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Examining the Impact of Antecedents and Consequences of the Organizational Structure Agility Model in the Ministry of Industry, Mine and Trade

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ABSTRACT

Organizational structure agility, as one of the influential factors in improving the performance of public organizations, requires a thorough examination of the variables affecting it. The purpose of this study was to design and test a model for enhancing organizational structure agility in the Ministry of Industry, Mine and Trade using quantitative methods. To this end, based on a review of the research literature and previous studies, the dimensions and key components of organizational structure agility were first identified. Subsequently, by developing a questionnaire and collecting data from 131 managers and experts of the Ministry, confirmatory factor analysis and structural equation modeling were used to examine the relationships among the variables. The findings indicated that the designed model consists of four main dimensions: structural agility requirements, outcomes and consequences, facilitating factors, and barriers to structural agility. The analysis results showed that agility requirements have a positive and significant effect on organizational outcomes, while structural barriers can weaken this relationship. Accordingly, suggestions were provided to improve the organizational structure agility of the Ministry.

Keywords: Organizational Agility, Organizational Structure, Structural Equation Modeling, Factor Analysis, Ministry of Industry, Mine and Trade

Introduction

In the rapidly changing landscape of contemporary organizations, particularly in the public sector, organizational agility has emerged as a strategic necessity rather than a mere operational advantage. The ability of organizations to swiftly respond to external changes, adapt internal processes, and reconfigure their structures to maintain competitiveness has been underscored in various streams of management research. Organizational agility is broadly defined as the capacity of an organization to sense environmental changes and respond effectively and rapidly to these changes in order to sustain performance and competitiveness [1]. This dynamic capability has become especially vital for public organizations tasked with complex responsibilities in volatile economic and technological environments.

Organizational structure—the formal configuration of tasks, responsibilities, and authority—plays a pivotal role in enabling or hindering organizational agility. Traditional bureaucratic structures, often characterized by rigidity and hierarchical decision-making, can impede the rapid flow of information and delay adaptive responses to environmental turbulence [2]. In contrast, agile structures are decentralized, flexible, and built around cross-functional collaboration, allowing organizations to respond more swiftly to shifts in their external environment [3]. The redesign of organizational structures to enhance agility is increasingly viewed as a foundational strategy for organizations seeking to thrive in uncertain contexts.

This imperative is particularly salient in the public sector, where the integration of agility within traditionally rigid bureaucratic structures has posed both opportunities and challenges. Research indicates that fostering agility within public institutions can improve their innovation performance and public value delivery, especially when such efforts are aligned with organizational structural reforms [4]. In the context of ministries and governmental agencies, such as the Ministry of Industry, Mine and Trade, enhancing structural agility is essential to effectively manage complex portfolios of industrial, commercial, and trade-related initiatives while simultaneously coping with rapid technological and economic shifts [5].

The significance of organizational agility has been amplified in the digital era. Digital transformation has redefined organizational boundaries, business models, and processes, thereby exerting pressure on organizations to become more agile. Studies demonstrate that digital transformation enhances corporate innovation performance through the mediating role of organizational agility, highlighting agility as a crucial mechanism linking digital capabilities to improved outcomes [6]. Similarly, the use of data-driven insights has been found to enhance ambidextrous digital transformation, enabling organizations to simultaneously pursue exploratory and exploitative strategies, with organizational agility serving as a key enabling factor [7]. These findings emphasize that in an era of big data and artificial intelligence, organizational structures must evolve to support agile decision-making processes and real-time responsiveness.

Artificial intelligence (AI) technologies are further accelerating the shift toward agile organizational paradigms. A growing body of research shows that AI adoption not only transforms operational processes but also reshapes organizational structures, leading to greater agility and adaptive capacity [8]. AI tools can enhance sensing capabilities, support rapid decision-making, and facilitate flexible resource allocation, all of which are core attributes of organizational agility. This technological shift necessitates a corresponding transformation in organizational structures to leverage the benefits of AI-driven agility fully.

At the same time, the organizational agility literature emphasizes that agility is not solely a technological or structural construct but also deeply rooted in organizational culture, leadership, and strategic orientation. Dove (2020) conceptualizes agility as an organizational capability grounded in cultural responsiveness, structural flexibility, and adaptive learning, stressing the need for coherent alignment across these dimensions [9]. Likewise, Goldman et al. (2019) argue that achieving agility requires organizations to transcend traditional hierarchical models and adopt networked, virtual forms that enable seamless collaboration and customer responsiveness [10]. These perspectives underscore the need for public organizations to cultivate a supportive culture and adaptive leadership alongside structural reforms to achieve sustainable agility.

Moreover, empirical research confirms that strategic leadership plays a crucial role in fostering agility, particularly through promoting innovation and proactive change management. For instance, supportive and transformational leadership styles are associated with the dismantling of structural inertia and the promotion of organizational learning, which are essential for agility [11]. In retail contexts, agile organizational concepts have been shown to enhance competitiveness by allowing firms

to adapt their structures to changing customer needs, highlighting the strategic significance of agility in maintaining market relevance [12]. These insights are highly relevant for public sector organizations seeking to maintain legitimacy and responsiveness in the face of evolving citizen expectations.

