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Presentation of the Model for Co-evolution of Governance and the Development of Smart Transportation Technologies in Tehran Metropolis

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A B S T R A C T

Objective: This study aims to present a model for the elements shaping the co-evolution of governance and the development of smart transportation technologies.

Methodology: This study employed a qualitative approach. Initially, by reviewing the literature on governance and smart technologies, the key factors from existing models and studies were extracted using content analysis, resulting in 234 initial codes. In the second step, expert interviews and the content analysis of these interviews were used to refine and complete the codes. The sampling method for the interviews was both snowball and judgmental, and after 31 interviews, convergence was reached.

Findings: From the combination of the codes, 35 themes were extracted and categorized into 11 groups, leading to the final model. The model was explained in a panel of experts and confirmed after necessary revisions. The findings showed that increasing the penetration of information and technology, the need for an integrated transportation system, information technology infrastructure, and modern technologies in the transportation industry, as well as legal and regulatory considerations, are important factors that, in the framework of the evolutionary process, align with the three principles of transparency, accountability, and participation in the good governance model, affecting both the market and smart technology.

Conclusion: Good organizational governance is achieved through the interaction of all levels within an organization. This interaction requires coordination among various components within the organization, its stakeholders, and its overall strategy, such that if this coordination is fully realized, organizational success and performance improvement will occur.

Keywords: *Good governance, co-evolution, smart transportation technologies, Tehran metropolis.*

1 Introduction

Large-scale projects require innovation accompanied by joint collaboration that transcends organizational, departmental, industrial, and regional boundaries. According to McKinsey, the world has invested 57 trillion dollars in infrastructure, which economists refer to as the largest period of growth in investment in human history for large-scale projects (Sheng et al., 2019). Urban transportation is also one of these projects that must be considered from various aspects. On the other hand, the economic, environmental performance, and public support of these large projects are often surprisingly weak (Flyvbjerg et al., 2019). Research has shown that of the 258 implemented projects, including railways and highways, cost overruns were widely observed in 40% of them (Flyvbjerg, 2007). Furthermore, after opening, insufficient revenue led to a failure to recoup investments. The Channel Tunnel, which opened in 1994, reached 6.9 million passengers after six years of operation, which was only 43% of the anticipated capacity. Additionally, the actual traffic volume on the Paris high-speed rail network during its opening year was only 25% of the projected volume (Flyvbjerg et al., 2019). Due to technological complexity, deep uncertainty, and the integration of knowledge, the execution of large projects requires joint innovation among organizations, sectors, industries, and regions (Brockmann et al., 2016). In other words, the execution of these projects requires joint collaboration, which is achieved through coordination and growth from various aspects, or what is referred to as the concept of co-evolution of governance. In the era of the Fourth Industrial Revolution, where converging technologies such as the Internet of Things, big data, and artificial intelligence have created numerous applications for both public and private sectors in advancing countries toward sustainable development and resilience (Ghazinoory et al., 2023; Ghazinoory et al., 2020), the use of emerging and transformative information and communication technology (ICT) tools has become inevitable for achieving good governance in governments. In modern public administration, good governance covers three areas: the public sector, private sector, and civil society, working together (Deghati et al., 2020). Citizens, voluntary organizations, businesses, the media, higher levels of government, parliament, international organizations, and government officials are six key stakeholders involved in good governance, which can help reduce the costs of uncertainty, interaction, and production, ultimately impacting the performance of companies and organizations. Within organizations, governance refers to a set of complex systems that establish reciprocal relationships between structure, tradition, function, process, and internal organizational operations with accountability, transparency, participation, assessment, and measurement (Rolinson, 2018). On the other hand, organizations are evolving and growing in a dynamic world full of interactions. This evolution takes place both in relation to organizations and their environment and in relation to other organizational elements such as technology. In this regard, one of the topics that has transitioned from biological sciences discourse to organizational discourse in the past three decades is co-evolution. Lewin and Volberda (2003) introduced the concept of co-evolution as an organizational-environmental system characterized by open systems and intense interactions with the environment. In the digital age and the Fourth Industrial Revolution, research on technology co-evolution has focused on examining the reciprocal effects of advanced technologies and institutions (Lewin & Volberda, 2003). These studies encompass the examination of new technologies such as information technology, biotechnology, nanotechnology, and complex technological products. In this context, governance and the development of smart transportation technologies represent a mid-level technology that can benefit from advanced technologies. Autonomous vehicles and smart devices that communicate with each other and transportation infrastructure are examples of such technologies. Governance in this area addresses the challenge of protecting the interests of citizens and technology. These challenges include regulation, law-making, setting urban service priorities, service delivery coordination, and monitoring and evaluating delivered services (Moradi et al., 2022). The role of governance in municipal governments and its interaction with new urban transportation technologies can be seen as a solution to the existing challenges in this area. The benefits of this co-evolution include reduced accidents, shorter emergency response times, increased road capacity, and reduced travel times (Moazzami et al., 2021). Urban transportation, as a key component of urban planning and sustainable development, requires precise planning and the design of a sustainable transportation model. To improve the transportation system, studies should focus on financial resources, infrastructure, population growth, and structural challenges. Experiences from developed countries can serve as guidance to achieve these goals (Abolhasanpour, 2008).

