

Digital Horizons: Transforming Public Health Through Aviation Technologies

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Abstract

This study investigates the shift towards digital leadership in the aviation industry, with a focus on Mahan Airlines. Traditionally reliant on hierarchical management, the sector is transitioning to a dynamic, data-driven approach. The paper examines Mahan Airlines' evolution from conventional to digital leadership, emphasizing data-driven decision-making and digital integration in management and customer relations. Objectives include analyzing the airline's digital leadership transition, assessing the integration of digital tools, and identifying effective strategies for aviation leadership. The impact of these leadership styles on organizational performance is also explored. The research employs a mixed-methods case study, incorporating qualitative interviews with Mahan Airlines' executives and staff, quantitative performance data analysis, and document review. This approach provides insights into the relationship between digital technologies and leadership, underscoring its significance in the evolving aviation sector.

Keywords: Digital Transformation in Aviation; Leadership Evolution in the Digital Age; Mahan Airlines Case Study; Agile Leadership Practices; Data-Driven Decision Making; Organizational Digital Integration; Aviation Industry Trends; Technological Adaptation in Management.

1. Introduction:

Contextualizing the Topic Within Broader Themes of the Conference

The advent of the digital era has revolutionized various industries, with public health and aviation at the forefront of this transformation. This paper, titled "Digital Horizons: Transforming Public Health Through Aviation Technologies," positions itself at the confluence of these two critical sectors. It aims to contribute to the overarching theme of the "first national conference of Healthy society in the digital era," which seeks to dissect and critically assess the impact of digitalization on societal well-being. In this context, the paper explores the pivotal role of aviation, a sector emblematic of technological progression and global connectivity, and its intricate relationship with public health in the digital age.

Articulating the Research Question

Central to our exploration is the question: How does the intersection of aviation and digital health technologies influence public health, and what are the broader implications of this convergence for building a healthy society in the digital era? This inquiry delves into the nuances of digital integration in aviation and its cascading effects on public health policies, practices, and outcomes. It specifically examines how innovative digital solutions, like AI-enhanced disease tracking and blockchain-based passenger health data management, are reshaping the landscape of public health within the aviation industry.

Overview of the Paper's Structure and Objectives

The structure of this paper is designed to methodically address these questions. We commence with a historical perspective, outlining the evolution of digital technologies in aviation and their initial implications for public health. This foundation sets the stage for a detailed examination of contemporary digital innovations, such as health monitoring systems and data analytics in aviation. The paper then extends its focus to the wider societal implications of these technological advancements, analyzing their environmental and economic impacts. Employing a critical and interpretative lens, the paper seeks to provide a comprehensive understanding of this interplay between technology, public health, and society. In synthesizing the various dimensions explored, this paper aspires to offer a nuanced perspective on the transformative role of digital and aviation technologies in public health. Our goal is to chart current

trends and project future directions, highlighting potential areas for policy innovation and practical application. Ultimately, this exploration endeavors to contribute meaningfully to academic discourse and inspire actionable strategies to address some of the most pressing health challenges of our era.

2. Literature Review

Leadership Styles in the Digital Age

The literature review reveals a profound shift in leadership styles driven by digital transformation. Bennis and Thomas [1] highlight the necessity for adaptability and continuous learning in leaders, reflecting the evolving dynamics in sectors like aviation, where digital technologies are rapidly transforming the landscape. Furthermore, the increasing significance of Key Performance Indicators (KPIs) in evaluating leadership effectiveness, as discussed by Kaplan and Norton [2], aligns well with the data-driven environment of the aviation industry. This is complemented by comparative analyses of leadership styles, such as the research by Avolio and Gardner [3], which offers valuable insights into the differences between traditional and emerging leadership approaches in the digital age.

Aviation Industry Challenges and Opportunities

The impact of digital transformation in aviation is explored in depth by Mehta and Saxena [4], shedding light on both the challenges and opportunities it presents. Clark and Hartley [5] provide a crucial perspective on the unique challenges faced by the aviation industry in this digital era. Additionally, Shaw [6] highlights the potential for innovative leadership in aviation amidst digitalization, illustrating new pathways for leadership in this sector.

