



PERIODS OF FORMATION OF HIGHWAY CONSTRUCTION ENTREPRENEURSHIP, THEORETICAL ISSUES OF EFFICIENCY AND TECHNOLOGICAL INNOVATION

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Abstract: According to its scope, the business activity of road construction is defined as providers of road construction services, investors in this field, users of these services, and those who bring benefits to the state. These services can be viewed at the macro and micro level. At these levels, they can be represented by highlighting indicators that represent their importance. Based on the need to measure and evaluate their effectiveness, the author in this article describes the periods of formation of the highway construction entrepreneurship, theoretical issues of efficiency and technological innovations based on scientific evidence.

Key words: automobile, road construction, enterprise, cost, efficiency, cost, entrepreneurship, evolution, consumer, strategy, innovation, investment, state, private, infrastructure.

Avtomobil yo'l qurilishi tadbirkorlik faoliyati o'zining qamroviga ko'ra bu yo'l qurilish xizmatlarni ko'rsatuvchilar, bu sohaga investitsiya kirituvchilar, bu xizmatlardan Bu xizmatlarni makro va mikro darajada qarash mumkin. Bu darajalarda ularni ahamiyatini ifodalaydigan ko'rsatkichlarni ajratib ko'rsatish orqali ko'rsatish mumkin. Bu ularni samaradorligini o'lchash va baholashda qo'l kelishi zaruriyatidan kelib chiqib, muallif ushbu maqolada Avtomobil yo'llari qurilishi tadbirkorligini shakllanish davrlari, samaradorlik va

Kalit so'zlar: avtomobil, yo'l qurilishi, korxona, xarajat, samaradorlik, xarajat, iste'molchi, strategiya, innovatsiya, investitsiya, davlat, xususi, infrastruktura.

Аннотация: По своему объему предпринимательская деятельность в сфере дорожного строительства определяется как поставщиками дорожно-строительных услуг, инвесторами в этой сфере, пользователями этих услуг и теми, кто приносит пользу государству. Эти услуги можно рассматривать на макро и микроуровне. На этих уровнях их можно представить, выделив индикаторы, отражающие их важность. Исходя из необходимости измерения и оценки их эффективности, автор в данной статье описывает периоды становления дорожно-строительного предпринимательства, теоретические вопросы эффективности и технологических инноваций, основанные на научных данных.

Ключевые слова: автомобиль, дорожное строительство, предприятие, стоимость, эффективность, себестоимость, предпринимательство, эволюция, потребитель, стратегия, инновации, инвестиции, государство, частное, инфраструктура.

Introduction. The formation of alternative transport corridors on a global scale, the creation of sustainable highway chains, the opening of new routes on transit routes, the

transition to effective "competitive cooperation (competition)" in efforts to access the world ocean, the creation of necessary highway infrastructures for domestic and international external freight transportation, such as modern clusters, based on the natural and geographical location of the countries, the improvement of tariff and customs systems, the increase in the investment attractiveness of highway construction service entities, the determination of the prospects for these entrepreneurial services are important strategic tasks. From this point of view, in order to measure the efficiency of a highway construction enterprise, it is necessary to implement indicators, change them, introduce new ones, temporarily abandon some of them.

These indicators should be constantly monitored. Because they are based on only one of the methods for assessing the efficiency of a highway construction enterprise. The two methods used to assess efficiency mentioned above are different from each other and at the same time interrelated. A serious problem that arises in determining and assessing the efficiency of a road construction enterprise using these methods is that some of the indicators used in these methods require that they be expressed both quantitatively and qualitatively.

This makes it difficult to express them through a single common parameter. To avoid such problems, the following 4 main indicators should be analyzed when assessing efficiency:

1. Total costs. Indicators that group each cost and indicate its share in the total cost.
2. The duration of the road construction cycle. Indicators that indicate the time it takes to complete one order.
3. Quality of road construction service. This is an indicator that is summarized by answering questions on several criteria based on feedback from customers.
- 4 Road construction efficiency. An indicator that represents the profit generated by each

Analysis of literature on the topic. Due to the lack of access to the open sea in Uzbekistan, the path of development of construction business services based on railway, air and highway systems for the import and export of internal and external cargo was chosen. In the adopted "Uzbekistan - 2030" Strategy [1], in special paragraph 53 entitled "Deepening the integration of the Republic of Uzbekistan into global transport and logistics networks and increasing the potential of the national transport system", priority goals and tasks for the modernization and reform of the transport systems of our republic are set. Research aimed at solving these goals and tasks, ways and prospects for the development of road construction business services, and factors for increasing their efficiency was conducted by our foreign and domestic scientists.