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Intelligent transportation systems are among the latest and most effective traffic management solutions, capable of creating new horizons for achieving dynamic and smooth mobility within society and offering better services to citizens as part of the e-government concept. The rapid growth of the population has led to an increase in travel demand, resulting in a significant rise in the use of personal vehicles (Mehri & Ebrahimi Dehkordi, 2017). This, in turn, has greatly increased pressure on existing transportation networks, especially in urban areas. Issues and problems related to urban transportation and traffic, such as congestion, increased time delays, accidents, violations, environmental pollution, energy resource depletion, and the rapid growth of urban transportation demand, have made providing safe and efficient urban transportation one of the most important challenges facing both developed and developing countries. Transportation technologies involve both technical and organizational components, which interact with each other. The experience of countries around the world in implementing transportation technology development projects indicates that organizational issues are more challenging than technical and engineering problems (Sheng et al., 2019).

In Nasiri Zare's (2020) research on presenting a good governance model for integrated water resource management in the country, the roles of government, civil society, and citizens were considered as the main components of the model. The study emphasized the importance of clearly defining the roles, powers, and responsibilities of each and the importance of their mutual participation. He believes that the provision, extraction, and production of water, as well as resolving associated issues, should be examined with the primary goal of food production. The use of water resources for food production should be prioritized over other uses, such as energy production (Nasiri Zare, 2020). In another study, Deghati et al. (2020) designed a smart governance model using a meta-synthesis approach, concluding that components related to ICT, human resources' knowledge and skills in using these technologies, information confidentiality, network security, reliability of information, the realism of security laws, credibility of the provided information, the adoption of legal procedures, and civil society's oversight on the performance of smart governments, citizen ease of access to government services, and reducing government costs, were of the highest importance among various aspects of establishing and developing smart good governance (Deghati et al., 2020). In research by Ghalipur Soteh et al. (2019), a smart government model was designed based on good governance ethics, including 54 categories such as evaluation and monitoring, public trust and security, and human and social development (Gholipour Souteh et al., 2019). Mohaghar et al. (2016) proposed a model that enables the public sector, private sector, and civil society organizations to consider smart good governance as a dynamic process (Mohaghar et al., 2023). Barcevicius et al. (2019) showed that smart government strategies and programs can significantly impact national outcomes (Barcevičius et al., 2019). Zhang et al. (2020) conducted research on the validation of co-evolutionary principles, concluding that the alignment between business and information systems can be seen as a complex adaptive system benefiting from co-evolutionary principles. They examined both theoretical and practical concepts related to using agent-based models to explore the alignment of business and organizational information systems based on co-evolution. These concepts arise from several thematic areas: 1) the alignment issue can be modeled using agent-based models, effectively describing the features of adaptive complex systems; 2) extracted concepts can identify behaviors related to co-evolution or business alignment with information systems, human resource behaviors, and organizational guidance; and 3) the development and experience of agent-based models can provide guidelines for describing and interpreting how to control more effectively and create alignments within an organization based on co-evolutionary principles (Zhang, 2020).

The above discussion reveals that there is a lack of sufficient knowledge and awareness about the governance model and smart urban transportation technologies from the perspective of co-evolution, especially within the country. In practice, governance discussions within organizations have often neglected the simultaneous interactions between organizations towards achieving growth and development. Therefore, focusing on governance and smart urban transportation technologies from the perspective of co-evolution provides a platform for advancing the understanding of these phenomena. This study aims to identify the key components of governance and smart urban transportation technologies in metropolitan areas and thereby present a model that explores the co-evolutionary role of these two phenomena. The theoretical gap observed in existing studies is the lack of attention to the phenomenon of co-evolution in governance and the development of smart urban transportation technologies in governmental organizations. Therefore, this research, considering this existing gap, seeks to examine the components of

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governance and smart urban transportation technologies from a co-evolutionary perspective. The main research question is: How does the co-evolutionary model of governance and smart urban transportation technologies manifest in metropolitan cities?

2 Methods and Materials

This study is applied in nature and falls under empirical research. In terms of research orientation, it is classified as a Case Study and is a subset of qualitative research. The present research aims to propose a model for the elements shaping the co-evolution of governance and the development of intelligent transportation technologies.

Initially, information was analyzed through content analysis using documents from upper-level sources, literature, and relevant references, resulting in 234 codes.

In the second step, expert interviews were conducted to supplement these codes. The data of interest were collected through interviews as the primary tool. This study, in terms of its objective, aims to describe the current state of co-evolution in governance and the development of intelligent transportation technologies, and the evolutionary interactions of these organizations with the environment.

