

The Impact of Organizational Immunity Dimensions on Organizational Effectiveness in Jordanian Public Universities

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Abstract:

This study examined the effect of organizational immunity on organizational effectiveness in Jordanian public universities. Organizational immunity was conceptualized as a multidimensional capability comprising organizational learning, organizational knowledge, organizational memory, and organizational DNA, and was theoretically grounded in Dynamic Capabilities Theory and the Knowledge-Based View. A cross-sectional descriptive-analytical design was employed. Data were collected through a structured 20-item questionnaire administered to employees occupying upper, middle, and supervisory administrative positions in Jordanian public universities. Using proportionate stratified random sampling, 378 questionnaires were distributed, of which 350 valid responses were retained for analysis, yielding a usable response rate of 92.6%. The data were analyzed using IBM SPSS Statistics Version 27. The reliability and factorial validity of the instrument were assessed using Cronbach's alpha and principal component analysis with Varimax rotation. Common method bias and non-response bias were also examined. Multiple linear regression was used to test the study hypotheses. Because the Breusch–Pagan test indicated mild heteroscedasticity, HC3 heteroscedasticity-consistent robust standard errors were used for coefficient inference. The regression model was statistically significant and explained 49.4% of the variance in organizational effectiveness ($R^2 = 0.494$). All four dimensions of organizational immunity had positive and statistically significant effects on organizational effectiveness. Organizational learning was the strongest predictor, followed by organizational knowledge, organizational DNA, and organizational memory. The findings demonstrate that organizational effectiveness in Jordanian public universities depends not only on formal resources and structures but also on the institution's capacity to learn, mobilize knowledge, retain experience, and coordinate internal organizational processes. The study contributes to the literature by presenting an integrated and theoretically grounded model of organizational immunity that may be tested in other higher education and knowledge-intensive public institutions.

Keywords: Organizational Immunity, Organizational Effectiveness, Organizational Learning, Organizational Knowledge, Organizational Memory, Organizational DNA, Jordanian Public Universities.

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أثر أبعاد المناعة التنظيمية في الفاعلية التنظيمية في الجامعات الحكومية الأردنية

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الملخص:

هدفت هذه الدراسة إلى استقصاء أثر أبعاد المناعة التنظيمية في الفاعلية التنظيمية في الجامعات الحكومية الأردنية، من خلال بناء إطار نظري يستند إلى نظرية القدرات الديناميكية (Dynamic Capabilities Theory) ومنظور المعرفة (Knowledge-Based View). وقد تمثلت أبعاد المناعة التنظيمية في التعلم التنظيمي، والمعرفة التنظيمية، والذاكرة التنظيمية، والحمض النووي التنظيمي (Organizational DNA). اعتمدت الدراسة المنهج الوصفي التحليلي باستخدام تصميم مقطعي، وجمعت البيانات بواسطة استبانة مكونة من (20) فقرة، وزعت على العاملين في المستويات الإدارية العليا والوسطى والإشرافية في الجامعات الحكومية الأردنية. ولتحقيق أهداف الدراسة، استخدم أسلوب العينة العشوائية الطبقية المتناسبة، حيث وزعت (378) استبانة، واستُعيدت (350) استبانة صالحة للتحليل الإحصائي، بنسبة استجابة بلغت (92.6%) وجرى تحليل البيانات باستخدام برنامج IBM SPSS Statistics الإصدار 27، مع التحقق من ثبات الأداة وصدقها العملي من خلال معامل كرونباخ ألفا وتحليل المكونات الرئيسية (Principal Component Analysis) مع تدوير Varimax. كما تم فحص تحيز الطريقة المشتركة (Common Method Bias) وتحيز عدم الاستجابة (Non-response Bias). ولاختبار فرضيات الدراسة، استخدم تحليل الانحدار الخطي المتعدد، وبسبب وجود تباين غير متجانس بدرجة طفيفة وفقاً لاختبار Breusch-Pagan، تم الاعتماد على الأخطاء المعيارية المتينة من نوع HC3 لضمان دقة الاستدلال الإحصائي.

وأظهرت النتائج أن نموذج الانحدار كان ذا دلالة إحصائية، وفُسّر ما نسبته (49.4%) من التباين في الفاعلية التنظيمية ($R^2 = 0.494$). كما بينت النتائج وجود أثر إيجابي ذي دلالة إحصائية لجميع أبعاد المناعة التنظيمية في الفاعلية التنظيمية، حيث جاء التعلم التنظيمي بوصفه أكثر الأبعاد تأثيراً، تلاه المعرفة التنظيمية، ثم الحمض النووي التنظيمي، وأخيراً الذاكرة التنظيمية.

