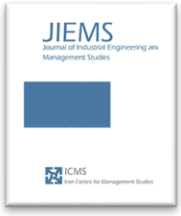
Vol. 12, No. 2, 2025, Pages 20-29

JIEMS
Journal of Industrial Engineering and Management Studies

journal homepage: www.jiems.icms.ac.ir



Roadmap for Industry Transformation in the Digital Economy (Case Study of Two Industries: Insurance and Transportation)

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Received: Jun 2025-11/ Revised: Agu 2025-21/ Accepted: Oct 2025-20

Abstract

The rapid emergence of the Fourth Industrial Revolution has accelerated the digital transformation of industries worldwide, reshaping value creation and competitive structures. However, while some industries—such as transportation and logistics—have successfully leveraged digital technologies, others, including the insurance industry, continue to struggle with transformation. This research addresses the critical question of why certain industries succeed in digital transformation under similar national and technological conditions, whereas others lag behind. Methodologically, this study adopts a comparative qualitative approach, analyzing two industries—transportation and insurance—as contrasting cases of success and failure in digital transformation within Iran. Data were collected through in-depth expert interviews with founders and senior executives of key startups (e.g., Snapp, AloPeyk, BimeBazar, Bimito, and Azki) and analyzed using thematic analysis in MAXQDA 12. The findings reveal that transformation success depends on both internal factors (entrepreneurial mindset, learning capability, organizational agility) and external factors (industry structure, regulatory conditions, access to smart capital, and technological maturity). The results provide managerial implications for policymakers and industry leaders. A four-strategy roadmap—digital transformation, digital evolution, startup creation, and digital planning—is proposed to guide industries at different readiness levels. Managers can use this roadmap to assess their industry's transformation maturity, align strategic initiatives with digital capability development, and foster innovation ecosystems that sustain digital competitiveness.

Keywords: Digital economy, digital roadmap, digital strategy, digital transformation, startup.

Paper Type: Original Research

1. Introduction

If productivity is a key aspect of the economy and industrial revolutions lead to increased productivity, it can be stated that the Fourth Industrial Revolution has created the most significant productivity increase in human history. With this revolution, digitalization of the economy has become inevitable. Consequently, digital transformation is gradually emerging in various global industries, and Iranian industries will not be exempt from this trend. While some industries have successfully implemented digital transformation, others, despite the emergence of digital technologies, have failed to achieve digital transformation. The transportation and logistics industry is among the pioneers of the digital economy in Iran. The emergence of startups in this sector has led to the formation of an innovation ecosystem. Startups such as Snapp, Carpino, AloPeyk, and Hampa are considered key players in this industry. Among these, Snapp and AloPeyk can be classified as successful startups, while AloPeyk and Hampa have struggled to succeed. These four startups have been selected as case studies for in-depth comparative analysis in this research. In contrast, the insurance industry is considered a lagging and unsuccessful sector in Iran's digital economy. Despite following a similar approach to the transportation and logistics industry and the emergence of startups such as BimeBazar, Bimito, Azki, BimeLine, BimeDotCom, and BimTis, digital transformation in the insurance sector has not materialized. Over time, these startups have been sidelined. It appears that insurance startups have failed to establish an innovation ecosystem, and their failure has raised questions about industrial transformation in the digital economy. The necessity of increasing the success rate of industries in achieving digital transformation is crucial in the digital economy. Studying successful and unsuccessful cases can provide valuable lessons for innovation ecosystem stakeholders. A deep examination of transportation and logistics startups and the emergence of digital transformation in this industry as a successful case, alongside an in-depth study of insurance startups and their failure to establish a digital model, is essential in answering the following key questions:

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- What are the key internal and external factors influencing industrial digitalization?
- What are the strategies for industrial digital transformation?
- What has been the digital transformation roadmap of transportation, logistics, and insurance startups?
- What practical solutions can enhance the success rate of industrial digitalization?

This research contributes to the growing body of knowledge on digital strategy and transformation roadmaps by proposing a practical, comparative framework that aligns industry readiness with technological advancement. The findings not only provide theoretical insights into the mechanisms of digital transformation but also offer actionable implications for industry leaders and policymakers to foster sustainable innovation ecosystems in emerging economies.

2. Literature Review

The Fourth Industrial Revolution (Industry 4.0) merges digital, physical, and biological systems, reshaping industries and business models worldwide. Industry 4.0 tech—like artificial intelligence (AI), big data analytics, the Internet of Things (IoT), cloud computing, and blockchain—are now vital for digital transformation (Bai et al., 2020; Deloitte, 2023). These tools create new value chains, boost productivity, and support data-driven decisions across sectors.