To achieve the research objectives outlined in the qualitative phases of the study, expert opinions in the fields of governance and intelligent transportation technologies in municipal government were utilized. Interviews were conducted with specialists in management and governance, as well as senior municipal managers. The criteria for expertise in this study included: 1) advanced education (particularly in the field of management), 2) work experience in municipal governance and particularly in intelligent transportation technologies, 3) over ten years of managerial experience. Efforts were made during the interviews to reach theoretical saturation with the experts.

Theoretical saturation is a point in qualitative research indicating that the collected data are sufficient for analysis and final reporting. At the point of saturation, no new evidence or data is derived. These interviews reached saturation after engaging 27 individuals, but to ensure completeness, the interviews continued until 31 individuals had been interviewed, at which point no new information emerged.

In the third step, the codes (from interviews and literature) were reviewed by the research team and categorized into 35 themes. In the fourth step, these themes were grouped into 11 categories and presented in the final model. The results from steps three and four were finalized after consultation with three experts, and the model was reviewed and revised by a panel consisting of three experts in governance, three experts in co-evolution, and three experts in technology, alongside the research team.

3 Findings and Results

The codes were constructed based on the concepts derived from the interview texts. When the codes became repetitive, further interviews were avoided. After collecting the experts' opinions, categories were formed. This process is outlined in Table 1.

Table 1

Interview Texts of Research Participants, Open Coding, and Conceptualization

No.	Interview Text	Codes
1	There is some level of accountability. Also, bribery is seen as bad by the majority of employees. Although people may try to buy organizational positions with money, administrative reforms are very much discussed, which itself stems from a good system and good governance. Some employees, seeing a proper atmosphere with no discrimination and meritocracy, are not dissatisfied even if there is job rotation, because of having a cohesive and interactive system. They participate in decision-making and empower their social capital. In a system with good governance, policies align with people's needs. However, I believe that every organization should have a research center to create a cohesive structure, where committed and accountable individuals can work. The issue is that sometimes we lack legal governance. Therefore, we must place qualified people at the top for positive changes.	Accountability, participation in decision-making, bribery abhorrence, administrative reforms, lack of legal alignment, no discrimination, meritocracy, influence of committed personnel, proper policies, cohesive structure, legal awareness, establishment of research centers, training to enhance employee awareness
2	Abuse of power is corruption, and this has often plagued our administrative system. Power competition and various internal and external factors can intensify this issue. However, good governance and proper contracts can partially solve this problem. We don’t have a good administrative law. Decentralization, determining who holds the power in an organization, accountability, and training can be effective.	No abuse of power, combating corruption and internal/external factors, efforts to avoid promoting competition, legal alignment, sense of responsibility, work ethics development, belief in work conscience, professionalism, meritocracy, lack of centralized administrative system, clear hierarchy, task delegation to professionals

