of 2016. Currently, 678 software companies are registered in Uzbekistan. In the first quarter of 2017, they rendered services for 25.5 billion soums and sold products worth \$ 131 thousand.

Currently, the share of ICT in the country's GDP is about 2%. At the same time, the share of information and communication technologies in the global GDP is more than 5.5%. According to experts, this figure is expected to exceed 9% in 2020.

One of the key indicators, characterizing the level of informatization, is the amount of costs for information technology. Table 1 shows the forecasts of global spending on information technology, calculated by Garther.

Table 1. Forecast of global IT expenditures (billion US dollars)

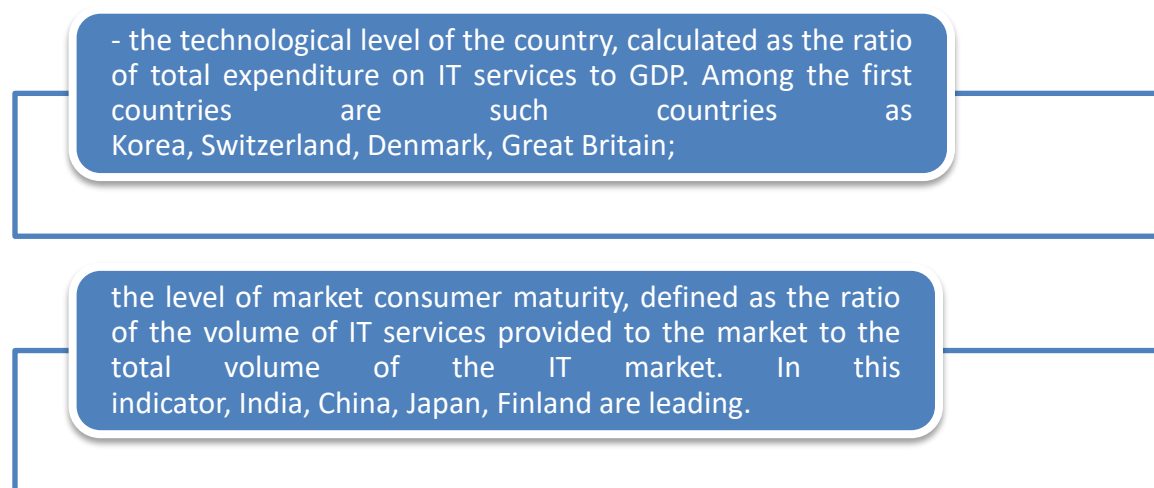
	2016 Spending	2016 Growth (%)	2017 Spending	2017 Growth (%)	2018 Spending	2018 Growth (%)
Data Center Systems	171	-0.1	171	0.3	173	1.2
Enterprise Software	332	5.9	351	5.5	376	7.1
Devices	634	-2.6	645	1.7	656	1.7
IT Services	897	3.6	917	2.3	961	4.7
Communications Services	1,380	-1.4	1,376	-0.3	1,394	1.3
Overall IT	3,414	0.4	3,460	1.4	3,559	2.9

Source: Gartner (April, 2017)

According to the forecast of Gartner, in 2017 world IT expenses will amount to 3.5 trillion. and will grow by 1.4% compared to the previous year. From the table it is possible to see growth in all directions in 2016. By 2017, Enterprise Software shows the lowest growth rates in 2016, with 5.5% and IT Services 2.3%, with the highest figures. It gives good results in this regard. IT Costs for Data Center Systems and Devices are expected to be positive with - 0.1% and -2.6% in 2017 and 0.3% and 1.7% respectively. In 2018, high growth rates and overall IT spending will grow by 2.9% in all directions (Gartner, April 2017).

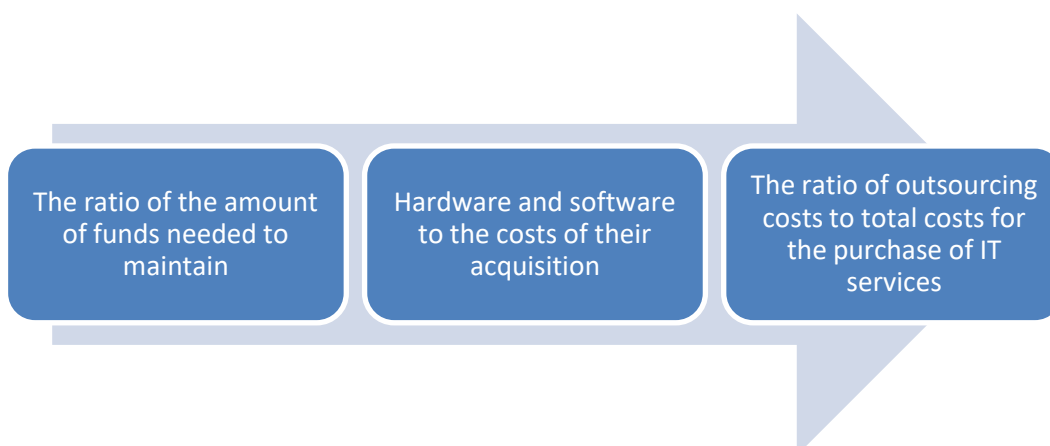
Demand for the IT market characterizes the level of the country's development. To determine this level, it is recommended to use two indicators:

Figure 1. IT development level of states



The diversity and complexity of the IT services provided in the country is usually determined by the following indicators:

Figure 2. IT services indicator



According to Figure 1 and Figure 2 could be identified categories of states on various factors as whole. The information systems market is currently focused either on automation of individual control functions or on complex automation based on the introduction of integrated systems.

MAIN STAGES AND FACTORS OF THE PRICE FORMATION PROCESS

An important issue related to IT costs is the pricing of information products and services. Effective pricing strategy is important for the companies of information products and services, as they have to recover their high fixed costs and ensure competition does not force their prices close to variable costs. In addition, the pricing strategies of each company can be a critical determinant of equilibrium market structure. A special advantage that companies in IT markets often have is that variable costs may be equal to almost zero, and this characteristic basis of many popular and successful pricing strategies. Below we generalize these strategies:

- Versioning. This type based on the quality of the product is particularly useful if the deterioration of the IT product for creating one or more versions of lower quality is not expensive. The article by Shapiro and Varian's (1998) provides an excellent description of the concepts and implementation of this strategy, highlighting a number of reasons for differentiation. Jones and Mendelson (1998) noted that version control might not be optimal for some kinds of utility functions. Based on this, the conditions under which version control is optimally analyzed in Bhargava and Choudhary 2002, and proposed indirectly in Sundararajan 2003.

- Bundling. Many "small" information products (for example, individual elements of web content, separate digital music streams) are sold in extremely large packages. This is possible, to a large extent, because their variable production costs are zero. In a couple of influential works, Bakos and Brinholsson (1999, 2000) justifies this strategy by showing that the packaging of information products increases the potential income of each individual commodity. Packaging also increases the market power of the company. Chuang and Sirbu (Chuang and Sirbu 2000) show that mixed packaging can be better. The effects of configuring content through categorization on strategy packaging are described in Kephart and Fay 2000.

Fixed-fee pricing. Sellers of information products often provide an unlimited number of users for a fixed fee. Again, this pricing strategy is possible because of their zero variable production costs. This pricing strategy is always beneficial in the presence of transaction costs, as established by Sundararajan 2003. Moreover, fixed pricing should often be offered in combination with second-degree price discrimination based on use (although not always - Varian 2000 provides a simple counter example), and this The pricing strategy complements the versioning and packaging management strategies described above.

- Other strategies. E-commerce increases the viability of using first-degree price discrimination for information products using software for dynamic pricing and agency technology. Some questions related to the use of this strategy are analyzed by Vulcan 1998 and Aron et al. 2001. Shapiro and Varian also recommend using price discrimination of the third degree, a popular strategy for software manufacturers for desktop computers. When there is uncertainty or asymmetric information about the value of the information product (for example, Internet advertising), Sundararajan 2003 shows that performance-based pricing can be profitable and can also signal the quality of the product.

The pricing process usually includes setting the settlement price, payment methods, types of discounts and allowances, price policy, determining prices for related or additional products and services, and so on. The main stages of the pricing process and their sequence are presented in Figure 3:

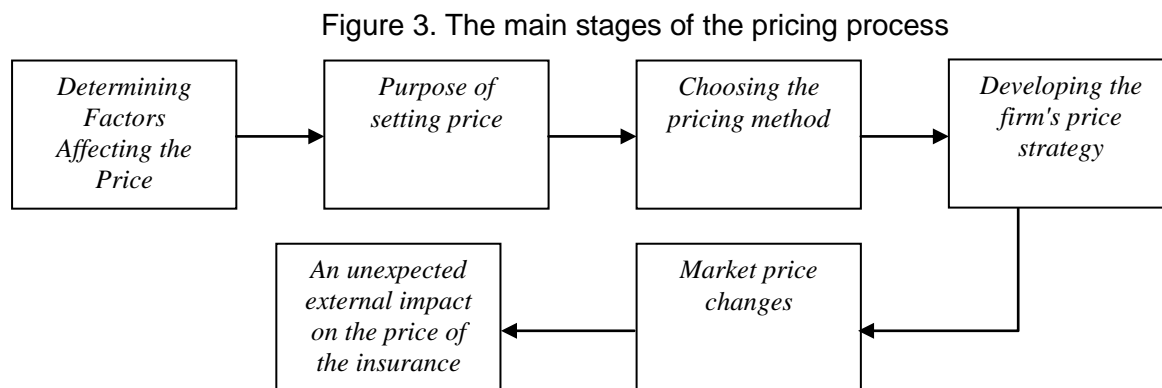


Table 2 shows the factors that affect the price level of information products and services. These factors can be divided into external and internal.