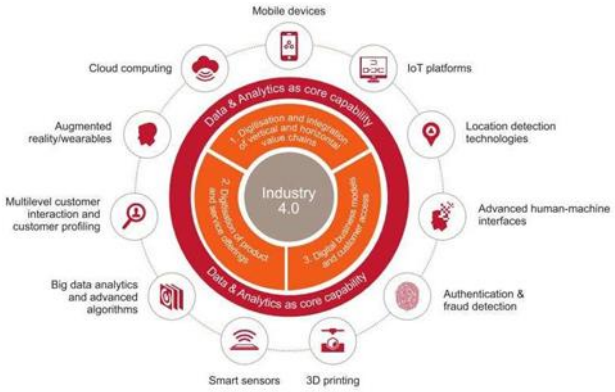

Figure 1. Industry 4.0 Framework and Supporting Digital Technologies Source: Geissbauer et al. (2016)

The table below provides definitions of various technologies within the Fourth Industrial Revolution.

Table 1. Definitions of Various Technologies in Industry 4.0

Technology	Definition
3D Printing	A manufacturing process that creates solid three-dimensional objects using additive or layered development frameworks.
Artificial Intelligence	A branch of computer science focused on creating intelligent machines that perform tasks typically requiring human intelligence.
Augmented Reality	An interactive technology that enhances real-world experiences through displays, sound, and computer-generated effects.
Autonomous Robots	Robots designed to replicate human actions in industrial and manufacturing settings.
Big Data & Analytics	Techniques used to analyze large datasets where traditional data mining and management methods fail.
Blockchain	A distributed and secure database technology that ensures integrity and transparency through encryption and consensus mechanisms.
Cloud Computing	IT services provided over cloud infrastructure, offering scalability and remote access.
Collaborative Robotics (Cobots)	Robots designed for direct physical interaction with humans in shared workspaces.
Cybersecurity	Methods used to protect data from unauthorized access, theft, or cyber threats.
Drones	Unmanned aerial vehicles (UAVs) used for various applications, including surveillance and logistics.
Global Positioning System (GPS)	A satellite-based navigation system that provides location, speed, and time data.

Internet of Things (IoT)	A network of interconnected devices that communicate and share data to optimize industrial and consumer applications.
Mobile Technology	Wireless communication technologies integrated into mobile devices to enable seamless connectivity.
Nanotechnology	The manipulation of atomic and molecular structures to develop advanced materials and systems.
Radio-Frequency Identification (RFID)	A wireless communication technology used for automatic object identification and tracking.
Sensors & Actuators	Devices that detect physical stimuli (such as heat, light, or motion) and convert them into digital signals for control and automation.
Simulation	The use of computer models to replicate real-world systems and processes for analysis and optimization.