Nevertheless, while the benefits of organizational agility are well documented, its implementation is fraught with challenges. Public sector entities often struggle with institutional inertia, rigid regulatory frameworks, and entrenched hierarchical structures that impede agility-oriented reforms [13]. The coexistence of formalized routines and the need for rapid adaptability can create structural tensions, necessitating careful redesign and change management strategies. Additionally, technological innovations such as software-as-a-service solutions have been found to simultaneously enable agility and reinforce inertia, highlighting the paradoxical nature of technology-driven structural change [14].

Recent studies further underscore that agility significantly contributes to organizational resilience, particularly in crisis contexts. Agility enables organizations to anticipate disruptions, rapidly reconfigure resources, and sustain operations during crises [15]. This capability is especially critical for governmental ministries such as the Ministry of Industry, Mine and Trade, which must navigate frequent policy changes, economic fluctuations, and global trade uncertainties. Building structural agility can therefore enhance the ministry's capacity to withstand external shocks while continuing to deliver on its mandates.

Conceptual models developed to explain organizational agility typically identify key dimensions such as sensing, responding, and learning capabilities [16]. These models stress that agility must be systematically embedded in organizational design rather than pursued through ad hoc initiatives. Strategic agility frameworks also emphasize the importance of aligning resources, decision-making structures, and cultural attributes with agility objectives [17]. In this respect, the transformation of organizational structures into more flexible, decentralized, and network-based configurations becomes a critical enabler of agility-driven performance improvements.

In the Iranian context, the quest for structural agility has gained urgency in light of the numerous challenges confronting the industrial and trade sectors. These include regulatory inefficiencies, fragmented decision-making structures, and insufficient adaptability to global technological trends [5]. The Ministry of Industry, Mine and Trade, as a central policy-making and executive body, requires an agile structural framework to effectively coordinate its diverse functions across industry, mining, and trade. Without structural reforms geared toward agility, the ministry risks operational inefficiencies and diminished responsiveness to market and technological disruptions.

In summary, the existing literature collectively highlights the strategic imperative of embedding agility within organizational structures, particularly in complex public sector entities. Organizational agility enhances innovation, crisis responsiveness, and overall performance while enabling organizations to cope with uncertainty and volatility. Yet, its realization depends on a multifaceted transformation encompassing structural redesign, cultural change, and technological integration. Considering the critical role of the Ministry of Industry, Mine and Trade in steering national industrial and commercial development, there is a pressing need to systematically examine the antecedents and consequences of structural agility within this ministry. Such an inquiry can provide actionable insights into how public organizations can transition from rigid hierarchical systems to adaptive, resilient, and innovation-oriented structures. Accordingly, the present study aims to design and test a comprehensive model for enhancing organizational structure agility in the Ministry of Industry, Mine and Trade, integrating theoretical perspectives and empirical evidence on the drivers, mechanisms, and outcomes of agility.

Methodology

The present study is applied in terms of its purpose, as it seeks to present a practical model for the Ministry of Industry, Mine and Trade. It is also descriptive-survey in terms of its method. Secondary information and data were collected through library studies, meaning that primary sources were extracted using books, previous research, and articles. Primary data collection was conducted using a researcher-made questionnaire based on the identified dimensions and components. The extracted questionnaire was validated in terms of face validity by university professors and was then confirmed using statistical methods. Convergent validity was examined by assessing the average variance extracted (AVE) for each construct, and discriminant validity was assessed by comparing the AVE of each construct with the shared variance between the constructs. In addition, the reliability of the collected data was confirmed using Cronbach's alpha coefficient.

To examine the opinions of experts in the Deputy for General Industries of the country—including the textile and apparel industries, food and pharmaceutical industries, cellulose, printing and stationery industries, household and office appliance industries, and sports and creative industries—sampling was conducted. Given that, according to the initial inquiry, nearly 200 experts were active in the Deputy for General Industries, sampling was carried out to collect their views. The maximum number of questionnaires was used for sampling, and Cochran's formula was applied to estimate the sample size for very large populations. Accordingly, the estimated sample size was 131 individuals. To ensure the minimum required number was covered, 10% was added to this number, resulting in nearly 145 questionnaires distributed among the experts. The questionnaire was also sent to academic experts who are active, well-regarded, and have published works in the field of organizational agility and organizational structure.

Findings and Results

In this section, before examining the correlations between the variables and then analyzing the regression relationships, each construct is examined and validated based on the collected data.

To assess convergent validity, the average variance extracted (AVE) must be evaluated.

Table 1

Matrix of Square Root of AVE Compared to Correlation Coefficients and Reliability of the Structural Agility Requirements Construct in the Ministry of Industry, Mine and Trade

Variable	AVE	Cronbach's Alpha	Composite Reliability
Management of Emerging Technologies	0.75	0.82	0.88
Optimal Supply Chain and Production Management	0.80	0.74	0.88
Supportive and Transformational Organizational Leadership	0.78	0.89	0.83
Risk and Change Management	0.77	0.75	0.74
Structural Flexibilization	0.83	0.87	0.78
Communication and Collaboration Management	0.79	0.74	0.78
Skill Development and Employee Empowerment	0.81	0.86	0.90
Human Resource Management	0.76	0.84	0.86
Design and Marketing Management	0.82	0.76	0.85
Adaptability to Laws and Regulations	0.84	0.78	0.82

As shown in the matrix above, the square root of AVE for each construct (main diagonal values) is greater than its correlation coefficients with other constructs (row and column values), indicating acceptable discriminant validity of the constructs.

