



**EXAMINING ORGANIZATIONAL IMMUNITY THROUGH
ORGANIZATIONAL DNA DIMENSIONS: AN APPLICATION IN AN
INDUSTRIAL ENTERPRISE**

**ÖRGÜTSEL BAĞIŞIKLIĞIN ÖRGÜTSEL DNA BOYUTLARI ÜZERİNDEN
İNCELENMESİ: BİR SANAYİ İŞLETMESİNDE UYGULAMA**

Osman KARA* 
Dr., Bağımsız Araştırmacı,
osmkara@msn.com

Azmi YALÇIN 
Prof. Dr. Çukurova Üniversitesi, İktisadi ve İdari Bilimler Fakültesi, İşletme Bölümü,
azmiyalcin@cu.edu.tr

Geliş Tarihi: 17.05.2026 **Kabul Tarihi:** 27.06.2026

Abstract: Organizations increasingly rely on organizational immunity mechanisms to maintain resilience and sustain long-term organizational health in turbulent environments. Although organizational immunity, organizational health, and organizational DNA are conceptually related, they represent distinct organizational constructs. This study investigates employees' perceptions of organizational immunity dimensions and examines whether these perceptions differ according to demographic characteristics. Data were collected from 377 employees working in a manufacturing enterprise in Türkiye using the Organizational DNA Profile Scale. The scale was used to operationalize organizational immunity through four dimensions: leadership and structure, adaptation, integration, and intellectual capital. The findings indicate that perceptions of organizational immunity vary across demographic groups. Significant differences were observed particularly with respect to education level, tenure, gender, and job position. Education level emerged as the most influential demographic factor, affecting both overall organizational health perceptions and several organizational immunity dimensions. Gender differences were primarily associated with leadership/structure and motivational factors, whereas age did not produce statistically significant differences. The results further suggest that dimensions derived from organizational DNA provide a useful framework for understanding organizational immunity and its contribution to organizational health. This study contributes to the literature by clarifying the conceptual distinction between organizational health, organizational immunity, and organizational DNA, while demonstrating that organizational immunity should be viewed as a multidimensional construct whose components vary according to workforce characteristics.

Key Words: Organizational Health, Organizational Immunity, Organizational DNA, Leadership, Adaptation, Organizational Resilience.

Özet: Günümüzün belirsiz ve hızlı değişen çevresel koşullarında örgütler, dayanıklılıklarını korumak ve uzun dönemli örgütsel sağlıklarını sürdürebilmek için giderek daha fazla örgütsel bağışıklık

* Sorumlu Yazar

mekanizmalarına ihtiyaç duymaktadır. Örgütsel bağışıklık, örgütsel sağlık ve örgütsel DNA kavramları birbiriyle ilişkili olmakla birlikte, farklı örgütsel yapıları ve süreçleri ifade etmektedir. Bu araştırmanın amacı, çalışanların örgütsel bağışıklık boyutlarına ilişkin algılarını incelemek ve bu algıların demografik özelliklere göre farklılaşıp farklılaşmadığını belirlemektir. Araştırma verileri, Türkiye’de faaliyet gösteren bir imalat işletmesinde çalışan 377 kişiden elde edilmiştir. Veri toplama aracı olarak kullanılan Örgütsel DNA Profili Ölçeği, örgütsel bağışıklığın liderlik ve yapı, uyum yeteneği, entegrasyon ve entelektüel sermaye boyutları kapsamında değerlendirilmesine olanak sağlamıştır. Araştırma bulguları, örgütsel bağışıklık boyutlarına ilişkin algıların demografik gruplara göre farklılık gösterdiğini ortaya koymuştur. Özellikle eğitim düzeyi, kıdem, cinsiyet ve görev pozisyonu değişkenlerine göre anlamlı farklılıklar belirlenmiştir. Eğitim düzeyi hem genel örgütsel sağlık algısını hem de çeşitli örgütsel bağışıklık boyutlarını etkileyen en güçlü demografik değişken olarak öne çıkmıştır. Cinsiyete bağlı farklılıklar daha çok liderlik/yapı ve motivasyon boyutlarında görülürken, yaş değişkeninin istatistiksel olarak anlamlı bir farklılık oluşturmadığı belirlenmiştir. Ayrıca bulgular, örgütsel DNA’dan türetilen boyutların örgütsel bağışıklığın ve onun örgütsel sağlığa katkısının anlaşılmasında yararlı bir çerçeve sunduğunu göstermektedir. Bu çalışma, örgütsel sağlık, örgütsel bağışıklık ve örgütsel DNA kavramları arasındaki kavramsal ayrımı netleştirerek literatüre katkı sağlamaktadır. Ayrıca örgütsel bağışıklığın, bileşenleri çalışanların demografik özelliklerine göre farklılaşabilen çok boyutlu bir yapı olarak değerlendirilmesi gerektiğini ortaya koymaktadır.

Anahtar Kelimeler: Örgütsel Sağlık, Örgütsel Bağışıklık, Örgütsel DNA, Liderlik, Uyum Yeteneği, Örgütsel Dayanıklılık.

INTRODUCTION

In recent years, economic instability, rapid technological change, and evolving social dynamics have forced organizations to rethink how they maintain a competitive edge. Consequently, the concepts of organizational health and organizational immunity have gained traction—particularly among companies striving to remain agile and resilient in unpredictable environments. Organizational health is no longer solely about operational efficiency; it reflects an organization’s ability to maintain strong performance, engagement, and morale during uncertain times (Lencioni, 2012; Miles, 1965). A growing body of research also suggests that organizations investing in their health are more likely to develop lasting resilience and sustain a competitive advantage over time (Keller & Price, 2011).

There is no direct equivalence between organizational DNA and organizational health; rather, the relationship between them is conceptually strong and can be justified on the basis of the literature. Organizational DNA is addressed as a concept that explains the fundamental operating codes of an organization, including its structure, decision rights, information flow, and motivational systems; these elements are emphasized as shaping how the organization looks, how it behaves, and how it implements its strategy (Neilson, Pasternack, & Mendes, 2003). The Organizational DNA Scale used in Türkiye evaluates organizations through such profiles as resilient, military, just-in-time, fits-and-starts, overmanaged, and passive-aggressive; these profiles make the organization’s healthy and unhealthy structural and behavioral characteristics visible (Çetin & Döş, 2014; Bostancı & Koçak, 2022). Organizational health, in turn, is associated with an organization’s capacity to function effectively, cope with its environment, and sustain its development over the long term; it is explained through dimensions such as goal clarity, communication adequacy, appropriate power balance, resource utilization, cohesiveness, morale, innovativeness, autonomy, adaptation, and problem-solving adequacy (Miles, 1965). Therefore, the structure, decision-making processes, information flow, management style, values, social relations, and operating patterns that constitute organizational DNA have direct conceptual overlap with the dimensions of organizational health, including communication, morale, cohesiveness, adaptation, innovativeness, resource utilization,

and problem-solving. Indeed, empirical studies examining the relationship between organizational structure and organizational health have shown that complexity and formalization are positively associated with organizational health, whereas centralization is negatively associated with it (Ordu & Tanrıöğen, 2013). Within this framework, it can be expected that organizations with healthy DNA profiles will strengthen the conditions that support organizational health, whereas organizations with overly centralized, bureaucratic, passive-aggressive, or poorly coordinated DNA profiles may develop structural and behavioral problems that can weaken organizational health.