2.1. Digital Economy

The term 'digital economy' was first introduced by Tapscott (1996). Tapscott discussed how networks of individuals use technology for wealth creation and social development. Lane (1999) examined the combination of computing and communication technologies on the internet, focusing on the implications of the digital economy, including privacy, innovation, standards, and the digital divide. Margherio et al. (1999) provided one of the first clear classifications of the digital economy, identifying four major trends: the internet, e-commerce, digital transformation, and the retail of tangible goods. Brynjolfsson & Kahin (2000b) emphasized understanding the digital economy through macroeconomics, competition, labor, and organizational changes, defining it based on the digitalization of computer-based information. Kling & Lamb (2000) defined the digital economy as encompassing all goods and services whose development, production, and sales rely on digital technologies. They divided the digital economy into four categories: purely digital goods and services, hybrid digital products, IT-enabled production and services, and the IT industry itself. Mesenbourg (2001) classified the digital economy into three segments: e-business infrastructure, e-business processes, and e-commerce. The Economist Intelligence Unit (2010) ranked digital economies based on factors such as technology infrastructure, connectivity, business environment, socio-cultural landscape, legal frameworks, governance policies, and the growth of digital customers and businesses, with rankings determined by the economic value generated through ICT adoption. The Organisation for Economic Co-operation and Development (OECD) (2013) explored the components of the internet and e-commerce within the digital economy, addressing competition, regulatory frameworks, digital market rules, network effects, interoperability, and open versus closed platforms. The Australian Department of Communications and the Digital Economy (2013) examined factors reinforcing the digital economy, including adoption readiness, environmental conditions, and targeted policy actions. The European Commission (2013) outlined key features of the digital economy, including venture capital-backed innovation, the significance of intangible assets, new business models based on network effects, and cross-border e-commerce. The British Computer Society (2014) identified core digital economy issues, including innovation, regulation, cybersecurity, and digital literacy. The European Parliament (2015) emphasized regulatory and competitive changes in the digital economy, noting that new platform-based business models have created multiple access routes for end-users. The UK House of Commons (2016) highlighted two key aspects of the digital economy: digital access to goods and services and the use of digital technology to enhance business operations. The G20 (2016) characterized the digital economy as encompassing a broad range of activities, including information and knowledge as key production factors, modern information networks as essential operational environments, and the efficient use of ICT as a driver of production and economic optimization. Elmasry et al. (2016) argued that the digital economy is less of a theoretical concept and more of a practical approach to business. They defined the digital economy as creating value within new business boundaries, optimizing processes to implement strategic visions, and building fundamental capabilities that sustain the overall system. Bahl (2016) described the digital economy as focusing on business value and profitability through digital integration into the core of operations, making interactions with customers, partners, and employees inherently digital. Knickrehm et al. (2016) measured the digital economy by assessing the proportion of economic output derived from digital inputs, including skills, equipment, and digital interfaces. Rouse (2016) defined the digital economy as a global network of economic activities facilitated by ICT. In simpler terms, he described the digital economy as an economy primarily driven by digital technologies. Dahlman et al. (2016) characterized the digital economy as the convergence of multiple target technologies, integrating economic and social activities conducted through the internet and other related technologies. They outlined the digital economy as encompassing digital infrastructure (broadband networks, routers), access devices (computers, smartphones), software applications (Google, Yahoo), and service delivery mechanisms (IoT, data analytics, cloud computing). As a result, Bakh and Hicks (2017) identified four key areas of the digital economy: the future of work, customer experience, digital supply chains, and

the Internet of Things (IoT). These four domains define how digitalization transforms industries and business practices.

2.2. Digital Transformation and Strategy Alignment

The first academic research on strategies in business emerged in the early 1960s. Over time, strategic planning for IT systems became a subject of research in terms of IT strategies. Approaches such as "business systems planning" were introduced and considered fundamental frameworks for IT strategies, but they remained separate from business strategies. In the 1990s, the first research papers were written on the alignment of business strategies and IT strategies. The "Triangle Model" was one of the first approaches to align IT strategies with business strategies. By 2010, researchers stated that strategic alignment was no longer sufficient. They introduced the term "digital business strategy," where business strategy and IT strategy are integrated. With a digital business strategy, IT strategy is no longer a functional-level strategy but rather an integral part of business strategy. This perspective was adopted, and the most recognized framework for digital business strategy was developed three years later (Lipsmeier et al., 2020). In the classical concept, strategy is a planned set of company actions to achieve long-term goals. A strategy consists of multiple criteria that are interconnected. Based on this classical understanding, a digital strategy "describes a company's overall vision in the context of digitalization, including strategic actions to achieve it." It defines specific short-term, medium-term, and long-term digitalization goals and initiatives in terms of products, services, value creation, as well as company organization and culture (Lipsmeier et al., 2020). Bharadwaj et al. (2013, p. 472) define digital strategy as an organizational strategy formulated and implemented using digital resources to create differentiated value (Torok, 2020). The proposed framework for digital strategy is presented below. Over time, this alignment evolved into digital business strategy, which integrates digital resources directly into business goals (Bharadwaj et al., 2013). In the digital economy, competitive advantage increasingly depends on a firm's ability to integrate IT capabilities with strategic agility and innovation (Lipsmeier et al., 2020; Sebastian et al., 2020). Digital transformation extends beyond technology implementation—it requires rethinking processes, culture, and governance structures (Matt et al., 2015). Empirical studies have shown that successful digital transformation depends on leadership commitment, ecosystem collaboration, and a dynamic capability to sense and respond to environmental changes (Vial, 2021; Verhoef et al., 2021). Conversely, industries with rigid structures, legacy systems, and regulatory barriers often struggle to adapt, as seen in traditional financial and insurance sectors (Kraus et al., 2021; Abou-foul et al., 2023).

