

EXPLORING THE INFLUENCE OF HIGH-SPEED TRAIN TRAFFIC ON SUSTAINABLE ECONOMIC GROWTH IN THE REGION

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Abstract: *Railway operators today face countless challenges. Therefore, to ensure fast and reliable communication between cities in different countries, promising alternatives to air and road transport are required. In the modern world, high-speed rail transport, when organizing mass transportation, confidently occupies a transport niche in the distance range of 400–800 km, providing the least total travel time, i.e. the highest overall travel speed for passengers with the highest safety, comfort and economy indicators.*

Keywords: *High-speed train traffic, railway, economy.*

INTRODUCTION

In order to organize the first high-speed passenger traffic from Tashkent to Samarkand in the Central Asian region, in 2008 a contract was signed with the Talgo company (Spain) for the purchase of two high-speed passenger electric trains [1].

Today, the high-speed railways of Uzbekistan are a single line connecting the ancient tourist cities. The first express trains were launched in 2011, when the Afrosiyob trains (of the Spanish company Talgo) under the number 161/162 began to run between Tashkent and Samarkand [1, 2].

The new high-speed train runs between Tashkent and Samarkand along with other electric trains serving this route. The high-speed train “Afrosiyob” covers 344 km of the railway in two hours and fifteen minutes. The maximum speed is 250 km per hour [3].

Afrosiyob includes two locomotives and nine comfortable carriages – 2 VIP cars (11 seats in a carriage), 2 business class (26 seats in a carriage), 4 economy class (36 seats in a carriage) and a bistro car [4].

The modern look of the train is given, first of all, by its design – aerodynamic, optimized under the influence of pressure waves and crosswinds. The length of the electric train is 157 m, height – 4 m. All salons are equipped with soft, comfortable reclining chairs and built-in tables, as well as monitors for watching videos. All areas of the train are non-smoking areas.

In 2016, “Railway Uzbekistan” implemented the following projects: “Construction of the electrified railway line Angren-Pap” and “Electrification of the Samarkand-Bukhara railway section with the organization of high-speed passenger train traffic”.

With the launch of new railway lines, the extended length of the main railway lines of the “Railway of Uzbekistan” amounted to 4842.4 km [5].

Currently, four high-speed comfortable trains are successfully running on the routes Tashkent-Samarkand, Tashkent-Bukhara and Tashkent-Karshi. These electric trains have opened up great opportunities for the expansion of tourist traffic on the railway, creating a worthy competition with air and road transport. And also, according to the plan of the Railway of Uzbekistan, it is planned to purchase two passengers high-speed electric trains of the Talgo-250 brand, as well as 4 economy-class cars at the end of 2021.

Main socio-economic effects:

- Regional development;
- Business mobility;
- Availability of jobs;
- Geopolitical security of the country;
- Environmental friendliness;
- New workplaces;

The economic success of a country requires mobility and speed.

The effect of the introduction of a high-speed railway line significantly exceeds the costs.

- Growth of population mobility and development of regions;
- Stimulating innovative technological development;
- Increased energy efficiency;
- Unloading of existing modes of transport;
- Increased traffic safety;
- Removal of infrastructural restrictions for the development of the country's transit potential.

For passengers:

- Increased comfort of Talgo train;
- Increased mobility – trains reach speeds of up to 250 km / h;

For operators:

- Allow you to compete with air travel;
- Increase passenger traffic;
- Provide high rates of train loading;
- Allows the customer to ensure a high profitability of the transportation process;
- Increase the attractiveness of rail transportation for passengers.

For power / government:

- Bring five cities closer together;
- Increase the business activity of the regions in the high-speed railway zone (Tashkent, Samarkand, Bukhara, Khiva, Karshi);
- Technological leap (innovative train based on Talgo).

This dissertation will look at the various channels through which high-speed railway can affect the local economy and the tourism access approach to quantify the causal effects of high-speed railway construction on Uzbekistan's economic growth.

1. Determine the level of comfort in Uzbekistan in recent years through the construction of high-speed railways;

2. Assess the impact of high-speed rail on the economic growth of cities in Uzbekistan as a result of changes in access to fixed assets through the investment channel;

3. Study the impact of investment in high speed rail on urban distribution in Uzbekistan;

4. Will the mode of transport change after the introduction of high-speed trains in Uzbekistan?

5. Is the gap between different modes of transport widening with the launch of a high-speed rail line?

MAIN BODY

Focus on the study of the economic impact of conventional rail transport networks in the implementation of high-speed railways. Thus, the research sample will select cities at the prefectural level in which high-speed railways were opened from 2011 to 2022, and the research methods used in this article should calculate time matrices that communicate with each other.

There are many scientists concerned about the causal relationship between the high-speed train and regional economic growth [3, 4]. To overcome the problems caused by endogenous problems in causal inference, various methods are used to increase the rigor of the empirical analysis, such as the method of simultaneous equations, the method of instrumental variables, the difference in model [5, 6], or propensity score versus the difference in method based on exogenous politics [7, 8].