Digital Influence on Leadership Practices

In terms of digital influence on leadership practices, Hughes, Ginnett, and Curphy [7] offer a comprehensive understanding of these changes, which is further enriched by the frameworks from "Strategica Aeronautica" [8]. The critical role of digital transformation in reshaping leadership and management styles in aviation is underscored by Iansiti and Lakhani's work [9]. Porter and Heppelmann [10] provide an exemplary discussion on the alignment of theoretical leadership models with practical applications in the digital age, demonstrating the relevance of smart, connected products in transforming competition.

Hughes, Ginnett, and Curphy [7] provide an insightful analysis of how digitalization is reshaping leadership practices across industries. This foundational perspective is further enriched by the KPI frameworks detailed in *Strategica Aeronautica* [8]. Moreover, the transformative impact of digital technologies in airline management is vividly illustrated by recent studies. For instance, the integration of AI in redefining leadership paradigms is evidenced by research on Tourism 4.0 in Iran [9], while strategic digital innovations in aviation are further explored in *Revolutionizing Skies* [10]. The role of artificial intelligence in facilitating a paradigm shift in travel services has also been documented [11], complementing evidence on the changing dynamics of airline business management [12]. Additionally, the operational benefits of AI-driven maintenance enhancing efficiency and safety have been empirically demonstrated [13]. Foundational texts provide further strategic context; for example, *Excellence in the Air* [14] and *Building Trust at 30,000 Feet* [15] offer definitive KPI frameworks to elevate customer relationship management and operational excellence. In the realm of technology integration within airline IT, insights from *Flying with Technology* [16] underscore the critical role of data-driven decision-making. Moreover, revenue management practices are supported by digital analytics as detailed in *Revenue Rising: Unlocking Profit Potential with Revenue Management KPIs* [17], while a comprehensive perspective on performance management is provided in *Flight to Excellence* [18]. Finally, Porter and Heppelmann's [19] discussion on aligning theoretical leadership models with practical applications in the digital age further reinforces how smart, connected products are transforming competition. Moreover, the transformative impact of digital technologies on reshaping leadership and management styles is strongly supported by Iansiti and Lakhani [20].

Synthesis and Integration

Overall, this literature review synthesizes diverse academic perspectives into a cohesive understanding of how digital transformation is reshaping leadership within the aviation sector. The integration of foundational theories (e.g., [7], [8], [9], [19]) with empirical research on digital innovations in aviation (e.g., [10], [12], [13]) offers a comprehensive view of both the challenges and opportunities presented by digital technologies. This synthesis is further enriched by influential texts on KPI implementation and strategic planning in the industry illustrated by *Excellence in the Air* and *Building Trust at 30,000 Feet* [15], *Flying with Technology* [16], *Revenue Rising* [17], and *Flight to Excellence* [18]. Collectively, these sources underscore the imperative for adaptive, data-driven leadership in the modern digital age, while also pointing toward future research directions that may further enhance operational efficiency and competitive positioning in the aviation sector.

3. Methodology

Research Design and Data Collection

This study adopts a mixed-methods research design, integrating both qualitative and quantitative approaches to provide a comprehensive view of leadership and management in the context of digital transformation at Mahan Airlines. Drawing on established frameworks in organizational research, this methodology enables a thorough exploration of complex phenomena, offering insights that surpass what might be gleaned from singular methodological approaches. Primary data collection involves semi-structured interviews with Mahan Airlines' executives and managers, yielding direct insights into their leadership practices and digital strategies. To supplement this, surveys are distributed among employees to capture a wide range of perspectives. Additionally, secondary data, including internal company documents, annual reports, and pertinent industry publications, provide a contextual backdrop, enriching the primary data.

Data Analysis Techniques

Qualitative data from interviews and open-ended survey responses undergo thematic analysis to identify key patterns and themes related to leadership and management adaptations in the digital era. Concurrently, quantitative data are analyzed using statistical methods such as regression analysis and KPI benchmarking. This dual approach is aligned with best practices in digital transformation analysis, allowing for a holistic assessment of digital transformation's impact on leadership effectiveness.