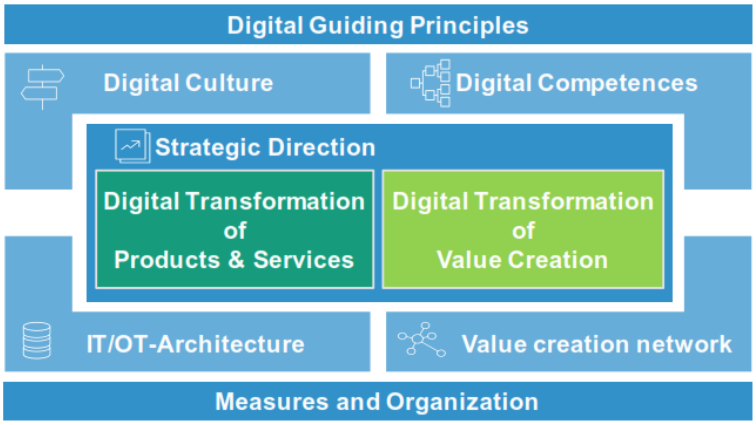

Figure2. The proposed framework for digital strategy (Lipsmeier et al., 2020)

2.3. Research Gaps and Conceptual Framework

Despite the growing body of literature, there remains a lack of comparative studies analyzing why certain industries within the same national context succeed in digital transformation while others fail. Most prior research focuses on firm-level or technology-level analysis rather than cross-industry comparison. Moreover, studies rarely explore the role of institutional infrastructure, entrepreneurial ecosystems, and regulatory frameworks in shaping transformation trajectories (Hess et al., 2016; Jonathan & Kuika Watat, 2020). This study addresses these gaps by developing a comparative framework that analyzes two industries—transportation and insurance—in Iran's digital economy. By examining internal factors (leadership, culture, innovation, and structure) alongside external factors (regulation, technology maturity, and capital access), the study seeks to construct a strategic roadmap linking industry readiness to technological advancement. This framework contributes to a better understanding of how industries in developing economies can align their digital strategies with national digital transformation goals.

3.Methodology

3.1. Research Design

This study adopts an applied and exploratory qualitative research design, aiming to develop a practical roadmap for industry transformation in the digital economy through comparative case analysis. The qualitative approach is appropriate for uncovering contextual, behavioral, and strategic factors that influence the success or failure of digital transformation within different industries.

3.2. Research Approach and Case Selection

A comparative case study method was employed to examine two industries in Iran—transportation and insurance—that exhibit contrasting patterns of digital transformation. The transportation sector was selected as a successful case of digital evolution, while the insurance sector represented a lagging case. Within these industries, a total of nine startups were chosen as the analytical units of the study:

Transportation and Logistics: Snapp, Carpino, AloPeyk, and Hampa

Insurance: BimeBazar, Bimito, Azki, BimeDotCom, and BimTis

The cases were selected through purposive sampling based on their relevance to the digital economy, innovation capacity, and operational maturity. This comparative design allows for cross-industry insight into the internal and external determinants of digital transformation.

3.3. Data Collection

The study utilized both secondary and primary data sources. Secondary data were gathered from academic journals, industry reports, and corporate documentation. Primary data were collected through semi-structured expert interviews, direct observation, and participation in startup and industry events such as Elecomp. A total of 20 in-depth interviews were conducted with founders, CEOs, and senior managers of the selected startups between 2022 and 2023. Interviews lasted between 45 and 90 minutes and were audio-recorded and transcribed verbatim with participant consent. The key characteristics of interviewees—such as age, education, and managerial experience—are summarized in Table 2.