Organizational immunity, while a newer and more conceptual term, draws a useful parallel to the human immune system. The idea is that organizations develop internal mechanisms—such as organizational learning, organizational memory, and organizational DNA—that help protect their integrity and functioning (Assayah, 2020; Huang, 2013). However, this protection can also become a liability. When immune responses become too rigid, organizations may begin to see innovation as a threat and resist necessary change. The challenge lies in creating a system that offers both protection and flexibility.

Four elements typically define an effective organizational immune system. First are leadership and structure, which involves clearly communicated values, strong alignment between individual and organizational goals, and transparent systems of accountability. When leaders model consistency, empathy, and drive, they help build trust and shape a resilient organizational culture (Lencioni, 2012). Second is adaptation—the capacity to respond to rapid changes in markets, technology, or regulation. Companies that adapt quickly tend to navigate crises more effectively (Sarta, Durand, & Vergne, 2021). Third, integration ensures that departments and teams are aligned, reducing internal friction and improving coordination (Tsasis, Evans, & Owen, 2012). Finally, intellectual capital—which includes human talent, organizational knowledge, and external relationships—underpins innovation and long-term value (Inkinen, 2015; Kianto, Ritala, Spender, & Vanhala, 2014).

There is a relationship between organizational health and organizational immunity that can be conceptually and empirically justified. Organizational health is associated with an organization's capacity to function effectively and to transform itself into a more functional system. In Miles's classical approach, this construct is explained through the dimensions of goal clarity, communication adequacy, appropriate power balance, resource utilization, cohesiveness, morale, innovativeness, autonomy, adaptation, and problem-solving adequacy (Miles, 1965). Organizational immunity, in turn, is conceptualized as an organization's capacity to recognize threats, weaknesses, and disruptions, to prevent them or mitigate their effects, and to protect itself through mechanisms such as organizational learning, organizational memory, and organizational DNA (Assayah, 2020; Huang, 2013). Therefore, organizational health provides the internal foundation necessary for the development of organizational immunity: open communication strengthens early-warning capacity; resource utilization reinforces the capacity for defense and adaptation; morale and cohesiveness enhance collective resilience; and innovativeness and problem-solving adequacy strengthen the organization's capacity to learn from and adapt to threats. Within this framework, organizational health can be regarded as one of the preconditions for organizational immunity, whereas organizational immunity can be considered a defensive and adaptive mechanism that protects organizational health against threats.

Although organizational health and immunity are closely connected, they are not interchangeable. A healthy organization thrives on communication, trust, and

collaboration—qualities that also support immunity. However, excessive internal defense can lead to rigidity, undermining those same qualities and limiting growth. The COVID-19 pandemic, along with ongoing digital transformation and economic uncertainty, has underscored the importance of finding the right balance between cultural health and structural immunity.

Much of the research on organizational health so far has focused on public institutions or the healthcare sector (Hadian, Yarmohammadian, & Shaarbafchizadeh, 2023). There is far less empirical work examining how these dynamics play out in industrial settings. This study addresses that gap by exploring how the four components of organizational immunity relate to organizational health in industrial enterprises. It also examines whether this relationship differs according to demographic factors such as age, gender, education level, seniority, and job role. The underlying assumption is that these relationships are not uniform—that demographic differences may shape how employees experience and contribute to both organizational health and immunity. The findings are expected to help managers better understand the needs of diverse employee groups and design more targeted, practical strategies. At the same time, the research aims to strengthen academic understanding of how resilience can be developed in real organizational contexts—particularly in sectors where adaptation and innovation are critical to survival.

CONCEPTUAL FRAMEWORK

The immune system is far more complex than a simple line of defense. It is a multi-tiered system that operates at the cellular and molecular levels to detect and eliminate potential threats. Although physical barriers, such as the skin and mucous membranes, provide initial protection, they are only part of the picture. Once a pathogen penetrates these surfaces, internal defenses are triggered. Cells, such as phagocytes, along with signaling molecules such as cytokines and complement proteins, begin to work to contain the threat and initiate repair processes (Murphy & Weaver, 2016).

The immune system employs two major branches: the innate and adaptive systems. The innate system is active from birth and responds rapidly to infections. It does not rely on prior exposure and recognizes general features shared by many pathogens. Although it responds rapidly, it lacks the ability to remember specific threats. Consequently, it reacts in the same manner each time a similar pathogen appears (Chaplin, 2010).

Adaptive immunity works differently. It takes longer to activate but is highly specific. B and T cells, the key players in adaptive immunity respond to the unique features of invading organisms. B cells generate antibodies to neutralize harmful pathogens, whereas T cells either eliminate infected cells or help regulate the broader immune response. Once activated, these cells multiply and create a pool of memory cells, which allows the immune system to respond more effectively if the same pathogen returns (Akondy et al., 2017).

This phenomenon is known as immune memory. It enables the body to respond more quickly and forcefully during subsequent exposures, producing antibodies with higher precision and affinity than in the initial response (Sallusto et al., 2010). In some cases, memory cells can persist for years, offering long-term protection. This mechanism explains the effectiveness of vaccines, which simulate infection to prime the immune system without causing illness (Pulendran & Ahmed, 2011).

The effectiveness of the immune system is due to the coordination between these two arms. Innate immunity offers speed, whereas adaptive immunity offers precision and durability. Together, they form a layered and responsive defense capable of adjusting to evolving threats (see Figure 1).

Figure 1.

Human Immune Process and Functioning



Source: Kara, O. (2025). *The role of organizational immunity in healthy and unhealthy enterprises: An application in an industrial enterprise* [Unpublished doctoral dissertation]. Cukurova University.

Two metaphors are often used in discussions about how organizations survive and adapt: the organizational immune system and organizational DNA. Both describe the inner logic that shapes how companies respond to change. The immune system metaphor is borrowed from biology. It suggests that, much like living organisms, organizations react instinctively when something unfamiliar enters the system. New ideas, alternative practices, or calls for change can trigger defensive behavior. OrgChanger (2021) describes this as a shift into “defense mode,” where the organization works to neutralize novelty and protect the status quo. Watkins (2024) interprets culture as a type of immunity, filtering out behaviors or people who might disrupt internal balance. Such defenses can be useful; however, they can also close off opportunities for learning if the reflex becomes too strong.

The idea of organizational DNA addresses the same question from another angle. It focuses on what holds the organization together—its basic code of values, assumptions, and ways of working. Flevy Consulting Group (n.d.) notes that successful firms weave this DNA into everyday operations, turning it into a foundation for performance. They point to four areas that reveal this pattern: how work is organized (by product, market, or geography), how authority is distributed in decisions, how motivation and rewards are linked to goals, and how communication flows through the system. Wilkins-Smith (2024) adds that this “code” is often invisible, changing quietly in response to crises or strategic shifts.

Although the two metaphors come from different traditions, they overlap. Both deal with the tension between stability and change. The immune metaphor can be broken down into four areas: leadership and structure, adaptability, integration, and intellectual capital. Leadership and structure define which ideas are welcomed and which are rejected, acting as the organization’s first filter (Flevy, n.d.; Watkins, 2024). Adaptability concerns the capacity to adjust to new conditions. A meta-analysis study has shown that increasing innovation capability is critical to adapting to environmental changes in a manufacturing enterprise (Ulu, Demircan Çakar & Ertürk, 2025). When the immune reflex dominates, flexibility weakens and resistance to transformation grows (Sarta, Durand, & Vergne, 2021). Integration describes how well departments and teams coordinate their

efforts. According to McKinsey & Company (2024), firms that link strategy with day-to-day execution tend to operate with greater internal health. Research has shown that there is a significant relationship between strategic fit, the integration of functional systems and processes in manufacturing enterprises, and financial performance (Doğrul, 2014).