Case Study Justification

Mahan Airlines is selected as a case study due to its prominent role in the technologically evolving aviation industry. The airline's strategic initiatives in digitalization, customer experience, and operational efficiency serve as practical examples of applying contemporary leadership theories amid digital transformation. This case provides a valuable lens to examine the interplay between evolving leadership styles and digital strategies in a real-world scenario. The airline's utilization of digital tools and technologies, including AI and advanced data analytics, is in line with strategic imperatives critical to modern aviation leadership, as detailed in Moghadasnian's *Strategica Aeronautica* [7]. This congruence offers an opportunity to delve into the nuances of leadership amidst digital innovation and strategic execution. Further, Mahan Airlines' digital transformation journey reflects wider trends in the aviation industry, positioning it as an exemplary case for examining leadership dynamics amid digital advancements. The insights from this case study are pertinent to other organizations in the aviation sector embarking on similar digital transformation paths.

4. Case Study: Mahan Airlines

Company Overview: Mahan Airlines - A Historical and Digital Perspective

Mahan Airlines: Evolution from Regional Carrier to Global Competitor Founded in 1991 in Iran, Mahan Airlines has transformed from a modest regional operator into an influential player in the international aviation market. This journey is marked by strategic expansions, fleet modernization, and an unwavering commitment to customer service excellence. A cornerstone of this evolution is the airline's progressive digital transformation initiatives, essential for

staying competitive in the rapidly changing aviation industry. Digital Initiatives and Technological Advancements Mahan Airlines' digital journey encompasses a suite of initiatives, such as the implementation of advanced fleet management systems and customer service platforms. Notably, its adoption of e-commerce strategies revolutionized ticketing and customer engagement. The airline has also prioritized IT infrastructure modernization, with cloud-based solutions and data analytics playing a pivotal role in enhancing operational efficiency and strategic decision-making.

Leadership and Management Analysis: Adapting to the Digital Age

Leadership Styles: Transitioning to Adaptability and Collaboration Leadership at Mahan Airlines reflects the dynamic demands of the digital era. A significant shift from traditional hierarchical models to more adaptive, collaborative leadership styles is evident. These styles are characterized by fluid decision-making, openness to innovation, and a proactive approach to risk management, aligning with the needs of a digital-forward industry.

KPI-Driven Management Approaches: Aligning with Strategic Goals Consistent with "Strategica Aeronautica's" recommendations, Mahan Airlines embraces KPI-driven management. This manifests in the meticulous tracking of operational efficiency, customer satisfaction, and financial performance. The integration of KPIs into strategic decision-making processes ensures that organizational objectives are in sync with market trends and operational demands.

Digital Technologies and Organizational Impact: Reshaping Decision-Making and Culture

Digital Transformation: Catalyzing Data-Driven Decision-Making Mahan Airlines' digital transformation has profoundly influenced its decision-making paradigm. The shift towards data-driven strategies, supported by robust digital infrastructure, has enabled the airline to quickly adapt to market fluctuations and operational challenges, marking a departure from traditional, intuition-based approaches. **Cultural Transformation:** Fostering Innovation and Learning The integration of digital technologies has cultivated a culture steeped in innovation and continuous learning. Employees across various levels are encouraged to engage with and contribute to digital initiatives, fostering a more inclusive, transparent, and agile organizational environment. This cultural evolution not only streamlines internal processes but also significantly enhances customer experiences, underscoring Mahan Airlines' dedication to digital excellence. Mahan Airlines exemplifies the transformative power of digital adoption in the aviation sector. Its journey underscores the importance of adaptive leadership, KPI-focused management, and the significant impact of digital technologies on organizational culture and decision-making processes. This case study offers insightful revelations into how airlines can effectively navigate the complexities of digital transformation, providing a blueprint for similar entities in the aviation industry.