Based on the results obtained, all identified factors in this construct have high reliability in the model. The composite reliability and Cronbach's alpha coefficient for all variables are above 0.7. Therefore, the results regarding the structural agility requirements construct in the Ministry of Industry, Mine and Trade confirm an acceptable model fit based on these two criteria.

In the figures below, the results of the revised CFA and standardized factor loadings for the structural agility requirements construct in the Ministry of Industry, Mine and Trade are evaluated. The fit indices of each of the confirmatory models indicate an acceptable fit for the structural agility requirements construct in the Ministry of Industry, Mine and Trade.

Figure 1

t-statistics for each relationship between the components of the structural agility requirements construct in the Ministry of Industry, Mine and Trade

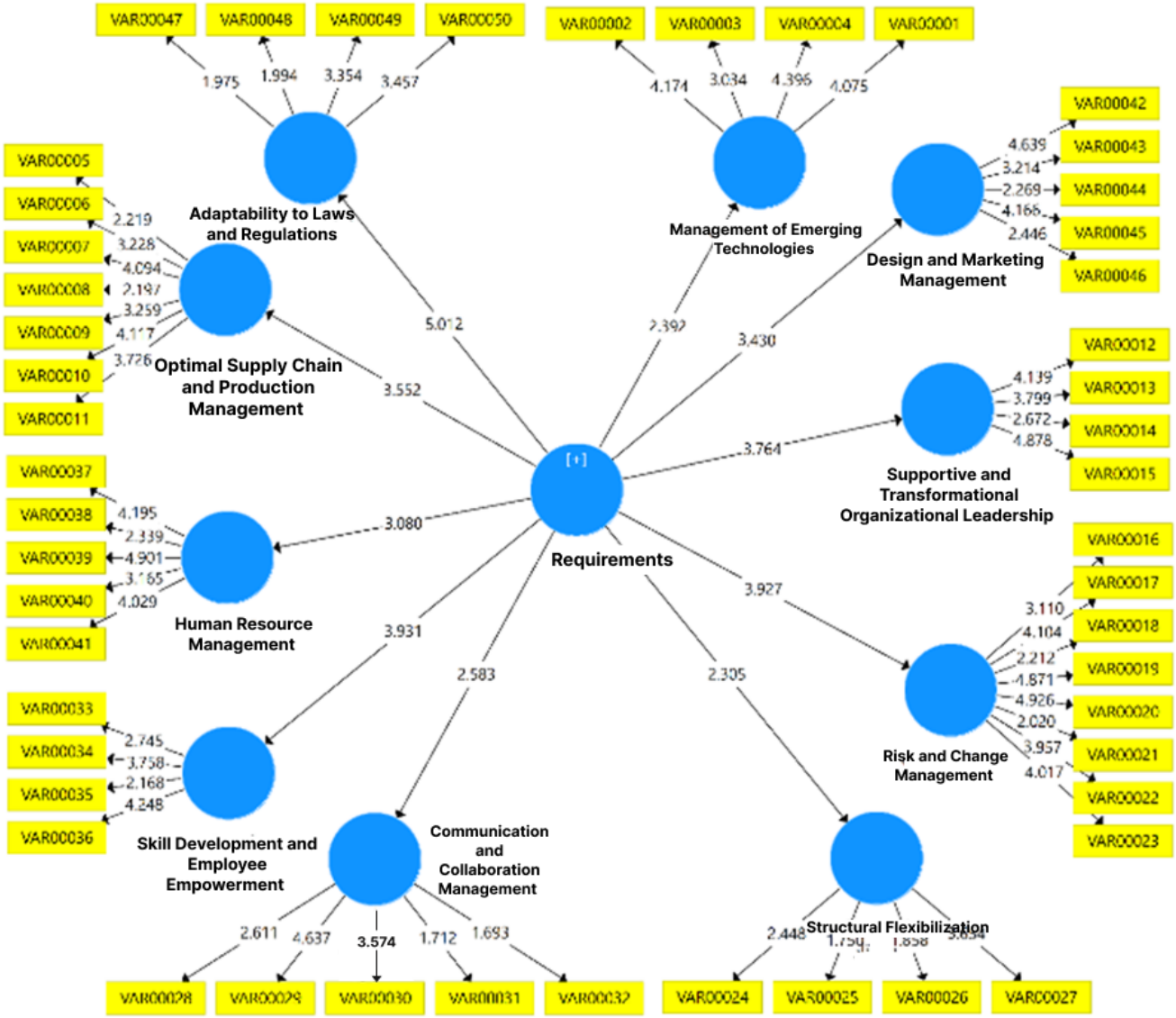
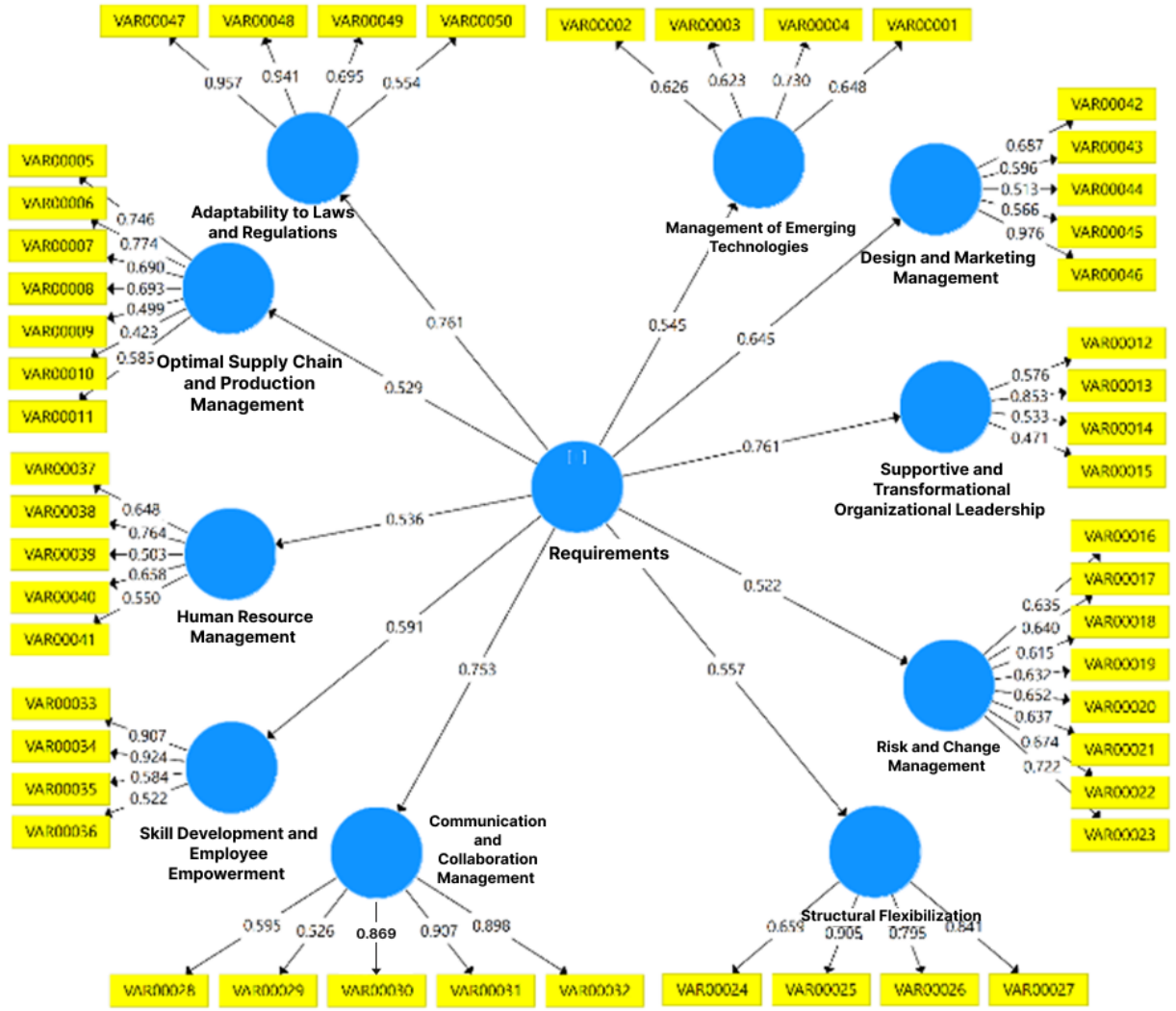