وتؤكد نتائج الدراسة أن تعزيز الفاعلية التنظيمية في الجامعات الحكومية لا يقتصر على توافر الموارد والهياكل التنظيمية الرسمية، وإنما يعتمد بدرجة كبيرة على قدرة المؤسسة على التعلم المستمر، وإدارة المعرفة وتوظيفها، والاحتفاظ بالخبرات التنظيمية، وتكامل مكوناتها الداخلية. كما تسهم الدراسة في إثراء الأدبيات الإدارية من خلال تقديم نموذج متكامل للمناعة التنظيمية يستند إلى أسس نظرية راسخة، ويمكن الاستفادة منه في دراسات مستقبلية تُجرى في مؤسسات التعليم العالي، وغيرها من المؤسسات العامة كثيفة المعرفة.

الكلمات المفتاحية: المناعة التنظيمية، الفاعلية التنظيمية، التعلم التنظيمي، المعرفة التنظيمية، الذاكرة التنظيمية، الحمض النووي التنظيمي، الجامعات الحكومية الأردنية.

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Introduction:

Universities are performing more complex functions today. They are not only expected to conduct teaching and research, but they must sustain quality, use resources efficiently, and keep pace with technological, social, and labor market changes. For Jordan, this is observed by the recent national reform initiatives that focus on enhancing the quality of education, upgrading regulation and quality of social function, and making accountability mechanisms more rigorous. Public universities therefore feel increasing pressure to prove organizational efficacy and generate more sustainable and actionable results (World Bank, 2024).

In this vein, organizational immunity has been developed as a useful managerial concept for accounting for the performance of an organization in the face of threats, spotting weaknesses early, learning from the past and preserving internal organizational coherence in the face of an upheaval. Recent literature has associated organizational immunity with four complementary organizational capabilities: organizational learning, organizational knowledge, organizational memory, and organizational DNA. Thus, these dimensions together allow institutions to absorb knowledge, retention, conversion to action and decision-making patterns conducive to both stability and adaptation. Also, empirical work in higher education as well as in the Jordanian context, indicates that organizational immunity is associated with positive organizational outcomes and that it should not be viewed as a theoretical metaphor only, but as an operational capability with consequences for loyalty, change, and effectiveness (Abunaser et al., 2023).

Though there has been an increase in interest in organizational effectiveness in higher education, there is still evidence, particularly within Jordan, that institutional effectiveness has not reached the desired level in public universities. Al-Momani and Battah (2020) found moderate institutional effectiveness in Jordanian public universities from the faculty members' perspective. Yet recent studies on Jordanian higher education have identified institutional excellence or reputation in light of innovative leadership and digital transformation — suggesting the necessity to pursue deeper and more sustainable organizational drivers. This suggests a natural justification for an explicit investigation of the effect of organizational immunity on organizational effectiveness at Jordanian public universities, as opposed to a moderating or additive effect or a comparative examination in other sectoral settings (Al-Mawadieh et al., 2024; Al-Dmour et al., 2025).

This study therefore examines the effect of organizational immunity on organizational effectiveness in Jordanian public universities. Unlike previous studies that have examined organizational immunity as a moderating variable, associated it with employee attitudes, or investigated its components separately in relation to different organizational outcomes, the present study treats organizational immunity as an integrated multidimensional capability comprising organizational learning, organizational knowledge, organizational memory, and organizational DNA. It evaluates both the collective explanatory effect of these dimensions and the relative contribution of each dimension to organizational effectiveness.

The study contributes to the literature in three main ways. First, it provides a theoretically integrated explanation of organizational immunity by linking its dimensions to Dynamic Capabilities Theory and the Knowledge-Based View. Second, it clarifies the conceptual position of organizational knowledge as a dimension distinct from, but complementary to, organizational learning and organizational memory. Third, it tests the four dimensions simultaneously within a unified model, thereby identifying whether they provide independent explanatory value and which dimension contributes most strongly to organizational effectiveness.

Although the empirical investigation is conducted in Jordanian public universities, the expected contribution is not limited to the Jordanian setting. The proposed model offers an analytical framework that may be relevant to other public and knowledge-intensive higher education institutions operating under conditions of institutional reform, resource constraints, environmental uncertainty, and increasing accountability. Accordingly, the study seeks to contribute to the broader understanding of how universities can convert learning, knowledge, accumulated experience, and internal organizational architecture into sustainable organizational effectiveness.

Problem Statement:

This study aimed to address the present problem by examining the impact of organizational immunity on organizational effectiveness in Jordanian public universities by answering the following principal question: What is the impact of organizational immunity, represented by organizational learning, organizational knowledge, organizational memory, and organizational DNA, on organizational effectiveness in Jordanian public universities? The sub-questions below arise from that question:

- What is the impact of organizational learning on organizational effectiveness in Jordanian public universities?
- What is the impact of organizational knowledge on organizational effectiveness in Jordanian public universities?
- What is the impact of organizational memory on organizational effectiveness in Jordanian public universities?
- What is the impact of organizational DNA on organizational effectiveness in Jordanian public universities?