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	However, work ethics must improve. Work conscience, humanity, and even personal beliefs should be examined. To claim that good governance exists and that the organization is growing simultaneously, the work must be assigned to professionals. If a blacksmith performs the work of a goldsmith, or vice versa, nothing good will happen.	
3	From an organizational structure perspective, the necessary power is lacking. Good governance means being structured. Managerial power and financial power are interdependent. In our organizations, anyone seeking power must advance their career through connections and relationships. This dependency between management, economics, and relationships can only be corrected through good governance. We don't have a strong working group that can, with thought, maturity, and democracy, criticize their manager. Our structure and organization are sometimes inadequate, and if governance is good, individuals will certainly be chosen based on merit, not expedience. Having laws and not being indifferent to lawlessness are the outcomes of good governance. I think the introduction of rewards and punishments, addressing the supply and demand of administrative corruption, budgeting, education, adequate capacity, and proper culture are all shaped by good governance. On an executive level, bureaucracy is necessary. However, good governance cannot occur unless employees have intellectual maturity. Transformation in education is needed. In the short term, a reward and punishment system should be used, and in the long term, training and awareness should be promoted. The lack of necessary organizational capacity to fulfill the organization's mission is essential. Sometimes, good governance lacks a clear existential philosophy in our organizations, so simultaneous growth of departments cannot be successful.	Organizational authority, establishment of clear and transparent hierarchy, independence of managerial power from financial power, accurate judgment, presence of working groups, intellectual and organizational maturity, selection of qualified managers, absence of expedient decision-making, reduction of financial dependency, appropriate training, meritocracy, rule of law, reward and punishment system, non-discrimination, organizational values, organizational independence, job stability, organizational culture, reliable data, bureaucratic competence, non-influence of ethnic and racial factors, organizational efficiency and effectiveness, organizational capacity, awareness of good governance philosophy, task delegation to specialists, absence of repeated organizational positions, proper organizational structure, training and awareness, rule of law, capacity building, corruption diagnosis
4	Choosing managers by the employees themselves encourages their participation in decision-making. A decentralized system encourages employee involvement in decision-making. The organizational system needs proper reform. When we refer to the system, we essentially mean the simultaneous interaction and evolution. Qualified individuals should be placed at the top. When qualified people are in charge, progress follows. Unfortunately, practical steps are rarely taken because this relates to the governance of senior organizational figures. Security helps resolve issues. Good governance, in the context of simultaneous evolution, leads to a systematic network. However, this phenomenon seems to be complex, and the involvement and support of some organizational managers is necessary and essential.	Manager selection by employees, employee participation in decision-making, administrative system reform, selection of qualified, committed, and conscientious individuals, legal actions, involvement of government officials in creating an enabling environment for good governance, no threats to managers for making incorrect decisions, absence of mafia networks in organizations, combating lawlessness
5	Efforts must be made to enhance employee literacy and awareness to ensure positive outcomes and the selection of the best candidates. The awareness of individuals and their trust that the organization works for them is key. Employees may make mistakes, but corrections should be made, and if no correction occurs, the reward and punishment system should be implemented. The administrative system must be reformed. Democracy must exist in the workplace to ensure employee participation, enabling cohesion and evolution. The organizational composition should be based on meritocracy and specialization to ensure that good governance occurs and that the evolution being discussed takes place. Only then can it be claimed that this evolution has occurred across the entire organization.	Employee training and increasing intellectual and professional maturity, employee trust and awareness of the organization, administrative system reform, reward and punishment system, democracy in the workplace, selective organizational positions, no discrimination in position assignments, no racism, meritocracy, and specialization
28-31	According to my knowledge, the government, civil society, and the private sector are recognized as key players in the governance system. Although the characteristics of the governance model may not directly reflect these players, when examples of these characteristics are cited, the roles of civil society institutions, government structures and laws, and private companies along with their activities and programs become evident. For instance, in the context of political freedom, we refer to examples such as political party activities, freedom of the press, freedom of speech, and gatherings, all of which involve civil society. These three actors play interdependent roles, and any disruption in the functioning of one of them can lead to disorder in the others, indicating their mutual dependency. Good governance results from the healthy performance of each of these players, and balancing their participation in community affairs is crucial to maintaining the identity and integrity of the political system and ultimately achieving its objectives.	Freedom or justice, categorization and examples for evaluation, assessment, cohesive governance structure (government, private sector, civil society institutions, etc.), civil society (political party activities, freedom of the press), political system identity and integrity

As shown in Table 1, some concepts derived from the interviews are repeated and overlap with the material extracted from the literature. This is a characteristic of qualitative research, where concepts tend to repeat in the final interviews to reach saturation. The themes were

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constructed based on the concepts derived from the interview texts.

The themes identified are shown in Table 2. Some examples of these themes are as follows:

Table 2

Identified Themes (35 Themes)

Themes	Themes	Themes
Transparency (Social, Economic, Organizational)	Required Knowledge for Intelligent Transport	Development and Economic Capability
Competence in Organization (Specialization)	Intelligent Transport Technology Development	Monitoring and Evaluation Systems
Rule of Law in Society	Community Participation	Combating Corruption in Society
Strategic Perspective in Society	Empowered Human Resources	Industrial Innovations
Social Stability	Strong Database Infrastructure	Financial Satisfaction
Organizational Culture	Social Justice	Financial Transparency
Delegation of Authority	Evaluation Systems	Utilization of Financial Resources
Economic Justice	Participation (Social, Economic, Organizational)	Social Efficiency
Sufficient Resources and Economic Strengthening	Economic Participation	Technology in Organizations
Economic Participation	Social Ethics	Comprehensive Management
Intelligent Capability	Utilization of Financial Resources	Industrial Dynamics
Accountability (Social, Economic, Organizational)	Software and Hardware Capacity Building for Intelligent Transport	

As shown in Table 2, 35 themes were extracted. These themes and categories were presented to a panel of experts to obtain their opinions regarding these themes and their categorization into categories. After individual feedback and synthesizing the responses, the final model was presented and approved by the panel. According to the research by Saffari et al. (2010) on the indigenous maturity model of mobile government, transparency, accountability, and participation are considered the foundational components of e-Government. These elements must be present in all stages of e-Government maturity, which serves as the foundation for digital transformation, ensuring the growth and evolutionary progress of these systems over time. Furthermore, another article highlights that the implementation of the platform government model, which will soon replace e-Government, requires certain prerequisites. These include good governance, a paradigm shift in the government's role from service provider to ecosystem leader, nurturing entrepreneurial communities and startups, creating digital trust, and establishing centers for growth, development, and digital transformation. It should be noted that this article is also based on the indigenous maturity model of mobile government. Therefore, categorizing the levels of governance evolution into three components: transparency, accountability, and participation was approved. The factors extracted were then arranged and subsequently validated by the panel of experts.