Figure 2

Standardized factor loadings for the structural agility requirements construct in the Ministry of Industry, Mine and Trade



The results indicate that, from the perspective of the statistical population, all identified components belong to the construct, and the identified components of the structural agility requirements in the Ministry of Industry, Mine and Trade are properly formed from the specified dimensions. The table below presents the fit indices of the structural agility requirements construct in the model.

Table 2

Fit Indices for the Structural Agility Requirements Construct in the Ministry of Industry, Mine and Trade

Index	df/χ^2	SRMR	d-ULS	d-G	NFI
Calculated Value	1.604	1.82	0.92	0.87	0.94
Result	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Accordingly, based on the results obtained, it is evident that the designed construct for the structural agility requirements section of the Ministry of Industry, Mine and Trade has an acceptable fit, and therefore, the designed construct for the structural agility requirements in the Ministry of Industry, Mine and Trade is confirmed.

Table 3

Matrix Comparing the Square Root of AVE, Correlation Coefficients, and Reliability of the Structural Agility Outcomes Construct in the Ministry of Industry, Mine and Trade

Variable	AVE	Cronbach's Alpha	Composite Reliability
Increasing Public and Customer Satisfaction	0.81	0.79	0.85
Improving Productivity and Reducing Costs	0.79	0.81	0.83
Increasing Response Speed	0.82	0.83	0.88
Competitiveness	0.81	0.81	0.84
Brand Development and Strengthening Based on Agility	0.76	0.84	0.89
Formation of a Favorable Organizational Environment	0.78	0.83	0.86
Strengthening Collaboration and Communication	0.79	0.81	0.85
Environmental Sustainability	0.80	0.79	0.82
Improving Production Processes and Supply Chain Management	0.81	0.81	0.86
Optimal Crisis Management and Organizational Resilience	0.79	0.81	0.85

As shown in the matrix above, the square root of AVE for each construct (main diagonal values) is greater than its correlation coefficients with other constructs (row and column values), indicating acceptable discriminant validity of the constructs.

Furthermore, based on the results obtained, all identified factors in this construct have high reliability in the model. The composite reliability and Cronbach's alpha coefficients for all variables are higher than 0.7. Therefore, the results regarding the structural agility outcomes construct in the Ministry of Industry, Mine and Trade confirm an acceptable model fit according to these two criteria.