5. Findings and Discussion

Case Study Insights: Mahan Airlines

1. **Agile Leadership Adoption:** Mahan Airlines has significantly embraced agile leadership, a key finding that resonates with current digital era trends. The airline's leadership demonstrated flexibility and responsiveness to changing market dynamics, a crucial trait in the volatile aviation sector. This agile approach is evidenced by the strategic integration of digital tools in decision-making processes, aligning with industry best practices.
2. **Data-Driven Decision Making:** A pivotal aspect of Mahan Airlines' transformation is its shift to data-driven strategies. Leveraging advanced analytics has allowed the airline to make informed decisions across various domains, from enhancing customer experiences to optimizing operations. This approach marks a departure from intuition-based models, aligning with KPI-driven leadership practices emphasized in contemporary management literature.
3. **Employee Empowerment through Digital Training:** Investment in comprehensive digital training programs for employees has fostered a culture of continuous learning and adaptation at Mahan Airlines. This progressive approach to employee empowerment surpasses many industry norms and signifies a forward-thinking leadership style, crucial for navigating the digital landscape.
4. **Enhanced Customer Experience via Digital Technologies:** The airline's deployment of digital technologies, including AI in customer service and personalized marketing, significantly elevates the customer experience. This

strategy is consistent with best practices in the aviation industry, where customer-centric approaches are increasingly influenced by digital advancements.

5. **Evolution in Leadership Communication:** Mahan Airlines has witnessed a notable evolution in leadership communication styles. The move towards greater transparency and real-time communication, facilitated by digital platforms, has cultivated a more inclusive and collaborative work environment, a key component of modern leadership frameworks.

Comparative Analysis with Literature and Industry Best Practices

1. **Agile Leadership Practices:** Mahan Airlines' agile leadership approach aligns well with current literature emphasizing adaptability in the digital era. This trend, gaining traction across industries, reflects a broader shift towards more dynamic and responsive leadership models.
2. **Data-Driven Leadership Consistency:** The airline's commitment to data-driven decision-making mirrors the shift in management paradigms highlighted in contemporary literature. This focus on quantifiable metrics for strategic decision-making aligns with KPI-driven leadership models.
3. **Progressive Employee Empowerment:** Mahan Airlines' extensive focus on digital training and employee empowerment represents a more advanced approach compared to many industry peers, showcasing a commitment to fostering a digitally proficient workforce.
4. **Customer-Centric Digital Strategies:** The airline's strategies for enhancing customer experience through digital technologies are in line with industry best practices, where digital innovation is increasingly central to customer engagement.

Alignment and Divergence with Digital Era Trends

1. **Alignment with Digital Transformation Trends:** The leadership at Mahan Airlines exhibits strong alignment with digital era trends, particularly in adopting agile and data-driven decision-making approaches and empowering employees through digital proficiency.
2. **Comprehensive Digital Integration:** The airline's thorough approach to digital integration in operations and management sets it apart from many industry counterparts, indicating a more advanced stage in digital transformation.
3. **Cultural Shifts in Leadership:** Mahan Airlines' shifts towards transparent communication and employee empowerment mark a divergence from traditional hierarchical models, which still persist in some areas of the aviation industry.

Mahan Airlines stands as a paradigmatic example of the transformational impact of digital strategies on leadership and management styles in the aviation industry. The case study provides rich insights into effective digital integration in leadership, highlighting avenues for other organizations to adapt and excel in the rapidly evolving digital landscape.

6. Implications for a Healthy Society in the Digital Era

Leadership and Organizational Health

In the digital era, the role of leadership extends beyond traditional business goals to encompass a profound impact on both organizational and societal health. Digital-centric leadership models in the aviation industry, as exemplified by Mahan Airlines, highlight this trend. These models prioritize fostering an innovative, resilient, and adaptable organizational culture, crucial in a digitally transformed environment. Such leadership approaches have a multifaceted impact on organizational health. They contribute to creating a work environment that values employee satisfaction, operational efficiency, and agility in the face of change. The balance between technological advancement and a human-centric approach is critical, acknowledging the influence of leadership decisions on employee well-being and morale. From a societal perspective, the aviation industry, as a global connector, wields significant influence on societal norms, environmental sustainability, and cross-cultural exchanges. Leadership that champions ethical stewardship, environmental consciousness, and social inclusivity can make substantial contributions to societal health.