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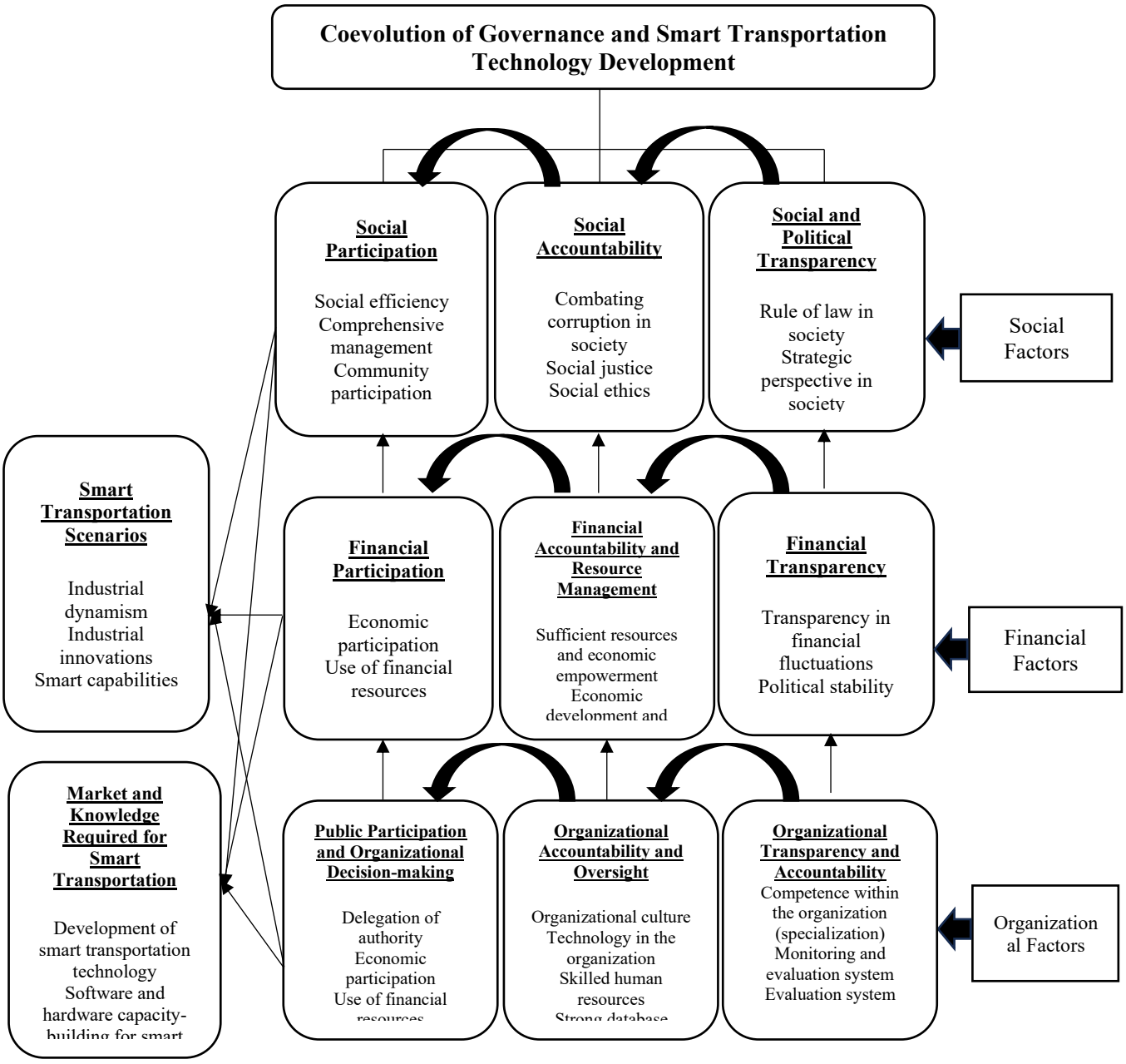
Figure 1

Factors Affecting the Co-evolution Model of Governance and the Development of Smart Transportation Technologies in Tehran Metropolitan Area



4 Discussion and Conclusion

Based on the topic and research questions, four groups were selected for interviews: 1) transportation experts, 2) managers and officials from the municipality, 3) stakeholders of smart transportation services in the municipality, and 4) management experts. Semi-structured interviews began and continued until theoretical saturation was achieved after 31 in-depth interviews. The distribution of the participants' areas of activity was as follows: 1) transportation experts: 12 individuals, 2) managers and municipal officials: 9 individuals, 3) stakeholders of smart transportation services: 6 individuals, 4) management experts: 4 individuals. Most of the interviewees were selected from transportation experts, all of whom were faculty members and, in a way, stakeholders of smart transportation services. During the interviews, efforts were