Figure 3

t-statistics for each relationship between the components of the structural agility outcomes construct

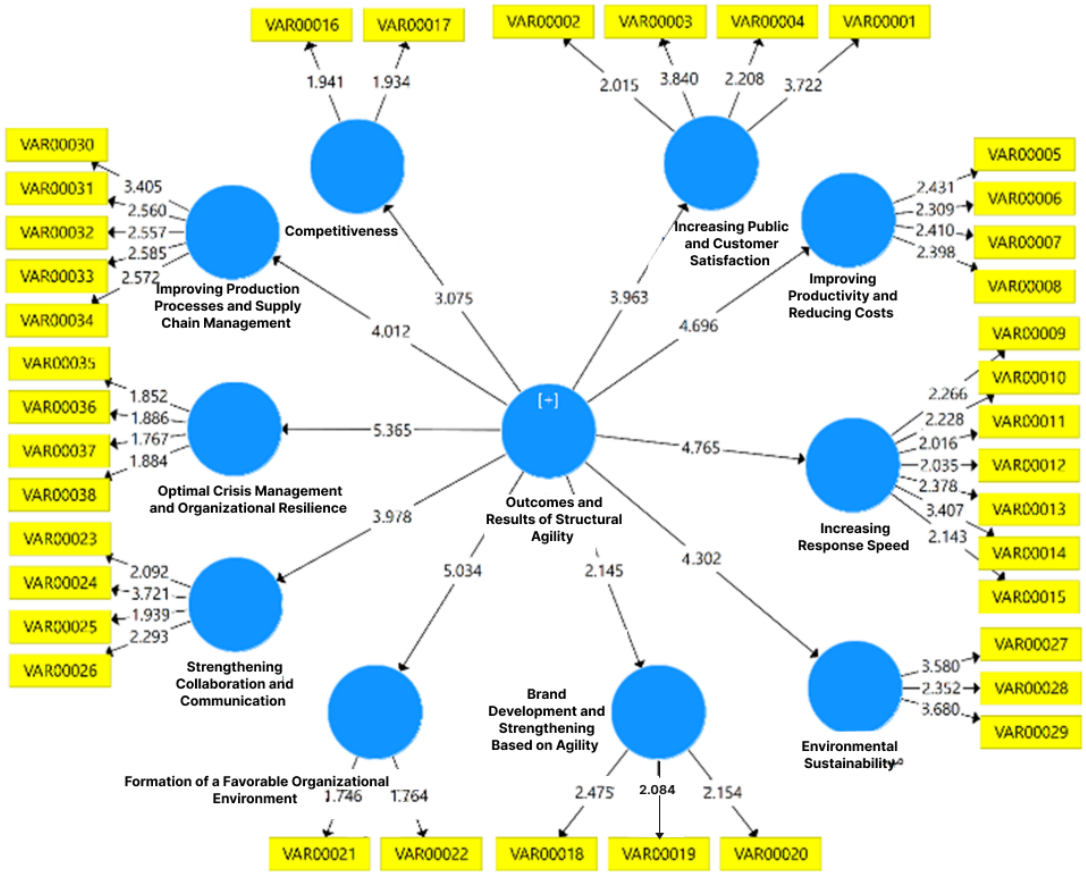
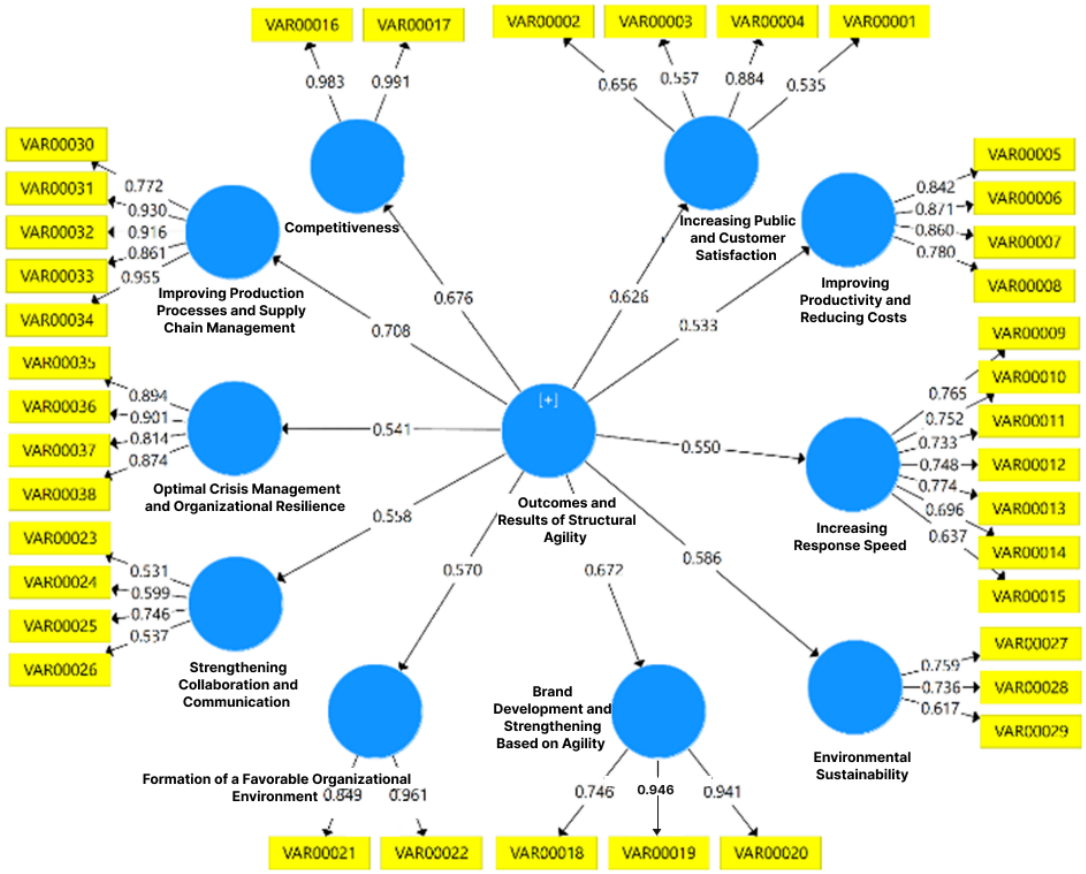