The fourth element, intellectual capital, brings the discussion back to the idea of DNA. It covers the knowledge, experience, and relationships that give an organization its character. Investopedia (n.d.) separates this into three forms: human capital (skills and expertise), structural capital (systems and infrastructure), and relational capital (connections with external stakeholders). These resources act as both memory and identity. They preserve lessons from past experiences while supporting innovation and resilience. In this sense, intellectual capital bridges the two metaphors—it remembers like an immune system and encodes like DNA (see Figure 2).

Figure 2.

Organizational Immunity Process and Its Functioning



Source: Kara, O. (2025). *The role of organizational immunity in healthy and unhealthy enterprises: An application in an industrial enterprise* [Unpublished doctoral dissertation]. Cukurova University.

General Systems Theory (GST), often abbreviated as GST, grew out of the attempt to understand how complex systems hold together. Rather than studying parts in isolation, it examines how elements connect, react, and depend on one another across levels. The Decision Lab (n.d.) describes it as a way of thinking that traces how people, groups, and institutions interact with their surroundings and adapt over time. The essential idea is that a system's components are mutually dependent: changing one part causes the others to shift in response. An open system is a *open system*, an entity in constant exchange with its environment. Energy, information, and resources move in and out, and feedback loops allow the system to adjust while maintaining its internal balance, or homeostasis (Kast & Rosenzweig, 2020; The Decision Lab, n.d.).

Organizations fit neatly into this picture. They act much like living organisms, reading signals from their environment and reconfiguring internal routines when circumstances change. This is where the concept of *organizational immunity* takes shape. Firms sort through new information and ideas, accepting some and rejecting others to protect the coherence of the whole. The immune response here is not only defensive; it also helps the organization learn and adapt. What matters is not the rejection of change itself, but the ability to filter and integrate it without losing direction.

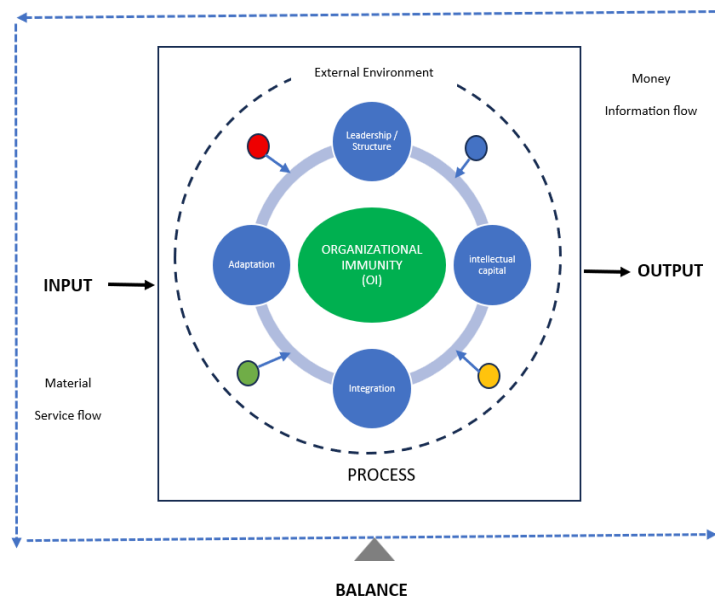
A second perspective, *organizational ecology*, approaches the same question from the outside in. Rooted in sociology, it examines how entire populations of organizations survive within a shared environment. Carroll and Hannan (2015) describe it as an effort to explain how founding, growth, and decline follow environmental pressures rather than

internal plans. The model freely borrows from biology and economics to study why some organizations endure while others disappear. Central to this argument is the notion of *organizational inertia*. Stable structures and routines can help an institution maintain reliability; however, the same stability can harden into resistance when change becomes necessary (Hannan, Pólos, & Carroll, 2007). In this sense, inertia behaves much like immunity—useful up to the point where it blocks renewal.

Taken together, systems theory and organizational ecology describe two sides of the same problem. Systems theory looks inward, at balance and feedback. Ecology looks outward, at competition and survival. Both highlight that an organization must defend its integrity while staying open to the environment around it. *Organizational immunity* sits between these views: a blend of protection and adaptation, meant to preserve what gives the system identity while allowing it to evolve (see Figure 3).

Figure 3.

Operating System



Source: Kara, O. (2025). *The role of organizational immunity in healthy and unhealthy enterprises: An application in an industrial enterprise* [Unpublished doctoral dissertation]. Cukurova University.

Although organizational health, organizational immunity and organizational DNA are related concepts, they represent different analytical levels. Organizational DNA refers to the structural and cultural code of the organization that shapes how information flows, decisions are made, employees are motivated and authority is distributed. Organizational immunity refers to the organization's capacity to recognize, filter and respond to internal and external threats. Organizational health, in contrast, represents the overall effectiveness, well-being and sustainability of organizational functioning. In this framework, organizational DNA constitutes the structural foundation of immunity mechanisms, while organizational immunity contributes to the development of organizational health.

RESEARCH METHODOLOGY

Research Model and Hypothesis

Researchers use the terms organizational health and organizational immunity to discuss how workplaces survive and grow, however, the way these ideas play out often depends on who works there. Organizational health refers to the conditions that allow people to do good work without burning out. It includes fairness, trust, and a sense that effort matters. When these elements are built into everyday practice, different types of employees tend to work together more easily, and diversity becomes a strength rather than a management problem. When the Organizational Health Behavior Index (OHBI) was tested in 2023, the researchers investigated whether the scale treated different groups—men and women, junior and senior staff, public- and private-sector employees—the same way. The results suggested that it did (Jaafari et al., 2023). That may sound technical, but it matters: a health measure that works across groups hints that the idea itself is inclusive.

Even with good tools, people do not perceive organizational health the same way. Age, education, or years of experience can change how someone reads the signals of fairness or support. Leadership style and human-resources policies also color these perceptions. Guillaum et al. (2017) note that such factors spill over into teamwork, conflict handling, and innovation. In other words, equality and inclusion are not optional add-ons; they are part of what makes an organization healthy in practice. The concept of organizational immunity takes the metaphor in another direction. It describes the reflexes that protect an organization from disruption. Some resistance to change keeps things coherent; too much turns into rigidity. Demographics matter in this regard. In a study of almost 3,000 employees, Kunze, Boehm, and Bruch (2013) found that older workers were not, as people often assume, the most resistant to change. Resistance actually decreased with age. Experience and job level also influenced how people responded to new demands, linking the “immune” reaction to both position and performance. In sum, these patterns suggest that diversity shapes not only an organization’s feeling of health but also its ability to defend itself. Workplaces that treat difference as normal—through fair management and open leadership—tend to stay adaptable. Where hierarchy and bias dominate, the same immune system that protects stability can reject innovation. Managers who pay attention to these demographic undercurrents have a better chance of turning diversity into resilience rather than resistance.

Although the Organizational DNA Profile was originally developed to assess structural characteristics of organizations, its dimensions substantially overlap with the conceptual components of organizational immunity identified in the literature. Specifically, the dimensions of structure, decision-making, information flow and motivators correspond to leadership and structure, adaptability, integration and intellectual capital dimensions of organizational immunity. Therefore, the scale was considered appropriate for operationalizing organizational immunity within the scope of this study.