Analysis of the basic requirements of passengers for a high-speed railway:

- Short travel time;
- Intervals of movement with agreed and synchronized schedules;
- Accessibility even from the city center;
- Safe ride;
- High comfort with optimal use of travel time;
- No or minimum number of changes in one trip;

Analysis on the main requirements of the authorities and the government for the high-speed railway:

- Power and government;
- Proposal of a general transport concept;
- Providing affordable transportation;
- Effective use of the budget - in any case, operation should be profitable;
- Reducing CO2 emissions by supporting public transport;
- Interconnected intercity transport (aviation, rail and bus), suburban and urban transport.

Analysis of the main requirements of infrastructure owners for a high-speed railway:

- Efficient use of investment in infrastructure and equipment;
- Providing infrastructure for efficient operation;
- Qualified operation of infrastructure and equipment;
- Effective use of infrastructure opportunities.

Analysis of the main requirements of transport operators for high-speed railway (Operators of transport services)

- Ensure safe operation by adhering to basic planning principles;

- Attractive and competitive passenger services;
- Receiving income from the operation of infrastructure, passenger and freight traffic;

- Operation “on demand” (flexible fleet).

An analysis of the key success factors for high-speed rail.

- Efficient use of high-speed rail infrastructure – Increase operator profitability by organizing mixed traffic of high-speed trains, regional and freight trains;

- Creation of an attractive system of interconnected transport;

- Ensuring traffic safety;

- Airport connection for the convenience of national and intercontinental passengers;

- Optimal door-to-door travel times;

- Accessibility of the city center;

- Short intervals with synchronized traffic schedules;

- Using one or a minimum change of vehicle in one trip;

- Ecological transport;

- High comfort with optimal use of travel time.

CONCLUSION

High speed railway transport and its advantages:

For operators: – increased passenger traffic and increased profits;

For passengers: – high level of comfort – increased safety – accessibility to city centers;

For the environment: – low pollution – low energy consumption – low noise;

For the university: – development of regions connected by high-speed railway, creation of jobs;

The main effects resulting from the creation of a high-speed traffic network are:

- increasing the connectivity of the territories of Uzbekistan and the mobility of the population. The travel time between the capitals of the regions will be on average 1-2 hours and will significantly increase economic activity and labor migration with an increase in the level of wages in the regions adjacent to the high-speed railway by 30-50%.

- high-speed railway - for Uzbekistan, a fundamentally new level of technology, a catalyst for the development of design and construction technologies, production of materials, electronics, transport engineering, training systems for engineering and scientific personnel.

- reducing the cost of transportation and improving their quality due to the separation of passenger and freight traffic lines. This will ensure an increase in the throughput capacity of highly loaded areas and a decrease in investment costs for expanding the existing infrastructure.

- transition to a high-speed railway line and high-speed lines of part of long-distance and interregional transportation with a guaranteed minimum travel time with high service and safety;

- organization of regular route transportation of container cargo on the high-speed railway. The use of the transit potential of the territory is the implementation of one of the strategic priorities in positioning Uzbekistan in the global transport market.

For businesses, the constraining impact of transport problems and high cost of real estate within the city will decrease. The investment attractiveness of suburban areas will increase.

REFERENCES:

1. Постановление № ПП–1074 18 март 2009 президента Республики Узбекистан «О комплексной программе развития и модернизации железнодорожной отрасли на 2009-2013 годы».
2. Постановлению № ПП–1255 5 января 2010 г. Президента Республики Узбекистан «О мерах по реализации проекта «приобретение двух высокоскоростных пассажирских электропоездов Talgo-250 (Испания)».
3. Ravshan Aliev 2021 A Rail line model with distributed parameters of track circuit IOP Conf. Series: Materials Science and Engineering 1152 (2021) 012018.
4. R. Aliev Analysis of controlling the state of track sections on lines with speed and high-speed train traffic German International Journal of Modern Science № 14, 2021. – PP. 57–58.
5. E. Tokhirov, R. Aliev Improving the braking distance of the train before level crossing. Inter Conf, 2020. – PP. 183–187.
6. Вальтер Х. Устройства СЦБ для высокоскоростных линий // ЖДМ, 1988, № 1. – С. 27–37.
7. Albalade D, Bel G. (2012) High-speed rail: lessons for policy makers from experiences abroad. Public Adm Rev 72(3): 336–349.
8. Johan B. (2002) Railway safety risk and economy. Doctoral thesis: Traffic and transport planning. Royal institute of technology. ISBN 91-7323-019-7.
9. Blanquart C., Koning M. The local economic impacts of high-speed railways: Theories and facts. Eur. Transp. Res. Rev. 2017, 9, 12.
10. Panrawee R, Yuwen Y, Sakdirat K. (2020) Does high-speed rail influence urban dynamics and land pricing? Sustainability 2020, 12 3012.
11. Chia-Lin C, Anastasia L, Jose M, Roger V. (2019) Spatial short and long-term implications and planning challenges of high-speed rail: a literature review framework for the special issue. Taylor & Francis Group. European planning studies-2019, vol. 27, no. 3, 415–433.