Table 2. Characteristics of Interviewees

Interviewee	Startup Name	Gender	Education	Age	Executive Experience	Position
Mohammad Razini	Snapp	Male	Bachelor's	45	22	CEO
Rasha Shidmaher	Snapp	Male	Master's	35	13	Marketing Vice President
Mehdi Arabzadeh Yekta	Snapp	Male	PhD Candidate	38	17	Consultant
Iman Hajizadeh	Carpino	Male	PhD in Finance	39	18	Founder & Board Member
Sohail Mahdikhani	Carpino	Male	Bachelor's	36	12	CEO
Majid Moharami	Carpino	Male	Master's	42	22	Consultant
Mehdi Naeibi	AloPeyk	Male	Bachelor's	38	26	Founder & CEO
Ali Fayazbakhsh	AloPeyk	Male	Master's	39	18	Chairman of the Board
Sina Bakhtiari	Hampa	Male	Bachelor's	22	4	Founder
Saeed Nematollahi	Hampa	Male	Bachelor's	24	4	Founder
Mohammadreza Farahi	Bime Bazar	Male	PhD in Finance	33	10	Founder & Chairman
Mohammadsadegh Montazeri	Bime Bazar	Male	MBA Master's	29	6	Founder & CEO
Ghasem Nemati	Bimeh	Male	Master's in IT	44	20	IT Vice President
Ali Eslami Bidgoli	BimTis	Male	PhD in Business	45	24	Founder & Chairman
Hooman Damirchilou	Snapp	Male	Master's	36	14	Founder & CEO
Shahram Shahkar	Snapp	Male	Master's	36	14	CEO
Hamed Valipour	Bimito	Male	Bachelor's	34	12	Founder & CEO
Tim Latif	Azki	Male	Bachelor's	42	20	Founder & CEO
Bahareh Sharifian	Bime Dot Com	Female	Master's	37	15	Founder & CEO
Hamidreza Ezati	BimTis	Male	PhD Candidate	32	10	Founder & CEO

The interviews were transcribed after being conducted and then coded using the thematic analysis method in MAXQDA 12 software. In coding the conceptual themes, the line-by-line method was used.

3.4. Data Analysis

Data were analyzed using thematic analysis following Braun and Clarke's (2006) six-step procedure. The analysis was facilitated by MAXQDA 12 software, enabling systematic coding, categorization, and identification of cross-industry themes. Thematic coding was performed line-by-line to extract both internal factors (organizational, structural, cultural, and leadership aspects) and external factors (regulatory, technological, and economic conditions) influencing transformation.

4. Findings and Discussion

The comparative analysis of two industries—transportation and insurance—revealed distinct trajectories of digital transformation. The findings are structured around two dimensions: internal organizational factors and external environmental factors, which collectively determine the readiness and success of digital transformation.

4.1. Internal Factors of Selected Startups

was primarily driven by entrepreneurial leadership, organizational agility, and the existence of innovation ecosystems. Startups such as Snapp and AloPeyk demonstrated the ability to rapidly adapt to market feedback, integrate emerging technologies, and scale their operations based on customer demand. Their founders possessed a growth-oriented mindset, emphasizing experimentation and continuous learning—traits consistent with the concept of dynamic capabilities (Teece, 2018). In contrast, startups in the insurance sector, such as BimeBazar and Bimito, faced internal rigidity due to dependence on traditional insurers and limited autonomy in product design. Their operations were constrained by knowledge silos, lack of cross-functional integration, and weak learning mechanisms, which inhibited innovation and speed of adaptation. The absence of a robust innovation culture and weak control mechanisms led to fragmented efforts rather than coherent digital strategies. The comparative insights suggest that internal integration and leadership orientation play a pivotal role in shaping transformation outcomes. Firms with open cultures, flexible structures, and learning-based control systems were better positioned to sustain innovation and achieve transformation. The table below presents a comparison of internal transformative factors in the transportation and insurance industries, derived from the interviews.

Table 3. internal transformative factors in the transportation and insurance industries

Transportation Industry	Insurance Industry
Having capital	Insurance market lag gap
Implementation team	Justice gap in premium payment
Learning innovation ecosystem concepts and sufficient experience	Technology pressure
Superiority of transformative idea and model compared to the current model	Idea generation
Entrepreneurial mindset	Founding team
Structural evolution	Initial capital
Appropriate control model	Knowledge management weakness
Revenue model	Key resources and capabilities
Training	Organic structure
	Revenue model
	Open organizational culture
	Value creation based on benchmarking

The comparison of the two industries shows that factors such as capital, initial idea, and an implementation team are essential for launching a startup in both industries. It appears that whether the idea originates from technological pressure or a market gap does not impact the success of a startup. However, presenting an idea that offers a model superior to the existing one—meaning that it creates sufficient value for customers and allows them to benefit from it—can influence the startup's success. Another key factor in the emergence of a successful startup is the entrepreneurial and challenge-driven mindset of the founder. An entrepreneurial spirit can help overcome challenges and persist despite difficulties. Structural evolution can be considered the most critical internal element of a successful startup. Both successful and unsuccessful startups have followed this path, expanding their structures as needed. However, this factor alone cannot be regarded as a decisive one. A revenue model is also observed in both industries. While a revenue model may not be a crucial factor during transformation, it can serve as a lever to convince investors if it is well-developed. Having an open organizational culture can make working within the company more appealing and motivate employees. However, it is essential to recognize that what ultimately leads an organization to success in its transformation journey is the integration of its elements. The organization must implement control systems that maintain this integration. Learning and knowledge management play a significant role in these organizations.