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made to utilize their implicit knowledge and real-life experiences in the field of good governance and coevolution within their professional environments, and the interviews were not confined to theoretical discussions. From the concepts derived from the interview texts, categories were developed. These categories were presented to several university professors and organizational members for their opinions regarding the categories and subcategories, and after collecting their feedback, the categories were finalized. The results of this process were previously presented in the form of a table as the identified categories. These categories include: transparency (social, economic, organizational), competence within the organization (specialization), rule of law in society, strategic perspective in society, social stability, organizational culture, delegation of authority, economic justice, sufficient resources and economic empowerment, economic participation, transparency in financial fluctuations, use of financial resources, social efficiency, technology in organizations, comprehensive management, industrial dynamism, use of financial resources, anti-corruption in society, industrial innovations, financial satisfaction, smart capabilities, accountability (social, economic, organizational), social ethics, required knowledge for smart transportation, development of smart transportation technology, community participation, skilled human resources, strong database infrastructure, social justice, evaluation system, participation (social, economic, organizational), economic participation, software and hardware capacity-building for smart transportation, development and economic empowerment, monitoring, and evaluation systems. Therefore, the categories were extracted. After conducting open coding to derive the main categories, axial coding was performed, and finally, the research model was presented.

The existence of technological infrastructure in countries is one of the most important pillars for the shift from an output-driven economy to an efficiency-driven economy and a driving force toward an innovation-driven economy (Diyaz, 2020). This research aims to explain the coevolutionary model of governance and the development of smart transportation technologies in the metropolitan city of Tehran. Governance and smart technologies in the field of urban transportation are considered a new concept. Studies have shown that governance, with a focus on transparency, accountability, and participation, can lead to favorable outcomes. On the other hand, in a platform government, as the overarching system of smart transportation, service delivery occurs competitively and based on higher value production. In the platform government, as decision-making procedures and service delivery processes are systematized and minimize dependence on individual interventions, these services are innovatively provided by the people for the people, with the government playing an enabling and regulatory role in offering innovative services. Therefore, the transition of government services from traditional services to those based on the platform government, which fosters the digital economy in Iran, is now a necessity being pursued and implemented by the Iranian Information Technology Organization. The smart government is, in fact, the provision of services from one system to another. The platform government model is applicable across all businesses and creates multiple values, which, through the flourishing of businesses, can also improve the country's competitiveness (Razavi et al., 2024). The smart platform government aims to provide public services to people using technological tools and adopting open innovation approaches and leveraging the internal capabilities of the people in a much easier, cheaper, and smarter way. Naturally, the output of this model should be offered in the market section and future market design to be usable. Therefore, these two sections were also considered in the model. So far, five sections of the elements of the model in Figure 1 have been explained: 1) transparency, 2) accountability, 3) participation, 4) market, and 5) scenarios and future plans.

Regarding the interrelationships and interactions between urban governance components and smart urban transportation technologies, it can be stated that an ideal organizational governance system should consider both individual participation and their social development. Optimal organizational governance heavily relies on participatory and interactive behaviors within and outside the system. Organizations and enterprises are growing and evolving in a dynamic and interconnected world; thus, coevolution emerges. In coevolution, organizations and their innovative members should have an understanding of the ecosystem to which they belong and fulfill their respective roles effectively. The formation of this ecosystem must be based on strategic goals and the unique capacities of the region, leveraging the existing experiences in each location (Pidorycheva et al., 2020). Additionally, other studies indicate that the production of innovation in specific locations can be partly explained by the efficiency of their ecosystems (Ghazinoory et al., 2023; Ghazinoory et al., 2020). This also indicates the impact of the platform and the environmental framework on innovation. In organizational

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environments, the primary focus is on coevolutionary transformations within the organization, meaning coevolution at the micro-environment level, and coevolution between the organization and its broader environment, or macro coevolution. Based on the above, the intellectual foundation of this research is formed. That is, good organizational governance is the result of the interaction of all levels of an organization aligned with the macro-policy levels of the country. Therefore, in organizations such as municipalities, the interaction of all organizational levels leads to good organizational governance, which, in the establishment of a knowledge-based economy, further enhances the quality of life. Since the most important macro-level areas in the success of municipalities are financial issues and then communication issues between individuals, these two macro levels are in interaction with the organizational level. This study considers three levels: "organizational, financial, and social" for transparency, accountability, and participation, which are the core elements of the governance platform. The model used in this research is a comprehensive one, and its main premise is coordination between the various components and elements of the organization with itself and with the organization's overall strategy. If this coordination is fully realized, success and performance improvement (growth in performance indicators) will occur within the organization. In this context, the model of coevolutionary governance of urban governance and smart urban transportation technologies within the organization is defined with a systemic approach to determine the organizational factors affecting organizational governance.

In describing the strengths, weaknesses, and failures of the coevolutionary path of urban governance and smart urban transportation technologies, it can be stated that the primary goal of the organizational ecosystem is to understand the bilateral interactions within and between the communities constructing organizational ecosystems and the mechanisms and processes underlying their growth, monitoring, and decay.