Despite the growing attention given to organizational immunity and organizational effectiveness, the existing literature reveals several specific analytical limitations. **First**, previous studies have not consistently examined organizational immunity as a direct, integrated, and multidimensional predictor of organizational effectiveness. For example, AlDalaeen and Allafy (2021) examined organizational immunity primarily as a moderating variable in the relationship between innovation and organizational effectiveness, rather than investigating the direct and comparative effects of its individual dimensions. Similarly, Abunaser et al. (2023) focused on the relationship between organizational immunity and academic loyalty from the perspective of faculty members, leaving its explanatory role in organizational effectiveness insufficiently examined.

Second, much of the related literature has addressed the components associated with organizational immunity separately. Studies have investigated organizational learning in relation to innovation and institutional performance, knowledge management in relation to knowledge sharing and sustainability, organizational memory in relation to employee performance, and organizational DNA in relation to institutional excellence and organizational agility (Al-Kurdi et al., 2020; Gharib et al., 2025; Al-Khasabah, 2025; Pedraja-Rejas et al., 2025; Quarchioni et al., 2022). Although these studies establish the importance of the individual components, their fragmented treatment does not explain whether organizational learning, organizational knowledge, organizational memory, and organizational DNA operate as complementary dimensions of a broader organizational immunity capability. It also remains unclear whether each dimension contributes independently to organizational effectiveness when the effects of the other dimensions are statistically controlled.

Third, the existing higher education literature has frequently concentrated on faculty perceptions, individual universities, or organizational outcomes such as loyalty, reputation, innovation, agility, and institutional excellence. Less attention has been directed toward the perceptions of upper, middle, and supervisory administrative employees who participate directly in institutional decision-making, coordination, policy implementation, and resource allocation across multiple public universities. Consequently, the available evidence does not sufficiently explain how the dimensions of organizational immunity jointly influence overall organizational effectiveness at the administrative and institutional levels.

The research problem therefore extends beyond the general scarcity of studies. It concerns the absence of an integrated theoretical and empirical model that distinguishes among the four dimensions of organizational immunity, examines their simultaneous and relative effects, and explains how they collectively contribute to organizational effectiveness. Addressing this problem enables the present study to move beyond describing whether organizational immunity is important to explaining how, through which dimensions, and to what relative extent it contributes to the effectiveness of public universities.

Literature Review:

A review of prior literature review is a fundamental phase in developing the theoretical framework of any study by explaining the background of the variables and the relationships among them, and identifying research gaps in the literature, especially in higher education institutions. The literature upon which this study is based is divided into two distinct streams. The first presents organizational immunity as the independent variable by considering of its conceptualization and the dimensions that have been used in this study, namely, organizational learning, organizational knowledge, organizational memory, and organizational DNA. The second stream discusses organizational effectiveness as the dependent variable, focusing on its meaning, dimensions, and relevance in the context of public universities. This review seeks to provide a consistent theoretical background for formulating theory-driven study hypotheses to be formulated and to enhance the interpretation of the study outcomes in light of recent theoretical and empirical contributions.

Organizational Immunity:

Such a phenomenon has made organizational immunity an important managerial concept for explaining how organizations protect themselves from both internal and external threats, alleviate structural vulnerabilities, and enhance their capability for continuity and adaptation. (Abunaser et al., 2023) specifically argued that in the case of higher education institutions, organizational immunity should not be classified as a response to crises, but rather as an ongoing institutional capability inherent in how an institution thinks, learns, and organizes itself.

Similarly, AlDalaeen and Allafy (2021) demonstrated that organizational immunity in universities is related to higher organizational efficiency and may boost the efficacy of other managerial practices. As a result, organizational immunity could be considered a cognitive and structural defense that enables the university to maintain internal coherence, while maintaining intelligent responses to change (Abunaser et al., 2023; AlDalaeen & Allafy, 2021).

Organizational learning is the first dimension of this study, as it reflects the university's ability to learn from experience, make sense of it, and translate it into practices and decision-making that lead to organizational maturity. Pedraja-Rejas et al. (2025) demonstrated that in the university context, organizational learning is directly related to innovation and institutional performance, as it enables an institution to optimize its responses over time rather than repeating existing routines. Likewise, Pinheiro

and Alves (2024) observed that learning in education teams not only enhances professional congruence but also gradually improves organizational behavior to a higher level, contributing to institutional readiness. Consequently, organizational learning is not merely an internal process but a central immune response that facilitates adaptability, anticipation, and incremental progress (Pedraja-Rejas et al., 2025; Pinheiro & Alves, 2024).

Organizational memory and organizational knowledge are two elements that play complementary roles in creating organizational immunity, with no institution being able to defend itself unless it is equally capable of producing, disseminating, storing, and retrieving knowledge when necessary. Al-Kurdi et al. (2020) also showed that organizational climate in education has a significant effect on academic knowledge sharing, which is important not just for decision quality but also for institutional coordination. Likewise, Quarchioni et al. (2022) underlined that in higher education, knowledge management has emerged as an important element for institutional sustainability and development. Gharib et al. (2025) also demonstrated that organizational memory promotes performance by limiting knowledge loss and enhancing the utilization of previous experience. For example, organizational knowledge and organizational memory can serve as defensive institutional resources that reduce improvisation and enhance organizational responses from the perspective of organizational memory (Al-Kurdi et al., 2020; Quarchioni et al., 2022; Gharib et al., 2025).