This study examines employee perceptions of organizational immunity dimensions and their associations with demographic characteristics as presented in Figure 4. Based on the previously discussed research findings, it is proposed that:

H1: There is a significant relationship between organizational immunity/health (decision-makers/adaptation, motivators/integration, knowledge/intellectual capital, structure/leadership, structure) and demographic characteristics.

H2: Significant differences exist between the sub-factors of organizational immunity/health (structure, decision-makers, information, motivators) and gender.

H3: Significant differences exist between the sub-factors of organizational immunity/health (structure, decision-makers, information, and motivators) and educational status.

H4: There is a significant difference between the organizational immunity/health sub-factors of structure, decision-maker, information, motivators, and length of service in the institution.

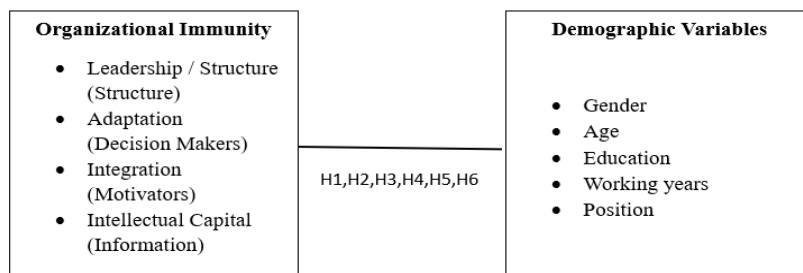
H5: There is a significant difference between the organizational immunity/health sub-factors of structure, decision-maker, information, motivators, and employees' duties in the institution.

H6: There is a significant difference between the sub-factors of organizational immunity/health (structure, decision-maker, information, motivators) and age.

Permission to use the questionnaire as a data collection tool in this study was obtained from the Cukurova University Ethics Committee with decision number 19 dated 25/11/2025 and numbered E.1477884.

Figure 4.

Research Visual Model



Methods Used in Data Analysis

The data collected in the study were analyzed using IBM SPSS Statistics 29.0 (IBM Corp., Armonk, NY, USA). For numerical variables, descriptive statistics were presented as means and standard deviations; for categorical variables, results were expressed as frequencies and percentages. Scores obtained from scale items were combined to calculate separate scores for each sub-dimension. The normality of continuous variables was evaluated using the Kolmogorov-Smirnov test. For comparisons between two groups based on demographic variables, the Independent Samples t-test (Student's t-test) was applied, while One-Way ANOVA was utilized for comparisons involving more than two groups. Pearson's Moment Correlation Coefficient was used to determine significant relationships between sub-dimensions. In addition, Cronbach's alpha reliability coefficients were calculated. Analyses of response bias in the scale data were performed using Hotelling's T^2 test along with Tukey's Nonadditivity Test. A p-value of less than 0.05 was considered statistically significant in all analyses.

Research Population, Sample Selection, and Data Collection

Considering limiting factors such as time, accessibility, and budget, a suitable sample was selected instead of the entire population. Accordingly, convenience sampling

was preferred, and data collection was carried out with employees working at the company in question. Data were obtained through a survey; of the 382 surveys administered, 377 were deemed valid for analysis.

According to Muthén and Muthén (2002), if the sample distribution is normal, at least 150 participants are required; otherwise, at least 265 participants are required. In this context, the sample size used in the study is a crucial factor for ensuring the statistical significance and overall validity of the analyses. Accordingly, the aim was to obtain randomly generated data with a covariance matrix of the form $\Sigma=\Sigma(\theta)$; the planned sample size was set at 350 individuals. In summary, the methodological strategies followed in the study and the determination of the sample size were carried out in accordance with the standards in the field, thus ensuring that the study was based on scientific principles.

The data used to analyze the relationships between the variables evaluated in the study were obtained through a questionnaire administered to the participants. In creating the questionnaire form, the relevant literature was examined in detail, and in this direction, the measurement tool called “Organizational DNA Profile” developed by Booz & Allen was chosen as the most appropriate scale for the purpose of the study. There is a total of 19 questions in the scale, and these questions are grouped into four basic sub-dimensions (see Table 3).

The scale and question structure used in the research were designed to enable in-depth analysis of the relationships between variables. During the data collection process, not only high participation but also data reliability was one of the primary goals. Accordingly, a randomly selected group of participants from among those who completed the survey were contacted again to verify the consistency of their responses. This second contact was made via both telephone and email; this method served as an important verification process to test the accuracy and reliability of the collected data. Valid data obtained from a total of 377 individuals were included in the analysis phase.

FINDINGS

In this study, data obtained from a total of 377 participants were analyzed. Males constituted 71.3% of the participants, while females constituted 28.7%. In terms of education level, bachelor's degree graduates represented the highest rate (57.6%), while high school graduates (21.8%), associate degree graduates (12.2%), master's degree graduates (8%), and doctoral degree graduates (n=2) constituted lower rates. The mean age of participants was 35.6 years (± 8.6), with a minimum age of 16 and a maximum of 64. When examining length of service, the most common group was those who had worked for 1–5 years (38.7%), while in terms of job distribution, the majority were regular staff (59.7%) and specialists (29.4%).

Table 1.

Organizational DNA Profile and Scores for Sub-Dimensions

	N	Average $\pm$ SS	Median; Ç1-Ç2	Min – Max
Age	376	35,58 $\pm$ 8,61	34;29-42	16 – 64
Structure	377	1,51 $\pm$ 0,88	1;1-2	0-3
Decision makers	377	3,19 $\pm$ 1,15	3;2-4	0-6
Information	377	2,91 $\pm$ 1,04	3;2-4	0-5

Motivators	377	2,88 ± 1,18	3;2-4	0-4
Organizational Health	377	10,51 ± 2,48	11;9-12	1-16

Table 2.

Demographic Characteristics of Participants

Features	Categories	N (%)
Gender	Female	108 (28,7)
	Male	268(71,3)
Education	Highschool	82 (21,8)
	Associate degree	46 (12,2)
	Bachelor degree	217 (57,6)
	Masters	30 (8,0)
	PhD	2 (0,5)
Work years	1-5 years	146 (38,7)
	6-10 years	109 (28,9)
	11-15 years	36 (9,5)
	16-20 years	47 (12,5)
	21 – above	38 (10,1)
Position	Staff	225 (59,7)
	Specialist	111 (29,4)
	Manager	34 (9,0)
	Upper Manager	7(1,9)

In the Organizational DNA scale assessment, the mean score for the structure dimension was 1.51 ± 0.88 , for the decision-makers dimension 3.19 ± 1.15 , for the information dimension 2.91 ± 1.04 , and for the motivators dimension 2.88 ± 1.18 . The total score of the scale was 10.51 ± 2.48 , which is above the median and close to the mean. The findings indicate that employees generally evaluate their organizations positively. However, low participation rates in items related to information flow and communication consistency were noteworthy.

Table 3.