4.2. External Factors of Selected Startups

The external environment exerted a profound influence on the transformation path of both industries. The transportation industry benefited from favorable contextual conditions—namely, high smartphone penetration, digital payment systems, and an accessible customer base. Economic stability during the initial years of platform growth and the influx of smart venture capital further supported the development of a robust innovation ecosystem. Moreover, the absence of heavy regulation allowed transportation startups to experiment freely, design customer-centric services, and achieve product–market fit. Conversely, the insurance industry operates within a heavily regulated environment characterized by data monopolization, limited competition, and centralized control of customer information. The lack of interoperability between insurers and digital intermediaries (e.g., startups) restricted the ability to innovate or develop personalized digital insurance products. The absence of a digital infrastructure—such as integrated databases, AI-based risk assessment tools, and IoT-enabled data flows—created systemic barriers to transformation. These conditions reflect what the literature terms institutional inertia (Hess et al., 2016), where outdated governance structures delay digital innovation. The table below presents a comparison of external factors in the transportation and insurance industries, derived from the interviews.

Table 4. external factors in the transportation and insurance industries

Transportation Industry	Insurance Industry
Internet development	Economic instability and inflation
Mobile phone penetration	Market entry timing
Economic stability	Global trends in insurance industry development
Assessing appropriate entry timing	Societal inclination towards technology
Lack of smart investment funds	Weak corporate governance in the insurance industry
Capital outflows from the ecosystem	Entry barriers against foreign competitors
Product-market fit	Resistance from the traditional market
Effective marketing	Regulatory support
Attracting and motivating talent	Technological infrastructure for insurance
Idea complexity	Legal barriers to data access
Level of organizational conflicts	Major technical issues in data integration
Balance between supply and demand	Repetition rate
	Logistics of paper-based insurance policies
	Lack of public awareness
	Unmotivated employees
	Competition with the traditional market
	Personalized nature of insurance demand
	Attracting specialized workforce
	Insurance culture
	Lack of contractual perspective towards insurance
	Rate-setting based on relationships

The need for internet infrastructure and the high penetration of smartphones in the transportation industry have created the necessary conditions for transformation. However, in the insurance industry, despite the availability of such infrastructure, transformation has not occurred. It appears that the required infrastructure for transformation varies across industries, and the insurance sector specifically requires different infrastructure to facilitate transformation. In other words, transformation in the transportation industry has taken place because the overarching infrastructure existed. However, in the insurance industry, transformation has not occurred because its necessary infrastructure extends beyond basic communication infrastructure. More precisely, the traditional structure of an industry can influences the formation of transformation, and the more monopolistic this structure is, the slower digital transformation will take place. The insurance industry requires more extensive infrastructure for transformation than the transportation sector. For transformation in the insurance sector, sufficient data is needed to integrate other emerging technologies such as artificial intelligence and the Internet of Things (IoT). However, since access to this data is monopolized by a specific organization within the insurance industry, startups cannot create sufficient value, thereby preventing the necessary groundwork for industry transformation. Undoubtedly, regulatory power and its determination to leverage the tools at its disposal, along with the industry structure, have influenced the transformation process. For instance, in the insurance industry, the database is controlled by "Fanavaran Khebreh," an entity under regulatory oversight. Meanwhile, only a handful of insurance companies provide insurance services, with four major companies holding approximately 60% of the market share. Consequently, governance in the insurance industry possesses the key levers of control and can dictate the direction of digital transformation. Conversely, the transportation industry has followed a different trajectory. It has not required a centralized database to leverage advanced emerging technologies. Since transportation is a daily necessity, mobile applications and smartphones have been sufficient for service delivery. Additionally, transportation service providers are primarily individual drivers and ride-hailing operators, with a vast number of them active in the industry. This means that there was no need for a specific service provider to facilitate market entry. Thus, insurance startups lack the foundational conditions necessary for transformation, whereas in the transportation sector, the