Organizational DNA refers to the underlying characteristics of the organization that give decision-making, organizational behavior, communication, and collaboration in the organization its shape Gover et al. (2024). In the context of the present study, organizational DNA was operationalized through questionnaire items that sought to measure such characteristics within the context of Jordanian public universities.

Organizational DNA is recognized as the fourth dimension because it covers the deep structure underlying institutional behavior (i.e., authority, information flow, relationship patterns, and values supporting day-to-day behavior). Al Khasabah (2025) found that organizational DNA is relevant to institutional excellence and organizational agility within Jordanian public universities. This construct provides a framework for understanding organizational immunity in relation to the other three dimensions: learning facilitates response, knowledge guides decision-making, and memory preserves experience, and organizational DNA ensures that each component works together in a coherent, stable institutional framework. Hence, the current study conceptualizes organizational immunity in terms of four dimensions: organizational learning, organizational knowledge, organizational memory, and organizational DNA (Al Khasabah, 2025; AlDalaen & Allafy, 2021).

Organizational Effectiveness:

In institutions of higher education, organizational effectiveness describes the extent to which a university has the capacity to accomplish its academic, administrative, and social goals efficiently and in a sustainable manner. According to Al-Momani and Battah (2020), the degree of institutional effectiveness in Jordanian public universities is only moderate from the perspective of faculty members, indicating that this variable needs to be further examined in Jordanian university settings.

On a theoretical basis, organizational effectiveness is more than just goal attainment; it encompasses quality of outcomes, clarity of processes, responsiveness, and capacity to meet objectives in a changing context. It is for this reason that organizational effectiveness is an appropriate dependent variable in this study, as it describes the overall institutional outcome reflecting how successfully the university puts its resources and capabilities into action (Al-Momani & Battah, 2020). Emerging empirical work shows that

organizational culture, leadership, and innovation are some of the strongest predictors of organizational performance in universities.

According to Subha and Ramnath Babu (2024), organizational culture directly influences organizational effectiveness within higher education institutions in that it establishes patterns of collaboration, commitment, and internal response. In the same vein, Suryadi et al. (2024) reported that digital leadership and digital innovation promote better higher education performance, which supports the view that organizational effectiveness is no longer related to traditional administration alone but also to an institution's ability to take the lead in change. Thus, organizational effectiveness arises from the interplay of cultural underpinnings, effective leadership and institutional preparedness for renewal and dynamism (Subha & Ramnath Babu, 2024; Suryadi et al., 2024). In recent years, organizational effectiveness has also been increasingly linked to the university's ability to utilize digital transformation and organizational knowledge in the enhancement of performance.

Al-Damour et al. (2025) report that digital transformation in Jordanian public higher education institutions has a positive impact on institutional reputation by enhancing operational efficiency and the quality of education. Similarly, the literature on knowledge management within higher education finds that the quality of knowledge sharing and the existence of appropriate knowledge systems enhance institutional coordination and decision-making capabilities that affect overall performance (Al-Kurdi et al., 2020; Quarchioni et al., 2022).

That is, organizational effectiveness in today's universities is not limited to resources and structure but also includes the organization's capacity for managing knowledge, transformation, and responsiveness simultaneously (Al-Dmour et al., 2025). In light of the above, it is theoretically justified to assume that organizational immunity can influence organizational effectiveness in Jordanian public universities. A university that has effective organizational learning, a knowledge system to support its work, an institutional memory, and an internal architecture that controls behavior is more capable of fulfilling its objectives satisfactorily. This assumption is further consistent with the findings of AlDalaeen and Allafy (2021), who revealed that in Jordanian institutions organizational immunity has a bearing on organizational effectiveness and is also supported by recent Jordanian higher education literature that emphasizes how a university's success is shaped by the university's capacity to change, grow and react. Consequently, the study of the effects of organizational immunity on organizational effectiveness constitutes a theoretically and practically justified extension of research on Jordanian public universities (AlDalaeen & Allafy, 2021; Al-Damour et al., 2025; Al-Momani & Battah, 2020).

Theoretical Foundation:

This study is primarily grounded in Dynamic Capabilities Theory, which explains how organizations sustain and improve their performance by integrating, developing, and reconfiguring their internal and external competencies in response to changing environmental conditions (Teece et al., 1997). Rather than focusing only on the possession of valuable resources, Dynamic Capabilities Theory emphasizes the organizational processes through which resources and capabilities are renewed, coordinated, and transformed into effective institutional responses. Teece (2007) further conceptualized dynamic capabilities through the interrelated capacities of sensing changes and emerging challenges, seizing opportunities through informed decisions, and reconfiguring organizational resources, structures, and routines. This theoretical perspective is particularly relevant to public universities, which operate in environments characterized by technological change, regulatory reforms, changing stakeholder expectations, increasing accountability, and continuous pressure to improve academic and administrative performance.

