Strategic Foresight for Smart Cities Management in 1415: A Case of Study in Rasht

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Abstract

Objective: Urban management in the current decade is associated with many complexities in the political, social, economic, environmental, legal, technical and technological issues. The city of Rasht, as one of the important metropolises of Iran is facing complicated and different issues in urban management toward its development process. The use of new technologies in the form of smart cities can be considered as a solution for the city of Rasht. To achieve the smart city in the horizon of 1415 in accordance with the upstream documents (provincial planning document in the horizon of 1415 and national model document in the horizon of 1444), it is necessary to use forward-looking tools to create a preferred and desirable future with the participation of all key stakeholders. This study tries to identify and prioritize the drivers of the smart city with a strategic foresight approach and explain the potential scenarios facing the city of Rasht on the horizon of 1415.

Method: The research is a combination of descriptive-analytical and survey which was conducted by using panel of experts (Delphi), cross-effect analysis using Mic Mac and scenario planning with scenario wizard.

Findings: In the present study, nine basic drivers in the realization of smart cities were extracted and three potential scenarios for Rasht in the horizon of 1415 have been explained.

Conclusion: According to the results of the present study, the scenario of "return of the golden age of Rasht" as a smart city was achieved in the horizon of 1415 as a desirable scenario and it is necessary for planners and city managers to take steps towards its realization with a special focus on it and operational plans and visions should be based on this preferred scenario.

Keywords: Future Foresight, Smart City, Rasht, Scenario Wizard

Introduction

In recent years, the city of Rasht, given its geographical expanse, population density, existing regulatory boundaries, and the increasing volume of construction violations, has necessitated the adoption of efficient and up-to-date technologies within the framework of integrated urban management. In response, the Rasht Municipality has undertaken significant initiatives towards establishing an electronic city and smartening its oversight processes to safeguard urban lands and regularize construction activities. These initiatives aim to enhance interdepartmental synergy and coordination to prevent building violations, ensure legal compliance in monitoring, and improve the speed, accuracy, and quality of law enforcement. With the implementation of the electronic municipality and smart urban systems, comprehensive supervision over municipal performance becomes feasible. Given the complexity of these issues, which makes integrated and systematic management challenging, it is essential to adopt innovative approaches, such as smart cities, to achieve sustainable urban development. Moving forward, the realization of smart cities requires leveraging methodologies such as foresight to envision the preferred and desirable futures of smart cities in Iran, followed by actions to achieve them. Uncertainties, natural and human crises, technological advancements, population growth, and urban expansion all underscore the need to pursue novel planning processes with a futures-oriented approach. Therefore, this paper will aim to analyze various scenarios concerning the feasibility of Rasht becoming a smart city by the horizon of 1415, using the Scenario Wizard method.

Methodology

The present research is applied in terms of its objectives and descriptive-analytical in nature. The research method employed is mixed (qualitative and quantitative), based on the necessary tools. An exploratory and participatory foresight approach has been used in this study. The main methods applied include Delphi expert panels, cross-impact analysis using MICMAC, and scenario development using Scenario Wizard, all of which are widely utilized in foresight literature. For gathering information on smart cities, library and field research methods have been employed. To assess the current status of the smart city, upstream documents and urban records have been used, and through the classification of documents and literature reviews in databases, the theoretical foundations and research background in the fields of smart cities and foresight are obtained. One of the most practical methods that can

significantly contribute to the foresight of smart cities is scenario planning. This method, as applied in this research, seeks to identify desirable futures for smart cities by focusing on the drivers and environmental changes across political, social, economic, technological, and environmental domains. Scenario planning has also been frequently used in similar studies evaluating the success of new cities in Iran.