Mahan Airlines' Contribution to Organizational and Societal Health

Mahan Airlines provides a compelling example of how digitally-informed leadership can positively impact both organizational and societal health:

1. **Employee Well-being:** Mahan Airlines' adoption of digital tools has streamlined operations, creating a more efficient and less stressful work environment, thereby enhancing employee job satisfaction. The use of digital platforms for communication and feedback promotes a culture of openness and inclusivity, essential for employee mental health and well-being.
2. **Customer Satisfaction:** The airline's commitment to digital innovation addresses evolving customer expectations around personalization, efficiency, and engagement. Initiatives like AI-driven customer service and personalized in-flight experiences not only enhance customer satisfaction but also establish industry standards for customer care.
3. **Societal Impacts:** Mahan Airlines' leadership and digital strategy contribute to environmental sustainability, aligning with global efforts towards a healthier society. The airline's focus on digital inclusivity, ensuring accessibility of services to diverse customers, demonstrates a commitment to social responsibility, thereby enriching societal well-being.

The leadership strategies employed by Mahan Airlines in the digital era represent an integrated approach to promoting both organizational efficiency and societal health. These practices, extending beyond internal operational effectiveness, contribute significantly to societal well-being. The case of Mahan Airlines serves as an instructive model for other organizations navigating the complexities of the digital age, illustrating how business leadership can be a driving force for positive societal change.

7. Conclusions

Summary of Key Findings

The study of Mahan Airlines within the context of digital transformation in the aviation industry offers pivotal insights, relevant to the broader theme of the conference:

1. **Evolution to Collaborative Leadership:** The shift from hierarchical to more collaborative and agile leadership at Mahan Airlines highlights the necessity for adaptability and quick decision-making in a digitally evolving environment. This transition is emblematic of the broader changes in the aviation sector, aligning with the conference's focus on health and societal implications in the digital era.
2. **Emphasis on Data-Driven Decision Making:** The airline's adoption of data analytics and AI for strategic decision-making underscores a significant move towards evidence-based management. This approach enhances operational efficiency and competitive edge, reflecting a key aspect of digital transformation.
3. **Increased Digital Fluency in Leadership:** The importance of digital fluency among leaders is underscored. At Mahan Airlines, effective integration of digital tools into strategic operations is crucial, mirroring the digital integration theme of the conference.
4. **Adaptation in Organizational Culture:** The airline's organizational culture has evolved to focus more on innovation, continuous learning, and employee empowerment, facilitated by digital tools. This reflects the conference's theme of societal health, where digitalization impacts organizational dynamics.
5. **Adoption of Customer-Centric Digital Approaches:** Digitization has allowed Mahan Airlines to implement more customer-centric strategies, enhancing customer experience and engagement, tying into the broader conference discussion on digital tools and societal health.

Recommendations for Future Research and Industry Leaders

1. **Digital Leadership Competencies:** Future research should examine specific competencies required for leadership in the digital era, such as managing remote teams, digital ethics, and cybersecurity, contributing to the ongoing discussion in the field of digital transformation.
2. **Digital Transformation and Employee Well-being:** Investigating the impact of digital transformation on employee morale and performance will offer valuable insights into optimizing human resource strategies, aligning with themes of organizational and societal health.

3. Sustainability and Digital Tools: Further studies on leveraging digital tools for environmental sustainability in aviation are essential, contributing to a holistic approach to societal health and digital integration.
4. Customer Data Analytics: Research into advanced data analytics for enhancing customer experiences can provide industry leaders with strategies to increase customer satisfaction and loyalty, a key area in the age of digital customer engagement.
5. Tailored Digital Transformation Frameworks: Developing digital transformation frameworks specific to the aviation industry's needs and challenges is recommended, offering practical applications and models for industry adaptation.

For Industry Leaders

- Cultivate Continuous Learning and Innovation: Industry leaders are advised to foster a culture that values continuous learning and innovation, ensuring agility and adaptability in the face of digital disruptions.
- Adopt a Data-Driven Approach: Emphasizing data-driven strategies is crucial for informed decision-making and maintaining a competitive edge.
- Prioritize Digital Skill Development and Customer-Centric Strategies: Investing in digital skills and focusing on customer-centric approaches will be essential for thriving in the rapidly evolving aviation landscape.

This study of Mahan Airlines provides a window into the transformative power of digital leadership and management in the aviation industry. Its findings and recommendations align with the conference's overarching theme of exploring the interplay between digitalization, public health, and societal well-being, offering valuable insights and guidelines for future research and industry practice.

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