From the perspective of Dynamic Capabilities Theory, organizational immunity can be conceptualized as an overarching organizational capability that enables an institution to identify internal and external threats, mobilize appropriate knowledge and resources, preserve useful institutional experience, and reconfigure its internal arrangements when necessary. The four dimensions examined in this study represent complementary mechanisms through which this capability operates. Organizational learning supports the sensing and interpretation of emerging problems by enabling universities to evaluate previous experiences and revise established practices. Organizational knowledge contributes to seizing opportunities and responding to challenges by making relevant expertise and information available for institutional decision-making. Organizational memory preserves lessons, procedures, and accumulated experience that can be retrieved when similar conditions recur. Organizational DNA provides the structural and cultural architecture—including decision rights, information flows, organizational values, and coordination patterns—through which learning, knowledge, and memory are translated into coordinated organizational action.

The inclusion of organizational knowledge as a distinct dimension of organizational immunity is additionally supported by the Knowledge-Based View of the organization. According to Grant (1996), knowledge represents one of the most strategically significant organizational resources, while the organization serves as a mechanism for integrating the specialized knowledge possessed by its members. Organizational knowledge is therefore not conceptually redundant with organizational learning or organizational memory. Organizational learning refers to the process through which experience is interpreted and transformed into new or modified knowledge, whereas organizational knowledge represents the currently available stock of explicit and tacit expertise that can be shared and applied to organizational activities and decisions. Organizational memory, in contrast, concerns the retention, storage, and retrieval of knowledge and experience accumulated over time (Walsh & Ungson, 1991). This distinction is consistent with Argote and Miron-Spektor (2011), who described organizational learning as the process through which experience creates knowledge, and with Antunes and Pinheiro (2020), who demonstrated that knowledge management, organizational learning, and organizational memory are closely related but conceptually distinguishable organizational processes.

This distinction is particularly important in public universities because relevant knowledge is often distributed among academic departments, administrative units, committees, and different managerial levels. The mere presence of experienced employees or institutional records does not guarantee an effective organizational response. Knowledge must be accessible, shared, integrated, and applied to current institutional problems. Organizational knowledge therefore functions as an active immune resource by reducing informational uncertainty, supporting evidence-based decisions, facilitating coordination across university units, and enabling the institution to respond to emerging challenges without relying on fragmented or improvised actions.

Dynamic Capabilities Theory consequently predicts that universities possessing stronger learning processes, more accessible and applicable organizational knowledge, effective institutional memory, and coherent organizational DNA will be better able to renew their routines, coordinate their resources, respond to environmental changes, and accomplish their institutional objectives. Organizational effectiveness is therefore viewed as an outcome of the university's ability to mobilize and reconfigure these mutually reinforcing dimensions of organizational immunity. On this basis, the study proposes that organizational immunity, both collectively and through each of its four dimensions, positively contributes to organizational effectiveness in Jordanian public universities. This theoretical integration extends the

application of Dynamic Capabilities Theory to the organizational immunity context and provides a clear explanatory foundation for the relationships proposed in the study model.

Analytical Research Gap and Study Contribution:

Although previous studies have examined organizational learning, organizational knowledge, organizational memory, and organizational DNA, these dimensions have generally been investigated separately and in relation to outcomes such as innovation, academic loyalty, institutional excellence, agility, reputation, and employee performance. This fragmented approach provides limited insight into how these dimensions work together as components of an integrated organizational immunity capability. Moreover, the few studies linking organizational immunity to organizational effectiveness have not clearly examined the independent and comparative contribution of each dimension within a single explanatory model.

The present study addresses this gap by grounding organizational immunity in Dynamic Capabilities Theory and supporting it with the Knowledge-Based View. It conceptualizes organizational immunity as a multidimensional capability through which universities learn from experience, generate and apply knowledge, retain institutional lessons, and organize their internal structures and decision-making processes. The study also clarifies the distinction among organizational learning, organizational knowledge, and organizational memory: learning refers to the process of creating or modifying knowledge, organizational knowledge represents the expertise available for current use, and organizational memory concerns the retention and retrieval of accumulated experience.

Accordingly, the study advances existing knowledge by simultaneously testing the effects of organizational learning, organizational knowledge, organizational memory, and organizational DNA on organizational effectiveness and comparing their relative contributions. Although the empirical data are drawn from Jordanian public universities, the proposed framework has wider theoretical relevance to other universities and knowledge-intensive public institutions facing institutional reform, resource constraints, and environmental uncertainty. The study therefore offers a theoretically grounded and empirically testable model that can be replicated and compared across different countries, sectors, and governance contexts, without claiming universal statistical generalizability beyond Jordan.

Study Model:

Grounded primarily in Dynamic Capabilities Theory and supported by the Knowledge-Based View, the study model proposes that organizational immunity represents an integrated organizational capability through which public universities renew, coordinate, preserve, and deploy their internal resources to achieve higher levels of organizational effectiveness. Dynamic Capabilities Theory explains that institutional performance does not depend solely on possessing resources, but also on the ability to sense emerging changes, seize opportunities through informed action, and reconfigure organizational routines and structures when existing arrangements are no longer adequate (Teece et al., 1997; Teece, 2007).