Table 2. Factors affecting the formation of a price level for information products and services

Minimum cost	Possible price			Very high cost
	Basic restrictions			
No income chance	Net cost	Competitors-Relatives	Unique feature of the product (service)	It is not possible to formulate the demand
No suggestions	Massive Demand	Decrease in demand due to the appointment of a deputy chairperson	High rate of demand	No demand

To external factors of pricing it is possible to carry the consumers, the market environment, participants of the channels of commodity circulation and the state.

Internal factors that affect the pricing of the information market include:

- □Demand factors that determine the price of demand for the goods offered by the buyer;
- □factors of consumer choice that determine the competitiveness of a particular product in the market of substitute products;
- □ supply factors that determine the price of the supply of goods for which the supplier claims (producer, seller);
- □factors caused by alternative production opportunities.

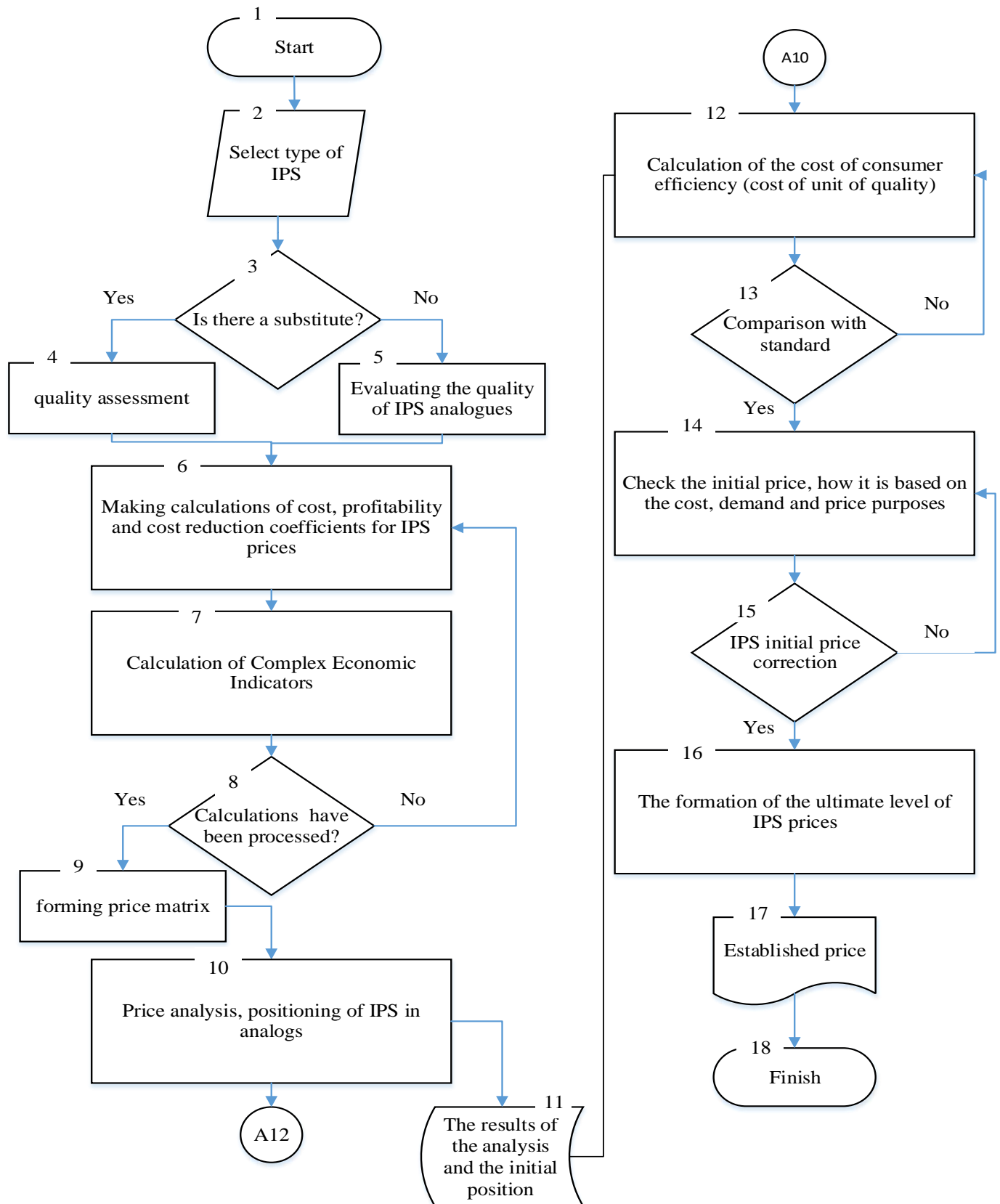
In determining the basic prices for information products and services, various methods can be used:

- □cost-based method based on the cost estimate of the producer (seller):
- □Price = Cost + Fixed Rate of Return;
- □the aggregate method of pricing used for products and services, aggregated from existing modules, elements, types of services, files, etc.;
- □parametric pricing method, based on the formation of prices on the basis of evaluation and correlation of qualitative parameters of network products;
- □pricing based on current prices, used for information products or services that want to offer on the market. Analogues are selected and their current prices are analyzed. This allows you to determine the "corridor" of prices for products and services.

It is proposed to set the price for information products and services on the basis of price and market share based on the "cost-quality" ratio. Additional terms and constraints are used by competitors, customers, required level of price and information on manufacturer-manufacturer costs.

The algorithm for formulating the price of information products is shown in Figure 4. In the upper part, in line with the market-specific limits, based on predefined pricing, presented price data for testing the market.

Figure 4. Algorithm of base price formation of Information products and services (IPS)



Note: Author's elaboration

FUNCTION AND STRATEGIES OF PRICE FORMATION

In order to analyze the optimal level of price for information products and services, it is required to study in different market conditions. The optimal level of price can be found using econometric models developed to analyze firm equilibrium in a generally unheard of competitive environment. Delete (A. V. Akimov & Dollery, 2006).

In our opinion, the prices of information products can be presented as follows:

$$N = F(Si; Ui; JX (ti, Xi); Re; Py), \quad (1)$$

Where, N – price of information products;

Si – i – vector of qualitative indicators of information product;

$Si \in [k, z]$ – z – the amount of analytic analogue analogs to be evaluated; Ui – i – market share;

$JX (ti, Xi)$ – the cost of the enterprise, representing the function of the cost reduction coefficient;

Re – profitability;

Py – demand parameters (forecasted sales volume of Information products and services, upper and lower price for consumers).

The pricing strategy in the information market is the choice of the possible dynamics of the change in the initial price of an information product or service that best corresponds to the objectives of the firm.

The strategy is based on whether we are setting a price for a new information product or information products already on the market.

Distinguish the following strategies (policy) of established prices for IT enterprises:

- a strategy of "skimming price policy", which consists in the fact that the firm outputs its information products to the market at the maximum price, achieving a high coverage;
- a penetration price policy, which is associated with the establishment of a possibly low price to win a certain market share and drive out competitors. Further, the price changes taking into account the market situation;
- The strategy of establishing prices for existing goods, associated with the use of a sliding falling price strategy.

In addition, there is an advantageous price strategy, the essence of which is to achieve a competitive advantage in terms of costs or the quality of information products offered at higher prices.

One way to increase sales is to set various discounts: discounts for buying more goods, prompt payments, for advertising purposes, to regular users, etc.

The market of information goods and services is currently one of the most dynamically developing ones, and the information business is one of the most profitable and promising ones.

CONCLUSION

The problem of pricing is one of the key in the market of information products and services primarily because of the special structure of costs. Zero marginal costs and high initial costs are not reflected in the methods based on the comparison of the marginal values of income and costs. The solution of the optimization problem in its classical formulation leads to the establishment of zero prices, which does not allow producers to compensate for the costs of product creation. The price is formed under the influence of a system of pricing factors that have a different orientation and different potential impact depending on the specific situation and time period. The process of price formation is associated not only with production, but also with market conditions. Restriction of any one approach to disclosing the essence of the price, its system-forming factors, methods of pricing will lead to unreasonable conclusions and loss of market benefits of producers of information products.

The use of the system price concept on the basis of a comprehensive analysis of pricing factors, a step-by-step approach to its formation will help to increase the validity of prices, improve economic relations, and develop an effective mechanism for price control. The prospective development of the pricing concept for information products and services is predetermined by the growth of opportunities to more accurately account for an increasing number of factors. Further research is required to improve the methods of pricing information products and services, taking into account their quality, methods for evaluating the efforts of manufacturing companies for research, production and distribution of information products.

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