Descriptive Measures of Items Related to the Organizational DNA Profile Questionnaire

Questionnaire	Categories	Average		
		N%	± SS	
1 All the middle management level, the average number of direct reports is....	5 or more	192 (50,9)		
	4 or fewer	185 (49,1)	0,51 ± 0,50	

2 promotions include lateral moves (from one position to another on the same level in the hierarchy)	Agree	160 (42,4)			
	Disagree	217 (57,6)	0,42 0,49	±	
3 “Fast track” employees here can expect promotions	Every three years or more	218 (57,8)			
	Less than every 3 years	159 (42,2)	0,58 0,49	±	
4 The culture of this organization can best be described as	Persuade & cajole	143 (37,9)	0,62 0,48	±	
	Command & control				
5 Important strategic and operational decisions are quickly translated into action	Agree	226 (59,9)			
	Disagree	151 (40,1)	0,60 0,49	±	
6 The primary role of corporate staff here is to....	Audit the business units	165 (43,8)			
	Support the business units	212 (56,2)	0,44 0,49	±	
7 Managers above me in the hierarchy “get their hands dirty” by getting involved in operating decisions	Frequently	118 (31,3)			
	Rarely	259 (68,7)	0,31 0,46	±	
8 Once made, decisions are often” second guessed”	Agree	192 (50,9)			
	Disagree	185 (49,1)	0,51 0,50	±	
9 Everyone has a good idea of the decisions / actions for which he or she is responsible	Agree	270 (71,6)			
	Disagree	107 (28,4)	0,72 0,45	±	
10 Overall, this firm deals successfully with discontinuous change in the competitive environment	Agree	316 (83,8)			
	Disagree	61 (16,2)	0,84 0,36	±	
11 Important information about our competitive environment gets to headquarters quickly	Agree	24 (6,4)			
	Disagree	353 (93,6)	0,06 0,24	±	
12 Field/line employees usually	Agree	266			

have the information they need to understand the bottom-line impact of their day-to-day choices	Disagree	(70,6) 111 (29,4)	0,71 0,45	±
13 We rarely send conflicting messages to the market place	Agree	24 (6,4)		
	Disagree	353 (93,6)	0,06 0,24	±
14 Information flows freely across organizational boundaries	Agree	211 (56,0)		
	Disagree	166 (44,0)	0,56 0,49	±
15 Line management has access to the metrics they need to measure the key drivers of their business	Agree	306 (81,2)		
	Disagree	71 (18,8)	0,81 0,39	±
16 If the firm has a bad year, but a particular division has a good year, the division head would still get a bonus	Agree	246 (65,3)		
	Disagree	131 (34,7)	0,65 0,47	±
17 Besides pay, many other things motivate individuals to do a good job	Agree	275 (72,9)		
	Disagree	102 (27,1)	0,73 0,44	±
18 The individual performance appraisal process differentiates among high, adequate, and low performers	Agree	283 (75,1)		
	Disagree	94 (24,9)	0,75 0,43	±
19 The ability to deliver on performance commitments strongly influences career advancement and compensation	Agree	285 (75,6)		
	Disagree	92 (24,4)	0,76± 0,43	

When examining the distribution characteristics of the data set, it was determined that the scores in all dimensions conformed to a normal distribution and were suitable for parametric tests. Hotelling's T^2 test showed that there was no systematic bias in the participants' responses. The results of Tukey's Homogeneity of Variance test revealed that the scale had a homogeneous and comparable structure. In Exploratory Factor Analysis (KMO=0.874; Bartlett's Test $\chi^2=2896.54$; $p<0.001$), a four-factor structure was obtained, and these factors explained 60.70% of the total variance. The factor loadings being at an acceptable level supported the validity of the scale.

These findings suggest that organizational DNA dimensions may provide a meaningful basis for interpreting both organizational immunity and organizational health. While organizational immunity reflects the organization's capacity to maintain stability and respond to threats, organizational health refers to the overall quality and sustainability of organizational functioning. In this respect, the dimensions derived from organizational

DNA appear to offer a useful framework for understanding these related but conceptually distinct organizational capabilities. In conclusion, the findings indicate that the Organizational DNA Scale is a reliable and valid instrument for evaluating an organization's structural health and immune mechanisms.

Hypothesis Tests

The primary objective of correlation analysis in this study is to evaluate the relationships between the variables in the questionnaire in terms of direction and strength. The only demographic variable that could be measured numerically within the scale was the participants' age. The normal distribution of the scale's sub-dimensions and total scores allowed for the use of Pearson's Moment Correlation Analysis to examine the relationships between age and these sub-dimension scores.

The analysis revealed no statistically significant relationship between age and the dimensions of structure and decision-makers. However, negative and moderately significant correlations were found between the information and motivators subdimensions and the overall organizational health score. This finding indicates that as age increases, employees evaluate information flow and motivational factors within the organization more negatively; therefore, younger employees perceive organizational functioning more positively.

It is noteworthy that the overall organizational health score is positively and significantly related to all subscales of the scale. In particular, the correlation coefficient between the information dimension and overall health was calculated as $r = 0.693$, indicating a strong relationship. In contrast, the relationship between the structure/leadership dimension and overall health is more limited, determined to be $r = 0.378$.

When examining the relationships between sub-dimensions, structure/leadership showed a significant correlation only with the decision-makers dimension, with a coefficient of $r = 0.181$. No significant correlation was found between the decision-makers sub-dimension and the information and motivators sub-dimensions. Conversely, a moderate positive relationship was found between the information and motivators sub-dimensions ($r = 0.558$), indicating that information flow and motivation mechanisms function in a mutually supportive manner within the organization.

Comparisons Based on Demographic Characteristics

This study explored whether the total and subscale scores of the organizational immunity/health scale differed based on demographic characteristics. In this context, analyses conducted based on the gender variable revealed a significant difference in the structure and leadership dimensions ($p = 0.007$). Male participants scored higher on this dimension than females. No significant gender-based difference was found in the decision-makers and information dimensions. However, in the motivators dimension, women were found to evaluate motivational factors more positively than men. The analysis revealed no significant variation in overall organizational health scores across gender groups. These results show that, as predicted in H1, organizational immunity/health dimensions may be related to certain demographic variables, but that this relationship does not occur at the same level across all dimensions.

Table 4.*Correlation Analysis of the Relationship between Organizational immunity/health Sub-Factors and Demographic Factors*

	Structure	Decision makers	information	Motivators	Organizational Health	Gender	Age	Education	Work years	Position
Structure	1									
Decision makers	0,171**	1								
Information	0,055	0,163**	1							
Motivators	0,095	0,147**	0,495**	1						
Gender	0,130*	0,026	0,017	0,111*	0,004	1				
Age	0,020	0,076	0,090	0,110*	0,051	0,028	1			
Education	0,080	0,220**	0,098	0,178**	0,081	0,311**	0,145**	1		
Work years	0,052	0,022	0,123*	0,222**	0,127*	0,200**	0,091	0,394**	1	
Position	0,052	0,099	0,140**	0,030	0,098	0,142**	0,077	0,368**	0,190**	1

*There is a significant relationship at the 0.01 level (two-tailed).

*There is a significant relationship at the 0.05 level (two-tailed).

According to the findings in Table 4, H1 hypothesis is only partially supported. The analyses show that there are significant but low-level correlations between some sub-dimensions of organizational health and demographic factors. Correlation coefficients ranging from 0.110 to 0.222 were obtained between structure and gender, decision-makers and education level, knowledge and length of service and job position, and motivators and gender, age, education level, and seniority. These results reveal that the relationship between organizational immunity/health and demographic variables has a limited effect, but that meaningful connections exist in certain situations. Therefore, H1 hypothesis has been partially confirmed and accepted to a limited extent.