Results and Discussion

In the present study, 602 factors were identified through library research, and 42 key influencing factors were extracted via a two-round Delphi process. Given the breadth of the research area, the cross-impact analysis technique was employed to identify the drivers and key factors influencing the development of the smart city. In the next step, by reviewing upstream documents and other studies conducted in the region, and leveraging expert opinions from smart city specialists through a questionnaire, the necessary data regarding the key drivers in the context of the smart city in Rasht were gathered. This process was facilitated using the MICMAC software, and ultimately, 9 key drivers were identified as follows. Considering that in this study, 9 key drivers were identified, each of which can manifest in three different states, the Scenario Wizard software was used to develop scenarios. As a result, the three scenarios with the highest scores were extracted, as detailed in Table 1. In this study, three scenarios were developed, titled "Return to the Golden Age," "The Cradle of Urban Technologies," and "The Forgotten City".

Table 1: Outputs of Scenario Wizard software

Scenario 1 (Return of the Golden Age)	Scenario 2 (The Cradle of Urban Technologies)	Scenario 3 (The Forgotten City)
Governance is completely democratic		Full state governance
Planned migration and sustainable urban development of Rasht and surrounding satellite towns		Increase in immigration, urban and population density of Rasht
Most people live alone		
The emergence of a decentralized economy based on blockchain		Continuation of fully state economy
The global city of Rasht	Joining Rasht to the corridor of Caspian Sea countries	
Urban management is based on big data.	Big Data is only used in the private sector and business.	Neglecting the use of big data in institutions
Cities are managed by technology companies		Technology companies have no influence on the management of cities
Sustainable smart transportation is created in the city		The transportation system is managed in a traditional way
Sustainable development relying on the international tourism economy of the creative city of Rasht		Not paying attention to tourism and turning Rasht into a transit city

Conclusions

The findings of this study indicate that the future viability of smart cities in Rasht hinges on several key interconnected governance factors: the integrated management of urban institutions (municipality, private sector, and civil society), increased migration to Rasht, rising individualism and changing lifestyles, the production and instant delivery of the "on-demand economy," globalization, greater use of big data in decision-support systems, the growing role of technology companies in urban development and management, the use of smart technologies to promote clean and sustainable transportation, and the increased contribution of tourism to Rasht's economy, leveraging the city's branding as a UNESCO Creative City of Gastronomy (international) and a national health tourism hub. Based on the analysis of these key factors, three final scenarios are envisioned for the future of Rasht as a smart city, titled "Return to the Golden Age," "The Cradle of Urban Technologies," and "The Forgotten City." Among these, the "Return to the Golden Age" scenario stands out as the most favorable, driven by the significant role of technology in urban management and fully citizen-centric governance. In this scenario, globalization transforms Rasht's urban management model, which becomes fundamentally different from its current state. The city is managed by the private sector through a fully citizen-based approach, with the role of local governments minimized. The city's governance is decentralized and managed by citizens through technology companies, relying on non-centralized technologies like blockchain. Urban decision-making is based on real-time data derived from the analysis of big data generated within the city, allowing citizens to have a direct role in major urban decisions. Urban development is pre-planned and driven by the tourism economy, with Rasht emerging as an economic hub for the country and even the region, due to its strategic position along the CIS countries' trade routes.

With abundant water resources in northern Iran and Rasht's centrality, combined with the proximity of towns and villages in Gilan, the city can establish satellite towns through the integration of surrounding villages and small towns, serving as a regional development engine. Intelligent urban transportation, combined with improved livability, organizes the accommodation of migrant labor and permanent residents. Rasht's development, fueled by a citizen-centric governance model supported by modern technologies, leads to the emergence of a sustainable smart city that is highly attractive to both domestic and international migrants. The rise of digital economies, alongside the tourism economy, and Rasht's location in one of the country's most resource-abundant regions with strong startup support infrastructure, make the city a magnet for technology innovators from across

the country and the region. Urban management, relying on decentralized yet integrated technological infrastructure, enhances the agility and responsiveness of organizations and companies to urban needs. Consequently, the city's per capita income increases through the attraction of foreign investments, positioning Rasht as a new economic hub in northern Iran, especially if the country transitions toward federalism.

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