Figure 4

Standardized factor loadings for the structural agility outcomes construct



In the figures above, the results of the revised CFA and the standardized factor loadings for the structural agility outcomes construct in the Ministry of Industry, Mine and Trade are evaluated. The fit indices of each confirmatory model indicate an acceptable fit for the structural agility outcomes construct in the Ministry of Industry, Mine and Trade.

The results indicate that, from the perspective of the statistical population, all identified components belong to the construct, and the identified components related to the structural agility outcomes in the Ministry of Industry, Mine and Trade are correctly formed from the specified dimensions. The table below presents the fit indices of the structural agility outcomes construct in the model.

Table 4

Fit Indices for the Structural Agility Outcomes Construct in the Ministry of Industry, Mine and Trade

Index	df/χ^2	SRMR	d-ULS	d-G	NFI
Calculated Value	1.849	1.50	0.92	0.89	0.91
Result	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Accordingly, based on the results obtained, it is evident that the designed construct for the structural agility outcomes section of the Ministry of Industry, Mine and Trade has an acceptable fit, and therefore, the designed construct for the structural agility outcomes in the Ministry of Industry, Mine and Trade is confirmed.

After confirming the designed constructs using confirmatory factor analysis, this section examines the relationships between the identified categories. Next, the significance of the relationships between the variables and then the effect size of each variable are determined.

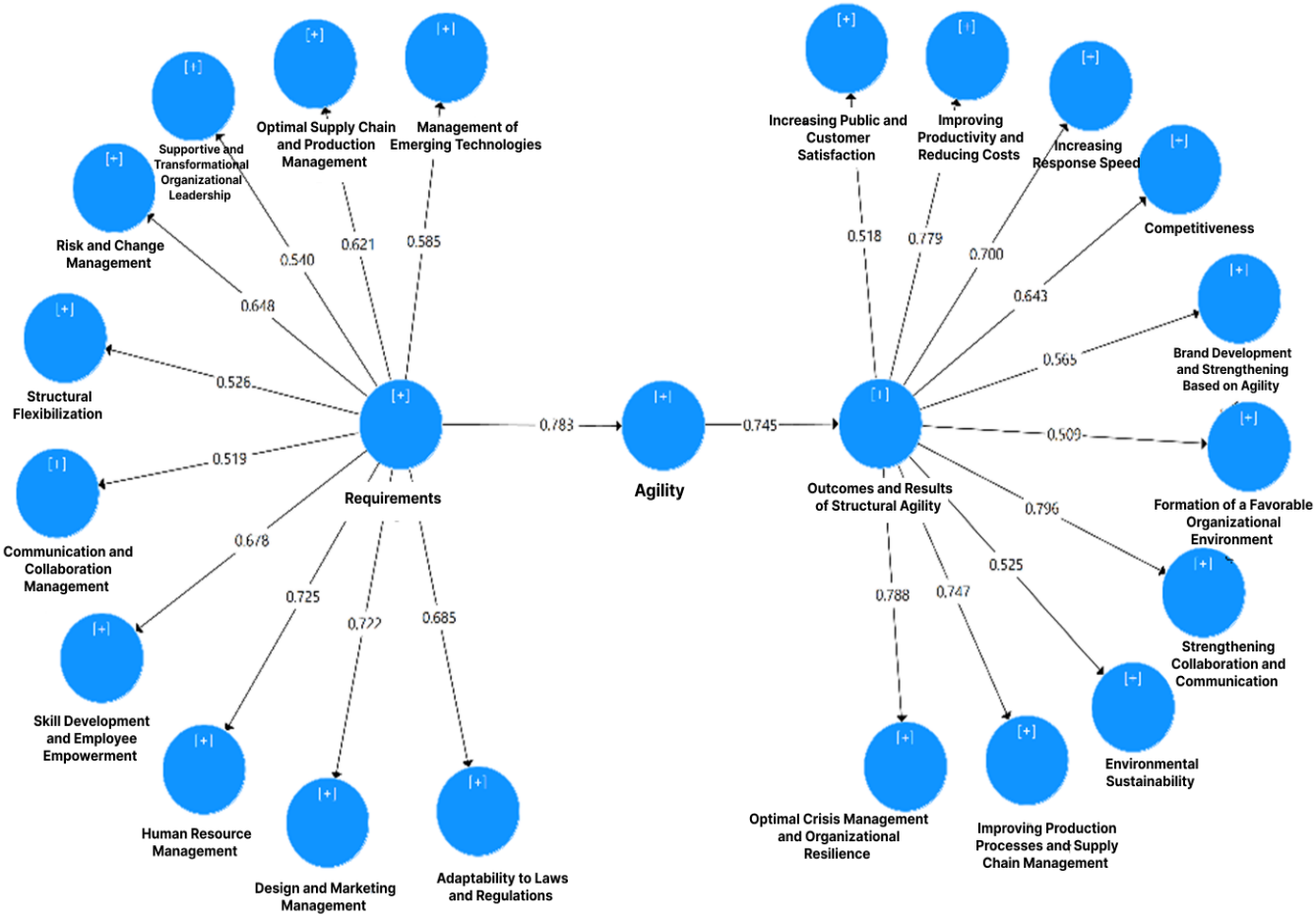
Figure 5

t-statistics for the significance of the relationships between the variables of the organizational structure agility model in the Ministry of Industry, Mine and Trade