H2 Hypothesis: *There is a significant difference between organizational immunity/health sub-factors such as structure, decision-maker, information, motivators, and gender.*

Table 5.*ANOVA Analysis Findings*

		Sum of Squares	Df	Mean Square	F	Sig.
Structure	Between Groups	6,393	4	1,598	2,080	,083
	Within Groups	285,803	372	,768		
	Total	292,196	376			

Motivators	Between Groups	9,399	4	2,350	1,675 ,155
	Within Groups	521,922	372	1,403	
	Total	531,321	376		
Decision makers	Between Groups	7,677	4	1,919	1,613 ,170
	Within Groups	442,710	372	1,190	
	Total	450,387	376		
Information	Between Groups	5,266	4	1,316	,910 ,458
	Within Groups	538,055	372	1,446	
	Total	543,321	376		

The analyses conducted indicate that the H2 hypothesis has been partially confirmed. Comparisons based on gender revealed no significant differences in the decision-makers and information dimensions; however, statistically significant differences were identified between female and male participants in the structure and motivators dimensions.

When considering educational level, no overall difference was observed in the structure and leadership dimensions; however, high school graduates scored higher, while associate degree and especially doctoral degree graduates scored lower. In the decision-makers dimension, it was noteworthy that master's degree graduates scored significantly lower than other groups ($p < 0.001$), and similarly, in the knowledge dimension, the low scores of master's degree graduates explained the difference ($p = 0.031$). In the motivators dimension, high school graduates were found to have lower scores than bachelor's degree graduates ($p = 0.001$).

Significant differences also emerged in overall organizational health scores based on educational level ($p = 0.025$), and it was determined that master's degree graduates had more negative assessments of organizational health.

These findings reveal that educational level is a critical variable in the perception of organizational health and that the hypothesis is supported only in terms of certain sub-dimensions.

H3 Hypothesis: There is a statistically significant difference between the sub-dimensions of organizational immunity/health, namely structure, decision-makers, information, and motivators, and the educational levels of participants.

Statistical analyses revealed that H3 hypothesis was fully supported. Findings indicate that employees' educational levels lead to significant differences in both overall organizational health scores and sub-dimensions. Educational level was found to be a decisive factor, particularly in perceptions related to structure, information flow, motivational factors, and decision-making processes.

The length of service variable was also found to be effective on perceptions of organizational health. Significant differences related to length of service were detected in the structure and leadership dimensions ($p = 0.038$), and employees with 6–10 years of seniority were found to have lower scores. While no significant differences were found in the decision-makers dimension, changes related to length of service were evident in the motivators dimension ($p < 0.001$). In this context, employees with 6–10 years of seniority evaluated motivation more positively, while scores remained quite low among those with 16–20 years of service.

Overall organizational health scores also differed significantly according to length of service ($p = 0.025$). Employees with 11–15 years of service, in particular, exhibited lower levels of perception, while the general trend showed that assessments of organizational health increased positively as length of service increased.

H4 Hypothesis: There is a statistically significant difference between the organizational immunity/health sub-dimensions of structure, decision-makers, information, and motivators, and the length of time employees have spent in the organization.

Statistical analyses revealed that the H4 hypothesis was partially supported. Significant differences were observed between employees' length of service and the overall organizational health score and some sub-dimensions, but no differences were found in the decision-makers and information dimensions. Therefore, the hypothesis was only partially confirmed.

With respect to the structure sub-dimension, the job title variable did not yield statistically significant differences; nonetheless, mean scores were highest among senior managers and lowest among specialists. No significant difference was found in the decision-makers dimension either, but senior managers reported the highest average, and middle managers reported the lowest.

Conversely, job groups exhibited a significant variation in the information dimension, with a p-value of 0.040. The personnel group evaluated information flow more positively, while the lowest score was given by managers. Similarly, a significant difference was found in the motivators dimension ($p = 0.012$); the highest average was reported among specialists, and the lowest among the manager group.

Despite the absence of a statistically significant difference in overall organizational health scores by job title, the mean scores suggested that senior managers reported the highest levels, followed by lower scores among managers. *H5 Hypothesis: There is a significant differentiation between the structure related to organizational immunity/health, decision-makers, information, and motivators sub-dimensions and the job titles of employees within the organization.*

Statistical analyses revealed that H5 hypothesis was only partially confirmed. Differences were found between employees' job titles and organizational health sub-dimensions; however, these differences were statistically significant only in the information and motivators dimensions. No significant difference was found in the structure and decision-makers dimensions based on job titles. Therefore, hypothesis H5 was not fully supported; however, due to the meaningful results obtained in certain sub-dimensions, hypothesis H5 was partially accepted.

H6 Hypothesis: *There is a statistically significant difference between the sub-factors of organizational immunity/health, namely structure, decision makers, information, and motivators, and the ages of the participants.*

ANOVA results indicated that none of the sub-dimensions showed statistically significant differences, as all p-values exceeded 0.05. This indicates that there is no significant difference in employees' perceptions of organizational immunity based on the age variable. Therefore, the perceptions of employees in different age groups regarding the dimensions of structure, decision makers, information, and motivators are largely similar. Based on these findings, H6 hypothesis is rejected.

Table 6.

Summary of Hypothesis Test Findings

Hypothesis	Findings	Conclusion
H1: There is a significant relationship between organizational immunity/health dimensions and demographic characteristics.	Significant but low correlations ranging from 0.110 to 0.222 were found between structure and gender, decision-makers and education level, knowledge and work duration and job position, motivators and gender, age, education, and seniority.	Partially supported
H2: Gender and education level create differences in organizational health dimensions.	Gender was found to be a significant factor in the structure and motivators dimensions. Significant differences were found in the dimensions of decision-makers, knowledge, and motivators according to education level. In particular, the scores of master's degree graduates were significantly lower.	Partially supported
H3: Educational level and length of service affect organizational health.	Educational level showed significant differences in the overall organizational health score and all sub-dimensions. Length of service had a significant effect on structure ($p = .038$), motivators ($p < .001$), and overall health scores ($p = .025$).	Accepted
H4: Length of service and job title create differences in organizational health dimensions.	Partial differences were observed in organizational health dimensions depending on length of service. Significant differences were found in the information ($p = .040$) and motivators ($p = .012$) dimensions in the job title variable; no significant difference was found in the structure and decision makers dimensions.	Partially supported

H5: Job title creates meaningful differences in organizational health dimensions.	Significant differences were found in the dimensions of information and motivators; no significant differences were found in the dimensions of structure and decision-makers.	Partially supported
H6: Age groups create differences in organizational immunity perception.	According to the ANOVA results, significance values were above .05 in all subdimensions. Perceived organizational immunity did not differ significantly across age groups.	Rejected

CONCLUSION AND RECOMMENDATIONS

This study examined the relationships between the four core components of organizational immunity—or, in other words, organizational health—(leadership/structure, integration, this research examined whether employee perceptions of organizational health vary based on demographic characteristics. The study focused on four key components commonly linked to organizational immunity: leadership and structure, integration, adaptation, and intellectual capital. Drawing on existing literature, a theoretical model was developed and tested using survey responses from 377 employees at a manufacturing firm in Adana.