industry's structure, the nature of service providers, and regulatory levers to apply pressure on industry transformation have been influential factors. Furthermore, the type of technology required and the volume of data needed to generate value through emerging technologies have significantly impacted the success of digital transformation in each industry. Therefore, a fundamental question arises: Are the technical conditions for transformation already in place, or is there a need to create them? Another contextual factor is economic stability. Economic and political instability, in any form, can disrupt the transformation process. Political uncertainty, regardless of its orientation, makes decision-making more difficult for startups and directs investments toward alternative markets. Conversely, in an economically stable environment, startups face clearer constraints and can make informed decisions based on them. In general, startups seeking transformation must evaluate whether they have chosen an appropriate entry time to initiate change. They must also assess whether the general macroeconomic conditions of the country—covering economic, political, social, cultural, technological, environmental, and legal factors—are conducive to transformation. These forces should not be overwhelmingly opposed to transformation, and the most crucial considerations should focus on economic groundwork and necessary technological infrastructure. The ability of transportation startups to achieve product-market fit, while the insurance sector has failed to do so, can be seen as a key intervening factor in the transformation paths of both industries. The insurance industry has not been able to leverage digital transformation to provide sufficient value to customers. Another major intervening factor in the transformation of both industries is access to smart financial resources. At the time of transformation in the insurance sector, these financial resources exited the innovation ecosystem. The bargaining power of service providers and the regulatory authority's ability to impose restrictions have effectively frozen transformation in the insurance industry. On the other hand, while the insurance industry delivers a service, it is treated similarly to a physical product. The existence of paper-based insurance policies has created conditions where electronic sales of insurance are not feasible, mainly due to the industry's lack of necessary technical infrastructure. Additionally, informal connections with certain service providers have resulted in price advantages for some traditional providers. This is because transparent pricing mechanisms do not exist, allowing traditional systems to exploit loopholes and maintain lower rates. Due to the regulated nature of insurance pricing, insurance startups have minimal influence over rate-setting and lack the authority to design their own products. Physical constraints have also limited electronic distribution, forcing startups to rely solely on promotions and advertisements for marketing. However, this is not a viable strategy given the lack of smart financial capital within the innovation ecosystem. As a result, insurance startups have been unable to implement effective marketing strategies. Conversely, in the transportation industry, there has been significant freedom in executing effective marketing campaigns, with fewer constraints on marketing strategies. Attracting and motivating talent has been a serious challenge for all startups, often posing a persistent headache for founders. In the transportation sector, achieving a balance between supply and demand has been a significant challenge. However, this issue has not been as prominent in the insurance industry because there is no inherent need for such a balance—insurance service providers are not the direct customers of the platform. Instead, insurance startups act as intermediaries, functioning as marketers and brokers for existing insurance companies. Thus, achieving balance between supply and demand has not been a critical factor in the insurance sector. Existing insurance startups tend to have similar business ideas, which has led them to avoid testing alternative value propositions. This lack of diversification has created a deadlock for all insurance startups. In contrast, the transportation industry has demonstrated a greater variety of ideas. For example, AloPeyk operates in real-time logistics, Snapp specializes in car-hailing, and Hampa focuses on carpooling. The degree of similarity in business ideas has emerged as a crucial intervening factor in the transformation of an industry.

4.3. Strategic Comparison

Table 5 outlines the strategic differences between the two industries. In the transportation sector, transformation strategies centered on agile product development, market experimentation, and user engagement through digital feedback loops. Startups prioritized rapid iteration and achieved scale through aggressive marketing and flexible pricing. In contrast, insurance startups relied on partnership-based strategies with incumbent firms, which limited their capacity for innovation. Their marketing and customer engagement efforts remained largely traditional, constrained by the absence of data access and product autonomy. The findings highlight that the transportation industry followed an agile digital transformation pathway, whereas the insurance industry pursued a dependent digital evolution pathway. This divergence aligns with the proposed four-strategy roadmap—digital transformation, digital evolution, startup creation, and digital planning. Industries with high technological maturity and structural flexibility (e.g., transportation) can directly implement digital transformation strategies. In contrast, industries with low readiness and high regulation (e.g., insurance) should begin with digital evolution and gradually progress toward transformation through staged capability development.