Furthermore, in this study, connected vehicles, which are one of the Internet of Things (IoT) technologies in the Fourth Industrial Revolution (Mohaghar et al., 2023), are not addressed. Future studies could explore the roadmap for implementing this technology toward the smart city.

The existing literature and studies also confirm the three levels stated in the extracted model. These studies can be divided into three categories:

The first category examines transparency, accountability, and participation at the social level. Hashemi-Zadeh et al. (2017) examine how political culture impacts good governance (Heshmatzadeh et al., 2017). This study shows that political culture can act both as a barrier and as a driver for achieving transparency and accountability. Ebrahimpoor and Aliki (2016) emphasize the importance of good governance for government efficiency. They argue that good governance can help improve relations between government, private sector, and civil society organizations, thereby increasing participation and accountability (Ebrahimpour & Aliki, 2016).

The second category examines transparency, accountability, and participation at the financial and economic level. Deghati et al. (2020) highlighted the importance of using information technology in smart governance. They believe that access to information and network security can enhance transparency and accountability in the financial sector (Deghati et al., 2020).

The third category examines transparency, accountability, and participation at the organizational level. Gholipour (2019) discusses the importance of ethics in good governance and its role in the development of smart government. She argues that collaboration between government and citizens and ethical behavior can enhance transparency and accountability (Gholipour, 2022). Asdamirji (2019) explores digital transformation maturity models, which can help organizations gain a better understanding of the stages of digital transformation, thus enhancing organizational transparency and accountability (Asadi et al., 2021).

Regarding transportation scenarios, no articles specifically address transportation scenarios and their data. Up to this point, all model elements have been discussed, and examples from the literature that confirm it have also been presented. The only new aspect is transportation scenarios, which are part of the future-oriented component of the model and have not been found in previous studies. This is an innovation in the model.

To implement this coevolutionary model of governance and smart transportation technology, the following considerations are necessary:

1. Definition of clear goals and strategies: Establishing clear goals for governance and technology development, such as improving efficiency, increasing transparency, and enhancing participation.

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2. Creation of a legal and institutional framework: Developing a legal infrastructure that supports governance processes and technology implementation, including data privacy, security, and intellectual property concerns.
3. Investment in technological infrastructure: Ensuring the availability of technological tools, platforms, and systems to support smart transportation technologies.
4. Stakeholder involvement: Engaging various stakeholders, including governmental entities, the private sector, and citizens, to ensure active participation in the development and implementation of smart transportation systems.
5. Continuous monitoring and evaluation: Implementing robust mechanisms for evaluating the effectiveness of governance and technology integration, ensuring continuous improvement.

In conclusion, this research contributes to the development of a coevolutionary governance model for smart urban transportation technologies, highlighting the interrelationship between governance elements and technological innovation. The model provides a framework for improving governance efficiency, transparency, and participation, while also fostering the development and deployment of smart transportation technologies. Future studies could expand on this model by incorporating emerging technologies such as connected vehicles and analyzing the role of artificial intelligence in urban governance.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

References

Abolhasanpour, A. (2008). The Impact of Implementing Intelligent Transportation Systems on Traffic Flow in Isfahan. *Journal of Traffic Management Studies*, *8*, 97-112. http://ensani.ir/fa/article/79485/

Asadi, M., Fathy, M., Mahini, H., & Rahmani, A. M. (2021). A systematic literature review of vehicle speed assistance in intelligent transportation system. *IET Intelligent Transport Systems*, *15*(8), 973-986. https://doi.org/10.1049/itr2.12077

Barcevičius, E., Cibaitė, G., Codagnone, C., Gineikytė, V., Klimavičiūtė, L., Liva, G., & Vanini, I. (2019). *Exploring Digital Government transformation in the EU*. Publications Office of the European Union. https://publications.jrc.ec.europa.eu/repository/handle/JRC118857

Brockmann, C., Brezinski, H., & Erbe, A. (2016). Innovation in construction megaprojects. *Journal of Construction Engineering and Management*, *142*(11), 4016059. https://doi.org/10.1061/(ASCE)CO.1943-7862.0001168

Deghati, A., Yaghoubi, N. M., Kamalian, A. R., & Dehghani, M. (2020). Providing a Stage-Based Development Model for Network Governance Using the Meta-Synthesis Approach. *Public Administration*, *11*(2), 203-230. https://www.sid.ir/paper/514800/fa

Diyaz, E. (2020). *Exploring Digital Government transformation in the EU*. Publications Office of the European Union. https://publications.jrc.ec.europa.eu/repository/handle/JRC118857

Ebrahimpour, H., & Aliki, F. (2016, 2016-06-02). Investigating the Role of Good Governance in Government Efficiency. International Conference on Elite Management, Tehran, Iran.