The analysis pointed to some low-level but statistically significant correlations. For instance, gender showed a modest relationship with structural perceptions. Education level was linked to how decision-making was viewed, while length of service related to both role perception and access to information. The motivators dimension was weakly associated with age, gender, and education. These outcomes provide limited support for the first hypothesis, suggesting that some aspects of organizational health are modestly influenced by employee demographics (Guillaume, Dawson, Woods, Sacramento, & West, 2017). ANOVA tests revealed more substantial findings. Gender was associated with differences in the structure and motivators dimensions, but not in perceptions of decision-making or information sharing (Eagly & Karau, 2002). Education level, however, was consistently associated with differences across all components, with more highly educated employees tending to view organizational processes more critically (Wright & Bonett, 2002). These results supported the third hypothesis. Differences related to length of service were limited to the structure and motivators dimensions, offering only partial support for the fourth hypothesis (Cohen, 1993). Employee role within the organization affected responses to knowledge and motivation, with no significant differences in the other dimensions. Age, on the other hand, had no statistically significant impact on any component, consistent with recent findings by Julian, Carlsen, and Huy (2024), who found limited effects of age on organizational attitudes. Taken together, these findings suggest that organizational health is not experienced uniformly. Demographic factors such as education and tenure appear to have the strongest influence, particularly in relation to leadership and motivation (Wright & Bonett, 2002). Gender played a more selective role, while age had no significant impact (Kunze, Boehm, & Bruch, 2013).

Three conclusions can be drawn from these results. First, the influence of demographic characteristics varies across different components of organizational health. Second, while adaptation and intellectual capital appear broadly consistent across groups, other components—especially leadership/structure and integration—are more sensitive. Third, these patterns offer practical implications for organizational strategy. Managers may benefit from considering education and tenure more carefully when developing systems intended to support resilience and long-term organizational health (Guillaume et al., 2017).

The findings suggest that organizational immunity and organizational health are related but distinct constructs. While organizational immunity reflects the organization's capacity to maintain stability and respond to threats, organizational health represents the overall quality and sustainability of organizational functioning. The results indicate that some dimensions derived from organizational DNA contribute differently to these two organizational capabilities. The concept of organizational immunity is still taking shape in the literature. Even so, this study supports its value as a framework for understanding how internal structures interact with workforce diversity. Further research could deepen these findings by expanding the sample or incorporating qualitative data. Recommendations are as follows:

Scale Development And Content Enrichment

The Organizational DNA Profile scale offered some initial insight in this study, but it has clear limitations when it comes to capturing the broader concept of organizational immunity. To study this construct more seriously, we'll need measurement tools that can account for how organizations respond under stress—not just structurally, but psychologically and culturally. A stronger instrument would allow us to examine things like internal resistance to change, how well a system adapts to external pressure, or where breakdowns in learning and coordination occur. Adding elements such as psychological safety, employee well-being, internal equilibrium, or even the organization's learning reflexes could make this type of tool far more useful. Without that kind of scope, it's difficult to fully understand how immunity functions across different settings or how it connects to long-term organizational health.

Examination of Sectoral Differences

Workplaces in different industries do not react to pressure in quite the same way. If we want to understand what “organizational immunity” really means, we have to look at those differences directly. A comparison between manufacturing, service, technology, and public organizations would make it clearer which parts of the immune response come from inside the system and which are shaped by outside conditions. That kind of work would also show what can and cannot be transferred from one field to another. The results could help managers design their own ways of strengthening immunity—approaches that fit the habits, risks, and culture of their own sector rather than a single general model.

Cross-Cultural Adaptability And Validity

It's hard to say whether organizational health and immunity work the same way across cultures without looking closely. These ideas might seem universal, but how they're understood or practiced could vary a lot depending on local norms, leadership styles, or even assumptions about work and authority. Comparative studies across different cultural settings would help show whether organizations respond to pressure in

similar ways, or if resilience takes on different forms depending on context. That kind of research could make it clearer which parts of the concept hold up globally and which don't.

Longitudinal Studies

We don't yet have a clear picture of how organizational immunity holds up over time. Most research so far looks at short-term responses, often tied to specific events. What's missing is a longer view — studies that follow organizations across years, through different kinds of stress and recovery. That kind of work could show which strategies actually build resilience and which ones fade or fail under pressure. Without it, it's hard to separate what's truly effective from what only looks useful in the moment.

Measuring the Effectiveness of Interventions

To really understand whether efforts to improve organizational health are working, businesses need tools that do more than check a few boxes. They need ways to look across different areas at once — how people feel about their work, whether they feel safe speaking up, how clearly teams communicate, and what kind of performance is actually showing up. Without that kind of detail, it's hard to know what's helping and what needs to change.

In this study, organizational immunity is treated as something that isn't fixed — it shifts, depending on who makes up the workforce and what kind of pressure the organization is under. More grounded, real-world studies could help show how some organizations manage to stay flexible and balanced while still holding together under stress. That's the kind of work that might actually move the conversation forward.

Declaration Of Ethics

Support Information: This study has not received support from any organization, such as public, commercial, or non-profit organizations.

Ethical Approval: All procedures performed in studies involving human participants comply with the ethical standards of the institutional and/or national research committee and the 1964 Helsinki Declaration and its subsequent amendments or comparable ethical standards. Ethical approval for this research was obtained from the Ethics Committee of Cukurova University with decision number 19 dated 25/11/2025 and numbered E.1477884.

Informed Consent Form: Informed consent forms were obtained from all individual participants in the study.

REFERENCES

- Akondy, R. S., Fitch, M., Edupuganti, S., Yang, S., Kissick, H. T., Li, K. W., ... & Ahmed, R. (2017). Origin and differentiation of human memory CD8 T cells after vaccination. *Nature*, 552(7685), 362–367. <https://doi.org/10.1038/nature24633>
- Al-Tahan, R. S. H., & Al-Hindawy, Z. A. U. A. (2021). The effect of organizational health on strengthening organizational immune systems: An exploratory study of the opinions of a sample of doctors in Imam Zain Al-Abidin “be upon him” hospital in the holy city of Karbala. *Journal of Statistics and Management Systems*, 24(4), 809–815. <https://doi.org/10.1080/09720510.2020.1860505>
- Assayah, A. A. M. (2020). Organizational immunity and its effect on strategic technological change options: A field study at Jordanian industrial companies listed in Amman Stock Exchange. *Academy of Strategic Management Journal*, 19(5), 1–10.