Table5. comparison of the digital transformation strategies implemented in the transportation and insurance industries

Transportation Industry	Insurance Industry
Focusing on entry timing for direct disruption of the existing order	Performance evaluation and incentive system
Accessing external smart financial resources	Prioritizing partner agents
Using appropriate control systems to motivate employees and maintain system integration	Insufficiency of phone consultation
Effective marketing and price dumping	Agility
Managing organizational conflicts	Smartness of startups
Creating a balance between supply and demand	Risk-based insurance sales
Using agile methods to achieve product-market fit	Implementation of the OKR system
	Critical incident logging system
	Product development
	Prioritizing partner agents
	Marketing and feedback collection

Using agile methods to gain market knowledge and achieve product-market fit has been the approach taken by the transportation industry, significantly contributing to its transformation. The insurance industry has also attempted to make improvements, but startups in this sector have failed to adequately address customer needs due to their limited bargaining power in designing the desired products. The use of control systems is highly important and has played a significant role in driving transformation in the transportation industry. In contrast, transformation in transportation occurred when effective marketing was implemented, and the technical department was able to support marketing efforts by designing products that matched customer needs. However, this has not happened in the insurance industry, as product design has never been in the hands of startups. While transportation startups were expanding, they placed a strong emphasis on system integration and coordination among departments. Some insurance startups have also adopted such systems to enhance their operational efficiency, which has had a positive impact on organizational control and progress toward transformation. Transportation startups grew during the post-JCPOA years when external smart financing played a crucial role in industry transformation. However, in the insurance industry, this phase occurred after sanctions were reimposed, preventing insurance startups from accessing smart capital. Organizational conflict management has been an influential factor in the success of transportation startups. However, none of the insurance startups mentioned organizational conflicts as a challenge. It appears that, if conflicts arise, the founders' conflict resolution skills can mitigate the issues, but this is not considered a major factor in industry transformation.

5. Conclusion and Recommendations

Based on the categorized factors, two key dimensions—industry readiness for change and the speed of technological advancement—are ultimately considered as the two axes of the digital transformation matrix. Considering the proposed solutions, four strategies are identified: digital transformation, digital evolution, startup creation, and digital planning, which together form the following matrix.

Table6. strategies matrix

	High Industry Readiness for Change	Low
High Technology Advancement Speed	Digital Transformation	Startup Creation
Low	Digital Evolution	Digital Planning

Based on the above matrix, there will be eight pathways for the roadmap of digital industry players, which include the following routes.

Table7. pathways for the roadmap of digital industry players

Pathway	Step 1	Step 2	Step 3	Step 4
Pathway 1	Digital Planning	Digital Transformation		
Pathway 2	Digital Planning	Startup Creation	Digital Evolution	Digital Transformation
Pathway 3	Digital Planning	Digital Evolution	Startup Creation	Digital Transformation
Pathway 4	Startup Creation	Digital Transformation		
Pathway 5	Startup Creation	Digital Evolution	Digital Transformation	
Pathway 6	Digital Evolution	Digital Transformation		
Pathway 7	Digital Evolution	Startup Creation	Digital Transformation	
Pathway 8	Digital Transformation			

The transportation, logistics, and insurance industries have mostly chosen Pathway Four. The following figure illustrates the trajectory of these startups. While this roadmap was accurate for the transportation and logistics industry, it was incorrect for the insurance industry. The most crucial technologies in the transportation sector, such as smartphone and mobile technology and internet infrastructure, have reached maturity. However, key technologies in the insurance sector, such as blockchain and the Internet of Things (IoT), have not yet matured. Additionally, due to its traditional structure, the insurance industry is not yet ready for transformation and requires time for technology to integrate with the industry, allowing it to develop the necessary groundwork. It appears

that the failure of the insurance industry to undergo digital transformation is rooted in its roadmap strategy. The digital strategy of the insurance sector has been flawed. This industry must first establish the necessary infrastructure. It seems that the insurance sector should follow the path of digital evolution, startup creation, and digital transformation to successfully achieve the required transformation. The study contributes to digital transformation literature by integrating industry-level and ecosystem-level perspectives into a unified framework. It demonstrates that transformation is not purely technological but institutional and strategic, requiring alignment between policy, infrastructure, and capability development. For policymakers, the roadmap serves as a diagnostic tool for prioritizing investments in digital infrastructure and formulating national strategies that balance innovation with regulation. For industry practitioners, it offers a structured approach to designing transformation programs that reflect real readiness levels and technological potential. Future studies can build on this framework by employing quantitative methods to measure digital readiness indices across industries and validate the proposed roadmap empirically. Further research could also explore cross-country comparisons or investigate sectoral transformation dynamics in banking, healthcare, and manufacturing to generalize the model. In conclusion, digital transformation is not a one-size-fits-all process—it is an adaptive journey shaped by internal capabilities, external contexts, and strategic foresight. Understanding these dynamics is essential for developing economies like Iran as they navigate the path toward sustainable digital competitiveness.

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