Within the proposed model, organizational learning enables the university to identify problems, interpret experience, and modify its practices; organizational knowledge provides the information and expertise required for informed decision-making; organizational memory preserves and retrieves accumulated institutional experience; and organizational DNA establishes the structural, cultural, and decision-making arrangements through which these resources are coordinated and applied. These dimensions are expected to operate as complementary components of organizational immunity and to enhance the university's ability to achieve its academic, administrative, and societal objectives efficiently and sustainably. Accordingly, the model proposes a direct effect of organizational immunity in its

combined dimensions, as well as a separate effect of each dimension, on organizational effectiveness in Jordanian public universities. The study model may be conceptually expressed as shown in Figure 1:

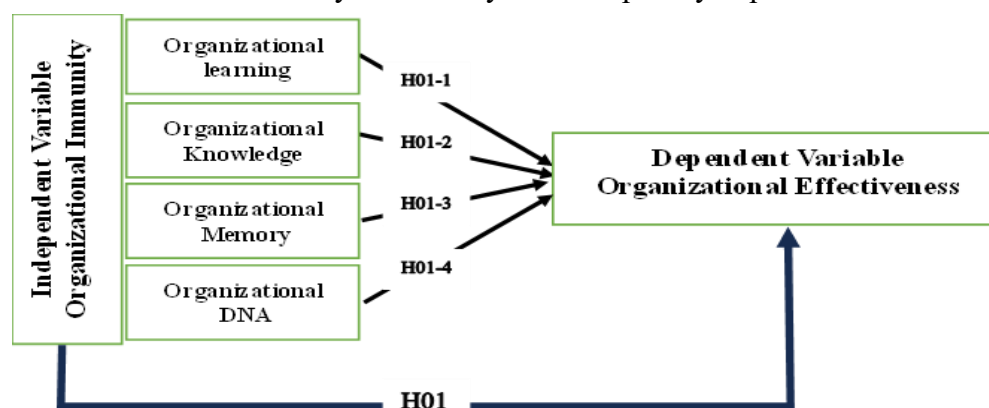


Figure 1. Study Model

Study Hypotheses:

Considering the theoretical assumptions and existing studies on the relationship between organizational immunity and organizational effectiveness, from the literature, we posit that increased organizational immunity in Jordanian public universities would be expected to positively enhance organizational effectiveness. Thus, a main hypothesis was constructed to analyze the impact of organizational immunity in its combined dimensions on organizational effectiveness, and four sub-hypotheses were formed to examine the effect of each organizational immunity dimension separately.

Prior research has indicated that the adaptability and performance of institutions can be enhanced by organizational immunity. Based on this, it is expected that organizational effectiveness would benefit significantly from organizational immunity.

Main Hypothesis: There is no statistically significant effect of organizational immunity with its combined dimensions (organizational learning, organizational knowledge, organizational memory, and organizational DNA) on organizational effectiveness in Jordanian public universities.

The main hypothesis branches into the following sub-hypotheses:

Organizational learning can improve decision- making and adaptability in the organization, which will influence organizational effectiveness.

H01-1: There is no statistically significant effect of organizational learning on organizational effectiveness in Jordanian public universities.

Coordination and informed decision making can be largely supported by effective organizational knowledge, which can contribute to the enhancement of organizational effectiveness.

H01-2: There is no statistically significant effect of organizational knowledge on organizational effectiveness in Jordanian public universities.

Both continuity and institutional experience can be maintained and preserved by organizational memory, subsequently contributing positively to organizational effectiveness.

H01-3: There is no statistically significant effect of organizational memory on organizational effectiveness in Jordanian public universities.

Organizational effectiveness relies on organizational behavior, the structural foundation of which is provided by organizational DNA, which means that organizational DNA is crucial for organizational effectiveness.

H0₁₋₄: There is no statistically significant effect of organizational DNA on organizational effectiveness in Jordanian public universities.

Study Methodology:

Research Design:

We used a descriptive-analytical approach with a cross-sectional survey design, as it was considered the most suitable for exploring the effect of organizational immunity on organizational effectiveness in an existing organizational setting by collecting data from respondents at a single point in time without experimental intervention. This design has been widely used in organizational and administrative research when the aim is to describe the phenomenon as it exists and to test the relationships among its variables through quantitative statistical analysis (Setia, 2016; Grimes & Schulz, 2002).