As shown in the figure, all relationships between the identified variables in the organizational structure agility model of the Ministry of Industry, Mine and Trade are greater than 1.96, which indicates that the relationships are significant. Therefore, all the relationships are significant, and the regression coefficients obtained in the next figure are valid and meaningful.

Figure 6

Coefficient values obtained from structural equation modeling of the organizational structure agility model in the Ministry of Industry, Mine and Trade



The examination of the coefficients in Figure 6 shows the relationships and relationship coefficients between the research variables. The model fit indices are presented below.

Table 5

Fit Indices for the Organizational Structure Agility Model in the Ministry of Industry, Mine and Trade

Index	df/χ^2	SRMR	d-ULS	d-G	NFI
Calculated Value	1.719	0.176	0.92	0.84	0.92
Acceptable Level	≤5	≤0.10	<0.90	<0.80	<0.90
Result	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

The results show that the model has an acceptable fit and that the findings obtained from the model are reliable. Accordingly, the results of testing the hypotheses indicate that the proposed model can effectively explain the relationship between the structural agility requirements and outcomes in the Ministry of Industry, Mine and Trade. The analysis of each hypothesis is presented below:

Main Hypothesis 1: The identified requirements in the model play a significant role in the formation of organizational structure agility in the Ministry of Industry, Mine and Trade.

The effect coefficient of 0.783 indicates a strong and positive impact of the identified requirements on organizational structure agility. This value shows that the identified requirements are not only the main basis for the formation of this process but also directly increase the agility of the organizational structure. The confirmation of this hypothesis is also theoretically justifiable, as the design of requirements to enhance adaptability and rapid response to environmental changes is one of the prerequisites for organizational structure agility.

Main Hypothesis 2: The organizational structure agility of the Ministry of Industry, Mine and Trade leads to the formation of the outcomes identified in the model.

The effect coefficient of 0.745 indicates a direct, positive, and strong relationship between organizational structure agility and its resulting outcomes. These outcomes can include increased productivity, improved organizational performance, and enhanced ability to respond to environmental changes. The confirmation of this hypothesis from a practical perspective shows that structural agility is not only a goal but also a tool for achieving positive and sustainable outcomes in the performance of the Ministry of Industry, Mine and Trade.

Discussion and Conclusion

The findings of this study underscore the pivotal role of structural agility requirements in enhancing organizational outcomes within the Ministry of Industry, Mine and Trade. The structural equation modeling results revealed that the identified structural agility requirements exert a strong and positive influence on the formation and development of organizational structure agility. This aligns with the conceptual premise that agility emerges not spontaneously, but as a result of systematically designed organizational enablers such as technological integration, adaptive leadership, collaborative structures, and flexible human resource systems [3]. The strong path coefficient observed between the structural agility requirements and the agility construct indicates that the presence of these enablers facilitates the reconfiguration of the organizational structure to respond swiftly and effectively to environmental turbulence. This observation resonates with earlier research suggesting that organizations which embed agility-supporting structures and practices are more capable of continuous adaptation and proactive change [1].

Additionally, the results showed that structural agility has a significant positive effect on various organizational outcomes, including improved productivity, enhanced crisis responsiveness, strengthened collaboration, increased competitiveness, and sustainable environmental practices. This supports the argument that agility acts as a performance multiplier by enabling organizations to align resources and processes dynamically with shifting external demands [16]. In line with these findings, prior studies have demonstrated that organizations with agile structures achieve superior operational efficiency, customer responsiveness, and innovation performance [10]. The outcomes identified in this study—ranging from increased public and customer satisfaction to enhanced brand development—mirror the benefits of agility documented in the broader literature on organizational adaptability and performance.

A notable insight from this study is the confirmation of a clear mediating role of agility between structural requirements and organizational outcomes. This finding reinforces the notion that agility serves as a conduit through which structural design translates into performance gains. Similar patterns have been reported in studies on digital transformation, which found that the positive effects of big data capabilities and digital strategies on innovation performance are mediated by organizational agility [6]. Likewise, research on data-driven organizational transformations has revealed that agility enables

firms to capitalize on data insights by facilitating ambidextrous strategic decision-making [7]. These converging findings validate the theoretical framing of agility as a critical dynamic capability that links structural design to sustainable performance.

The study also confirms that specific structural enablers—such as flexible supply chain management, risk and change management systems, and adaptive human resource practices—significantly contribute to the development of organizational agility. This result is consistent with prior work showing that flexible resource orchestration and decentralized decision-making structures underpin agile responses to environmental uncertainty [11]. Furthermore, the presence of supportive and transformational leadership within the ministry appears to have strengthened the alignment between agility requirements and achieved outcomes. This observation corroborates earlier evidence suggesting that leadership plays a pivotal role in dismantling structural inertia and promoting learning-oriented cultures that are conducive to agility [12].