- Bostancı, A. B., & Koçak, S. (2022). Okul DNA profillerinin örgütsel sinerji üzerindeki rolü. *Millî Eğitim Dergisi*, 51(233), 55–75. <https://doi.org/10.37669/milliegitim.779414>
- Camp, R., Gast, A., Goldstein, D., & Weddle, B. (2024). *Organizational health and long-term corporate performance*. McKinsey & Company.
- Carroll, G. R., & Hannan, M. T. (2015). *The demography of corporations and industries*. Princeton University Press.
- Chaplin, D. D. (2010). Overview of the immune response. *Journal of Allergy and Clinical Immunology*, 125(2 Suppl 2), S3–S23. <https://doi.org/10.1016/j.jaci.2009.12.980>
- Cohen, A. (1993). Age and tenure in relation to organizational commitment: A meta-analysis. *Academy of Management Journal*, 36(5), 1140–1156. <https://doi.org/10.2307/256650>
- Çetin, R. B., & Döş, İ. (2014). Örgüt DNA'sı ölçeğinin geliştirilmesi ve MEB üzerine bir tarama çalışması. *Uluslararası Sosyal Araştırmalar Dergisi*, 7(31), 560–575.
- Doğrul, B. Ş. (2014). Stratejik uyumun işletmenin finansal performansına etkisi: Borsa İstanbul'da işlem gören imalat işletmeleri üzerinde bir araştırma. *Eskişehir Osmangazi Üniversitesi İİBF Dergisi*, 7(2), 241-261.
- Dutton, Workman & Hardin (2014). *Compassion at Work*. Annual Review of Organizational Psychology and Organizational Behavior, 1, 277-304.
- Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review*, 109(3), 573–598. <https://doi.org/10.1037/0033-295X.109.3.573>
- Flevy Consulting Group. (n.d.). *Organizational DNA framework*. Flevy. <https://flevy.com>
- Guillaume, Y. R. F., Dawson, J. F., Otake-Ebede, L., Woods, S. A., & West, M. A. (2017). Harnessing demographic differences in organizations: What moderates the effects of workplace diversity? *Journal of Organizational Behavior*, 38(2), 276–303. <https://doi.org/10.1002/job.2040>
- Hadian, S. A., Yarmohammadian, M. H., & Shaarbafchizadeh, N. (2023). The organizational health components for small-sized health-care organizations: A systematic review. *Journal of Education and Health Promotion*, 12, Article 37. doi:10.4103/jehp.jehp_1307_21
- Hannan, M. T., Pólos, L., & Carroll, G. R. (2007). *Logics of organization theory: Audiences, codes, and ecologies*. Princeton University Press.
- Huang, J.-J. (2013). Organizational knowledge, learning and memory—A perspective of an immune system. *Knowledge Management Research & Practice*, 11(3), 230–240. <https://doi.org/10.1057/kmrp.2011.48>
- Inkinen, H. (2015). Review of empirical research on intellectual capital and firm performance. *Journal of Intellectual Capital*, 16(3), 518–565. <https://doi.org/10.1108/JIC-01-2015-0002>
- Investopedia. (n.d.). *Intellectual capital definition*. Investopedia. <https://www.investopedia.com>
- Jaafari, M., Alzuman, A., Ali, Z., Tantry, A., & Ali, R. (2023). Organizational health behavior index (OHBI): A tool for measuring organizational health. *Sustainability*, 15(18), 13650. <https://doi.org/10.3389/fpsyg.2025.1689559>
- Julian, D. M., Carlsen, A., & Huy, Q. N. (2024). Emotional capacity and organizational resilience: The moderating role of age. *Journal of Management Studies*, 61(1), 122–145. <https://doi.org/10.1111/joms.12910>
- Kara, O. (2025). *The role of organizational immunity in healthy and unhealthy enterprises: An application in an industrial enterprise* [Unpublished doctoral dissertation]. Cukurova University.
- Kast, F. E., & Rosenzweig, J. E. (2020). Organization and management as a system: A critical review. *Journal of Management Studies*, 57(5), 1101–1117. <https://doi.org/10.1111/joms.12580>
- Kianto, A., Ritala, P., Spender, J. C., & Vanhala, M. (2014). The interaction of intellectual capital assets and knowledge management practices in organizational value creation. *Journal of Intellectual Capital*, 15(3), 362–375. <https://doi.org/10.1108/JIC-05-2014-0059>

- Kunze, F., Boehm, S. A., & Bruch, H. (2013). Age, resistance to change, and job performance: Testing for a common stereotype. *Journal of Managerial Psychology*, 28(7/8), 741–760. <https://doi.org/10.1108/JMP-06-2013-0194>
- Lencioni, P. (2012). *The advantage: Why organizational health trumps everything else in business*. Jossey-Bass.
- Liu, Y., Wang, H., & Wang, Z. (2020). Organizational immune systems: The impact of defensive routines on innovation. *Management Decision*, 58(9), 1923–1939. <https://doi.org/10.1108/MD-10-2018-1156>
- Muthén, L. K., & Muthén, B. O. (2002). How to use a Monte Carlo study to decide on sample size and determine power. *Structural equation modeling*, 9(4), 599–620.
- McKinsey & Company. (2024). *The state of organizations 2024*. McKinsey & Company. <https://www.mckinsey.com>
- Miles, M. B. (1965). Planned change and organizational health: Figure and ground. In R. O. Carlson, A. Gallaher Jr., M. B. Miles, R. J. Pellegrin, & E. M. Rogers, *Change processes in the public schools* (pp. 11–34). Center for the Advanced Study of Educational Administration, University of Oregon.
- Murphy, K., & Weaver, C. (2016). *Janeway's immunobiology* (9th ed.). Garland Science.
- Neilson, G. L., Pasternack, B. A., & Mendes, D. (2003). The four bases of organizational DNA: Trait by trait, companies can evolve their own execution cultures. *Strategy+Business*, 33.
- Ordu, A., & Tanrıöğen, A. (2013). İlköğretim okullarında örgütsel yapı ile örgüt sağlığı arasındaki ilişkiler. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 33(33), 93–106. <https://doi.org/10.9779/PUJE470>
- OrgChanger. (2021). *Organizational immune system: How companies resist change*. OrgChanger. <https://orgchanger.com>
- Paine, N. (2021). Building resilient organizations: The role of leadership and organizational health. *Organizational Dynamics*, 50(4), 100824. <https://doi.org/10.1016/j.orgdyn.2020.100824>
- PMC. (n.d.). *Organizational health, leadership, and HR practices: Impacts on employee outcomes*. PubMed Central. <https://pmc.ncbi.nlm.nih.gov>
- Pulendran, B., & Ahmed, R. (2011). Immunological mechanisms of vaccination. *Nature Immunology*, 12(6), 509–517. <https://doi.org/10.1038/ni.2039>
- Raimo, N., Vitolla, F., Marrone, A., & Rubino, M. (2021). Do sustainable business models drive corporate performance? Evidence from the global financial crisis. *Business Strategy and the Environment*, 30(1), 682–691. <https://doi.org/10.1002/bse.2639>
- Sallusto, F., Lanzavecchia, A., Araki, K., & Ahmed, R. (2010). From vaccines to memory and back. *Immunity*, 33(4), 451–463. <https://doi.org/10.1016/j.immuni.2010.10.008>
- Sarta, A., Durand, R., & Vergne, J. P. (2021). Organizational adaptation. *Journal of Management*, 47(1), 43–75. <https://doi.org/10.1177/0149206320901563>
- The Decision Lab. (n.d.). *Systems theory*. The Decision Lab. <https://thedecisionlab.com>
- Tsasis, P., Evans, J. M., & Owen, S. (2012). Reframing the challenges to integrated care: A complex-adaptive systems perspective. *International Journal of Integrated Care*, 12(5), 1–11. <https://doi.org/10.5334/ijic.843>
- Ulu, Ö., Demircan Çakar, N., & Ertürk, A. (2025). Firma Seviyesi İnovasyon Yeteneğinin Öncülleri ve Çıktılarının Belirlenmesine Yönelik Bir Meta Analiz İncelemesi. *Eskişehir Osmangazi Üniversitesi İİBF Dergisi*, 20(3), 925-954.
- Watkins, M. (2024). *The organizational immune system and change resistance*. *Harvard Business Review*. <https://hbr.org>
- Wilkins-Smith, J. (2024). *Decoding organizational DNA: Systems, patterns, and transformation*. Wiley.

Wright, T. A., & Bonett, D. G. (2002). The moderating effects of employee tenure on the relation between organizational commitment and job performance: A meta-analysis. *Journal of Applied Psychology*, 87(6), 1183–1190. <https://doi.org/10.1037/0021-9010.87.6.1183>