Decrees of the President of the Republic of Uzbekistan No. PF-60 dated January 28, 2022 "On the Development Strategy of the New Uzbekistan for 2022-2026", No. PF-158 dated September 11, 2023 "On the Strategy of Uzbekistan-2030", No. PF-158 dated December 2, 2017 The issues of road construction entrepreneurship are reflected in the resolutions No. PQ-3422 "On measures to improve transport infrastructure and diversify foreign trade routes of freight transportation in 2018-2022" and No. PQ-246 dated May 18, 2022 "On measures to ensure the harmony of scientific potential and practical activities in working with international ratings and indices".

Currently, when talking about the efficiency of road construction entrepreneurship, it is necessary to refer to the term KPI (key performance index), that is, key performance indicators. This term was proposed by Peter Drucker in the 1960s, who explained the need for

this system with his phrase “strategy without measurements is just a desire”. [2]. This system began to be widely used after the 2000s. KPI is mainly considered as a tool for evaluating employee performance, increasing profits, and achieving goals in enterprises and organizations. Today, KPI is widely used mainly to determine the share of employees in the overall result, set bonuses, and provide motivation. When determining the main indicators of efficiency in transport and logistics enterprises, it is necessary to study them not only in the a

There is no universal classification of KPIs in the field of road construction entrepreneurship. According to Y. Melnikov, the main indicators of efficiency can be divided into two groups: (1) service and (2) financial indicators. Here, service indicators mean services related to logistics operations.

The service KPIs of road construction entrepreneurship include: perfect order, timeliness of shipment, timely return of documents. Financial KPIs include the ratio of delivery cost to sales volume, average cost of shipments, ratio of transported cargo to vehicle capacity (utilization rate), etc.

These indicators can be calculated independently by enterprises. The enterprise can also include other indicators that it considers to affect efficiency in these indicators. In general, the enterprise determines how many indicators it should consider as basic.

R.S. Kaplan and D.P. Norton believed that the number of such indicators should not exceed 20, and J. Hope and R. Fraser - no more than 10. Based on the experience of enterprises, the “10/80/10” rule was considered the most appropriate choice. According to this rule, an enterprise or organization should have 10 indicators representing the main final result, up to 80 production indicators and 10 key performance indicators [3].

However, in the research work conducted, issues such as developing the industry in exchange for increasing the efficiency of road construction entrepreneurship, ensuring its proportionality across regions, analyzing the factors affecting the economic development of road construction entrepreneurship, identifying strategic directions for development, and introducing innovations into the global road construction entrepreneurship network have not been sufficiently studied, and accordingly, the literature devoted to this problem has been published in small quantities, which has led to the need to provide a scientific solution to this issue in this study.

Research methodology. The study analyzed the periods of formation of the road construction entrepreneurship, the specific features of the theoretical issues of efficiency and technological innovations.

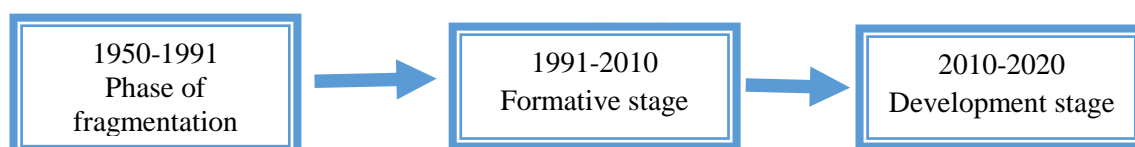
In order to deeply analyze the problems within the framework of the topic, develop scientifically based conclusions and recommendations, the method of comparative analysis was used based on the data obtained through induction and deduction, comparative analysis, study and analysis of scientific research conducted in foreign and Uzbekistan.