Population and Sampling:

Relying on official records provided by organizations, the study population consisted of employees occupying upper, middle, and supervisory administrative positions in Jordanian public universities, as these groups were the most closely involved in organizational processes and decision-making and were therefore better positioned to assess the levels of organizational immunity and organizational effectiveness within their universities. The unit of analysis was the administrative employee within these levels. An a priori statistical power analysis was conducted using G*Power 3.1 to assess the minimum sample size required for testing the proposed model. The analysis was based on linear multiple regression with four predictors, corresponding to the four dimensions of organizational immunity. Assuming a medium effect size of ($f^2 = 0.15$), a significance level of $\alpha = 0.05$, and statistical power of 0.95, the minimum required sample size was 129 respondents. The final sample of 350 valid responses therefore substantially exceeded the minimum requirement and provided adequate statistical power for detecting the hypothesized relationships. A larger target sample was initially selected to support proportionate representation across universities and administrative levels and to compensate for potential non-response and incomplete questionnaires (Faul et al., 2009).

The sample of 350 employees was selected through proportionate stratified random sampling, since the population was heterogeneous across universities and administrative levels. This sampling method was deemed more suitable than simple random sampling in heterogeneous populations due to its greater potential for subgroup representation and the greater generalizability of the results compared with non-probability sampling methods (Ahmed, 2024; Elfil & Negida, 2017). A total of 378 questionnaires were distributed using proportionate stratified random sampling. Of these, 350 were verified as valid for analysis, with a response rate of 92.6%. This demonstrates satisfactory representation of the study population.

Instrumentation:

Data were collected using a structured self-administered questionnaire developed and adapted from the conceptual definitions and empirical indicators reported in the relevant organizational immunity and organizational effectiveness literature. The questionnaire was not adopted verbatim from a single pre-existing scale. Instead, the items were selected and adapted to reflect the institutional and administrative context of Jordanian public universities.

The questionnaire consisted of two sections. The first section collected demographic and professional information, including university, administrative level, gender, age group, educational qualification, and years of experience. The second section contained 20 items measuring the study constructs. Organizational immunity was measured through four dimensions: organizational learning, organizational knowledge, organizational memory, and organizational DNA. Each dimension was measured using four items. Organizational effectiveness was also measured using four items.

Organizational learning items assessed the university's ability to learn from previous experience, review its practices, exchange lessons, and use feedback for improvement. Organizational knowledge items assessed the generation, sharing, accessibility, and application of institutional knowledge. Organizational memory items measured the preservation, retrieval, and use of previous institutional experiences, procedures, and lessons learned. Organizational DNA items assessed the clarity of decision rights, information flow, organizational roles, and coordination patterns. Organizational effectiveness items measured the university's perceived ability to accomplish its academic, administrative, and societal objectives efficiently, respond to institutional demands, and sustain performance.

All measurement items were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A composite score for each construct was calculated by averaging its four items, with higher scores indicating higher perceived levels of the respective construct. The factorial validity and internal consistency of the adapted measures were subsequently evaluated using exploratory factor analysis and Cronbach's alpha in IBM SPSS Statistics Version 27.

Table 1. Description and Literature Basis of the Measurement Instrument

Construct	Item codes	Number of items	Principal content measured	Literature used for item development and adaptation
Organizational Learning	OL1–OL4	4	Learning from experience, reviewing practices, exchanging lessons, and continuous improvement	Khasawneh et al. (2023); Pedraja-Rejas et al. (2025); Pinheiro and Alves (2024)
Organizational Knowledge	OK1–OK4	4	Knowledge generation, sharing, accessibility, and application in decision-making	Al-Kurdi et al. (2020); Quarchioni et al. (2022)
Organizational Memory	OM1–OM4	4	Retention, retrieval, and use of previous institutional experience and lessons	Walsh and Ungson (1991); Gharib et al. (2025)
Organizational DNA	DNA1–DNA4	4	Decision rights, information flow, role clarity, and coordination patterns	Govers et al. (2024); Al-Khasabah (2025)
Organizational Effectiveness	OE1–OE4	4	Goal attainment, efficiency, responsiveness, and sustained institutional performance	Al-Momani and Battah (2020); Subha and Ramnath Babu (2024)
Total	—	20	—	—

Note. The cited studies represent the conceptual and empirical literature used to develop and adapt the questionnaire items. The instrument was not reproduced verbatim from any single previously published scale.

Data Analysis:

The data were analyzed using IBM SPSS Statistics Version 27. Data screening was initially conducted to examine completeness, coding accuracy, and the suitability of the dataset for statistical analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the respondents' characteristics and describe the study variables.

The reliability of the measurement scales was assessed using Cronbach's alpha. Exploratory factor analysis was conducted to examine the factorial validity of the questionnaire items and determine whether they loaded on their theoretically specified dimensions. The suitability of the data for factor analysis was evaluated using the Kaiser–Meyer–Olkin measure of sampling adequacy and Bartlett's test of sphericity. Principal component analysis with Varimax rotation was used to identify the underlying factor structure.

Before testing the study hypotheses, common method bias was assessed using Harman's single-factor test and full-collinearity variance inflation factors, while non-response bias was examined by comparing early and late respondents. Multiple linear regression was subsequently used to examine the simultaneous effects of organizational learning, organizational knowledge, organizational memory, and organizational DNA on organizational effectiveness. The regression model was evaluated using the F statistic, coefficient of determination, adjusted coefficient of determination, unstandardized and standardized regression coefficients, t statistics, and significance values. Multicollinearity was assessed using tolerance and variance inflation factor values. Statistical significance was evaluated at the 0.05 level.