The role of emerging digital technologies in facilitating agility was also implicitly supported by the findings. As the ministry integrates digital systems into its operations, these technologies can serve as catalysts for enhancing structural agility. This is aligned with evidence that digital transformation can enhance corporate innovation performance by improving sensing, seizing, and reconfiguring capabilities through agility mechanisms [6]. Similarly, artificial intelligence has been shown to reshape organizational structures and processes, fostering agility by accelerating decision-making and enabling flexible resource allocation [8]. The synergy between digitalization and structural agility, highlighted in this study, suggests that technological innovation should be strategically embedded within structural reforms.

Moreover, the study revealed that agility not only drives operational improvements but also contributes to organizational resilience and crisis management capabilities. The strong relationship between agility and enhanced responsiveness to environmental changes aligns with previous findings showing that organizational agility enables institutions to anticipate disruptions, rapidly reconfigure resources, and sustain operations during crises [15]. This is particularly critical for public sector organizations like the Ministry of Industry, Mine and Trade, which must remain functional during economic fluctuations, policy shifts, and global trade disruptions. Agility thus emerges not merely as a performance enhancer but as a resilience-building mechanism.

Another important dimension emerging from this study is the cultural and behavioral aspect of structural agility. While the empirical model focused on structural and procedural enablers, the observed results suggest that cultural openness, collaborative communication, and skill development are integral to sustaining agility. This resonates with the argument that agility is embedded within the organizational culture and requires fostering values such as trust, learning, and empowerment [9]. Similarly, research emphasizes that strategic corporate social responsibility (CSR) initiatives can support agility by strengthening proactive behaviors and stakeholder-oriented cultures, thereby facilitating rapid organizational adaptation [18].

However, the results also indirectly reflect the inherent tensions and challenges in implementing agility-oriented reforms within bureaucratic public organizations. Institutional inertia, regulatory constraints, and deeply entrenched hierarchical norms may impede the structural changes required to achieve agility [13]. These challenges echo earlier findings highlighting that public sector reforms often face resistance stemming from rigid routines and risk-averse cultures [2]. Furthermore, the paradoxical role of technology—simultaneously enabling agility while reinforcing structural inertia—should not be overlooked, as observed in prior studies on software-as-a-service adoption [14]. This suggests that agility initiatives must be

accompanied by robust change management strategies to mitigate resistance and ensure alignment between technological and structural transformations.

Overall, this study provides empirical support for the conceptual proposition that agility serves as a critical mediator linking structural requirements to organizational performance. It confirms that embedding agility-enhancing mechanisms into organizational structures can yield substantial benefits in terms of innovation, responsiveness, collaboration, and resilience. These findings contribute to the growing body of knowledge positioning agility as a strategic capability that public organizations must cultivate to thrive in volatile and complex environments [17]. The demonstrated positive outcomes in this study strengthen the rationale for institutionalizing structural agility within the Ministry of Industry, Mine and Trade as a pathway to achieving sustainable organizational excellence and public value creation [4].

Despite its valuable contributions, this study has certain limitations that should be acknowledged. First, the research relied on cross-sectional data collected from managers and experts within the Ministry of Industry, Mine and Trade, which restricts the ability to infer causal relationships between structural agility requirements, agility development, and organizational outcomes. Longitudinal data would provide deeper insights into how these relationships evolve over time. Second, the study's focus on a single governmental ministry limits the generalizability of its findings to other public sector entities that may differ in size, function, or institutional culture. Third, although the study incorporated a wide range of structural and process-related variables, it did not explicitly measure cultural or behavioral enablers of agility, which may also play a crucial role. Finally, the use of self-reported questionnaire data could introduce common method bias, as respondents' perceptions might be influenced by social desirability or organizational loyalty.

Future research could extend this work in several ways. First, longitudinal studies could be conducted to track the progression of agility initiatives and their long-term effects on organizational performance and resilience. Such studies would help establish causal pathways and identify the temporal dynamics of structural agility transformations. Second, comparative research across multiple public sector organizations could provide a broader understanding of how contextual factors—such as regulatory frameworks, organizational culture, and political environments—affect the implementation and outcomes of agility reforms. Third, future studies could integrate cultural and behavioral variables into the analytical model to capture the softer dimensions of agility, such as trust, learning orientation, and employee empowerment. Fourth, mixed-methods designs incorporating qualitative interviews with senior leaders and change agents could yield richer insights into the challenges and success factors of implementing agility-oriented structural reforms. Lastly, research could explore the role of emerging technologies, including AI, blockchain, and big data analytics, in facilitating agility in public sector structures.

For practitioners, the findings offer several practical implications. Senior leaders within the Ministry of Industry, Mine and Trade should prioritize the institutionalization of structural agility mechanisms, including decentralized decision-making structures, cross-functional teams, and flexible resource allocation systems. Investing in leadership development programs that cultivate transformational and supportive leadership styles can help dismantle structural inertia and foster an agile culture. Moreover, digital transformation initiatives should be strategically aligned with structural reforms to ensure that technological investments directly enhance agility and responsiveness. The ministry should also establish continuous learning systems, knowledge-sharing platforms, and collaborative communication channels to embed agility into its operational fabric. Finally, policy frameworks and regulatory procedures should be streamlined to reduce bureaucratic rigidity, enabling faster decision-making and adaptive responses to external changes.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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