Analysis and results. From the time of its emergence to the present day, the road construction entrepreneurship has gone through several stages of development. This has happened differently all over the world and in individual countries. Based on our scientific research, we have tried to present in tables how the evolution of the road construction entrepreneurship has happened in the world and in Uzbekistan. The evolution of road construction around the world is divided into 4 stages. These stages are expressed in terms of

Stage name	The function of the road construction business		
and period		Material	TMB management material goods management
1920-1950s Fragmentation stage		Material	
1950-1970s		Material, information	Road construction business
Formation stage	<ul style="list-style-type: none"> - material flow management as a whole system - information flow management - financial flow management - complex logistics service 	Material, information,	Road construction entrepreneurship, supply chain management
1970-1990s		Material, information, financial, services	Road construction entrepreneurship, supply chain management, Environmental protection

introduce the 5th stage “Development of modern road construction entrepreneurship”. Strategy of Uzbekistan’s development have made a significant contribution to the development

The evolution of road construction entrepreneurship in Uzbekistan



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Table 2.
Characteristics of road construction entrepreneurship in Uzbekistan during the evolutionary periods²

Stage	Character	Controlle d flows
	;	Material
	; ; .	Material
	→ keeping statistics on transportation and storage activities necessary for road construction → continuous cargo turnover and transportation → the creation of central, high organizations → the emergence of road construction centers → the use of digital technologies and platforms; → the creation of new transit routes for international road construction cargo transportation → efforts to transport cargo by water transport in the world ocean.	Material, Information, Financial
	; ; .	Material, Information, Financial Services
From 2030 The development	;	Material, Information,

¹Author's development.

²Author's development.

stage of model logistics		Financial Services
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3

fit. This, in turn, implies reducing their costs. The most important and interesting aspect is that the cost of one party is considered income for the other. We propose to define this aspect as the “Efficiency Corner” of road construction entrepreneurship. It can be explained in detail

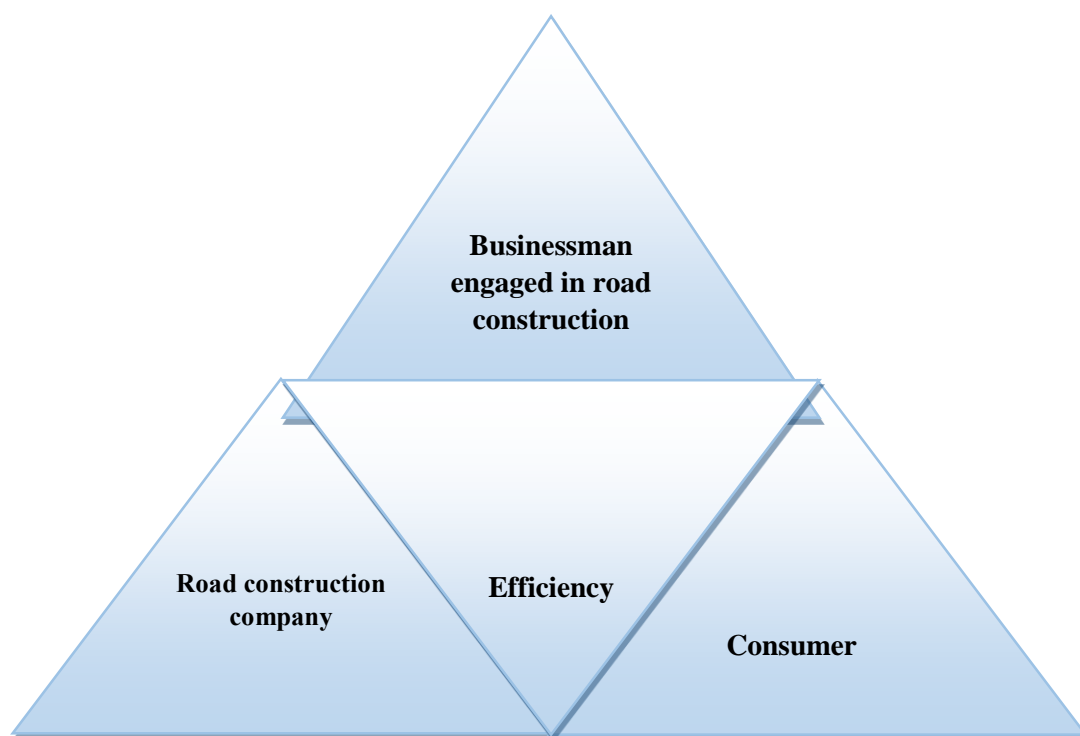


Figure 2. Efficiency angle of road construction entrepreneurship

³Author's development

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