Flyvbjerg, B. (2007). Cost overruns and demand shortfalls in urban rail and other infrastructure. *Transportation Planning and Technology*, *30*(1), 9-30. https://doi.org/10.1080/03081060701207938

Flyvbjerg, B., Bruzelius, N., & Rothengatter, W. (2019). *Megaprojects and risk: An anatomy of ambition*. Science Publishing & Media Ltd. https://www.researchgate.net/publication/235951810_MegaProjects_and_Risk_An_Anatomy_of_Ambition

Ghazinoory, S., Fatemi, M., Saghafi, F., Ahmadian, A. A., & Tatina, S. (2023). A framework for future-oriented assessment of converging technologies at national level. *NanoEthics*, *17*(2), 8. https://doi.org/10.1007/s11569-023-00435-4

Ghazinoory, S., Sarkissian, A., Farhanchi, M., & Saghafi, F. (2020). Renewing a dysfunctional innovation ecosystem: The

case of the Lalejin ceramics and pottery. *Technovation*, *96*, 102122. https://doi.org/10.1016/j.technovation.2020.102122

Gholipour, S. (2022, 2022-12-11). The Role of Urban Planning in Urban Traffic Management Development with an Environmental Approach. Third International Conference on Civil Engineering, Architecture, and Urban Development with an Approach to Urban Infrastructure Development, Izmir, Turkey.

Gholipour Souteh, R., Monavarian, A., & Elahiari Dooin, M. (2019). Designing an E-Government Model within the Ethical Framework of Good Governance. *Ethics in Science and Technology*, *14*(5), 186-189. https://ethicsjournal.ir/article-1-1696-fa.html

Heshmatzadeh, M. B., Haji Yusefi, A. M., & Talebi, M. A. (2017). Investigating the Barriers to Achieving Good Governance in Iran's Political Culture. *Contemporary Political Essays*, *8*(1), 1-24. https://politicalstudy.ihcs.ac.ir/article_2630.html

Lewin, A. Y., & Volberda, H. W. (2003). The future of organization studies: Beyond the selection-adaptation debate. In *The Oxford handbook of organization theory* (pp. 568-595). https://doi.org/10.1093/oxfordhb/9780199275250.003.0022

Mehri, A., & Ebrahimi Dehkordi, A. (2017, 2017-05-11). Planning Urban Intelligent Transportation Systems with an Emphasis on Multi-Story Parking in Coastal Cities. Third Annual Conference on Architecture, Urban Planning, and Urban Management, Shiraz, Iran.

Moazzami, M., Sheini-Shahvand, N., Kabalci, E., Shahinzadeh, H., Kabalci, Y., & Gharehpetian, G. B. (2021). Internet of things architecture for intelligent transportation systems in a smart city. 2021 3rd Global Power, Energy and Communication Conference (GPECOM),

Mohaghar, A., Heydarzadeh Moghaddam, H., & Ghasemi, R. (2023). Developing a Model to Optimize Maximum Coverage of Roadside Units Placement in Vehicular Ad-hoc Network for Intelligent Transportation System. *Journal of Industrial Management Perspective*, *13*(2), 211-240. https://jimp.sbu.ac.ir/article_102405.html?lang=en

Moradi, M. B., Karimi, S. N., & Hossein Jalali, A. (2022). A Dynamic Scalable Fast Blockchain-Based Framework for Smart Cities: The Case Study of Intelligent Transportation System. *Journal of Artificial Intelligence in Electrical Engineering*, *11*(43). https://journals.iau.ir/article_705240.html

Nasiri Zare, S. (2020, 2020-06-10). Providing a Good Governance Model for Integrated Water Resources Management in Iran. Thirteenth National Congress of Pioneers of Progress, Tehran, Iran.

Pidorycheva, I., Shevtsova, H., Antonyuk, V., Shvets, N., & Pchelynska, H. (2020). A Conceptual Framework for Developing of Regional Innovation Ecosystems. *European Journal of Sustainable Development*, *9*(3), 626-640. https://doi.org/10.14207/ejsd.2020.v9n3p626

Razavi, S. M., Balounejad Nouri, R., Kowsari, S., & Saghafi, F. (2024). Providing a Conceptual Model for Readiness to Enter Platform Government. *Journal of Futurology of the Islamic Revolution*, *5*(1), 153-171. https://civilica.com/doc/1935391/

Rolinson, M. (2018). The good governance agenda: Beyond indicators without theory. *Oxford Development Studies*, *36*(4), 379-407. https://doi.org/10.1080/13600810802455120

Sheng, Z., Xue, X., & An, S. (2019). Constructing theoretical system and discourse system of mega infrastructure construction management with Chinese characteristics. *Journal of Management World*, *35*(04), 2-16. https://www.mdpi.com/2071-1050/15/21/15301

Zhang, Z. (2020). Sustaining electronic governance programs in developing countries. 11th European Conference on eGovernment, Ljubljana.