Validity and Reliability:

The reliability and factorial validity of the measurement instrument were assessed using the responses of the final study sample ((N = 350). Internal consistency reliability was evaluated using Cronbach's alpha, while exploratory factor analysis was conducted to examine whether the questionnaire items represented the five theoretically specified constructs: organizational learning, organizational knowledge, organizational memory, organizational DNA, and organizational effectiveness.

The Kaiser–Meyer–Olkin measure and Bartlett's test of sphericity were first used to assess the appropriateness of the correlation matrix for factor analysis. The Kaiser–Meyer–Olkin value was 0.924, exceeding the recommended minimum value of 0.60. Bartlett's test of sphericity was statistically significant, $\chi^2(190) = 3698.143$, $p < .001$, indicating that the correlations among the questionnaire items were sufficiently strong to support factor analysis.

Table 2. Kaiser–Meyer–Olkin and Bartlett's Test Results

Statistical test	Result
Kaiser–Meyer–Olkin measure	0.924
Bartlett's approximate chi-square	3698.143
Degrees of freedom	190
Significance	< .001

The results presented in Table 2 demonstrate that the study data were suitable for exploratory factor analysis. The high Kaiser–Meyer–Olkin value indicated that the common variance among the items was adequate, while the significant Bartlett's test showed that the correlation matrix was not an identity matrix. Therefore, the questionnaire items contained sufficient intercorrelations to proceed with factor extraction.

Principal component analysis with Varimax rotation extracted five components with eigenvalues greater than 1. Together, the five components explained 70.709% of the total variance. The items loaded on their theoretically expected constructs, with principal rotated loadings ranging from 0.693 to 0.836. No item was removed because all principal loadings exceeded the acceptable threshold and the items demonstrated a clear conceptual association with their respective dimensions.

Table 3. Exploratory Factor Analysis and Reliability Results

Construct	Number of items	Rotated loading range	Cronbach's alpha
Organizational Learning	4	0.738–0.791	0.853
Organizational Knowledge	4	0.767–0.836	0.874
Organizational Memory	4	0.747–0.822	0.859
Organizational DNA	4	0.771–0.779	0.844
Organizational Effectiveness	4	0.693–0.764	0.860

Note. Extraction method: Principal Component Analysis. Rotation method: Varimax with Kaiser normalization. Total variance explained by the five components was 70.709%.

As shown in Table 3, all items demonstrated satisfactory rotated factor loadings on their intended constructs. The highest loadings were observed for organizational knowledge, while the lowest principal loading was 0.693 and remained within an acceptable range. Cronbach's alpha values ranged from 0.844 for organizational DNA to 0.874 for organizational knowledge, and all values exceeded the minimum acceptable criterion of 0.70. These findings support the factorial validity and internal consistency reliability of the measurement instrument and indicate that the composite scores were suitable for subsequent regression analysis.

Assessment of Multiple Regression Assumptions:

Before testing the study hypotheses, the assumptions underlying multiple linear regression were examined using IBM SPSS Statistics Version 27. The diagnostic assessment included linearity, normality of residuals, independence of errors, homoscedasticity, multicollinearity, and the presence of influential observations.

Linearity was evaluated through visual inspection of the scatterplot of standardized residuals against standardized predicted values. The residuals were distributed around the horizontal zero line without a pronounced curved or systematic pattern, indicating that the relationships between the predictor variables and organizational effectiveness were sufficiently linear.

The normality of the residuals was assessed using the histogram, the normal probability plot, and the Shapiro–Wilk test. The Shapiro–Wilk result was not statistically significant, $W = 0.994$, $p = 0.152$, indicating that the residuals did not significantly deviate from a normal distribution. The residual distribution also showed acceptable skewness and kurtosis values, supporting the assumption of approximate normality.

The independence of errors was examined using the Durbin–Watson statistic. The obtained value was 2.129, which was sufficiently close to the expected value of 2 and therefore indicated that the residuals were not affected by problematic serial correlation.

Multicollinearity was assessed using tolerance and variance inflation factor values. The tolerance values ranged from 0.676 to 0.755, while the VIF values ranged from 1.325 to 1.478. All tolerance values exceeded 0.10, and all VIF values were substantially below the conservative threshold of 5, confirming that multicollinearity was not a concern in the regression model.

Potentially influential observations were evaluated using Cook's distance. The maximum Cook's distance was 0.040, which was considerably below the commonly applied threshold of 1. This result indicated that no individual observation exerted an excessive influence on the estimated regression coefficients.

Homoscedasticity was examined using the Breusch–Pagan test. The result was statistically significant, $\chi^2(4) = 11.330$, $p = 0.023$, indicating a mild departure from the assumption of constant error variance. To address this issue, heteroscedasticity-consistent HC3 robust standard errors were estimated. The robust analysis produced the same coefficient directions and statistical significance decisions as the original ordinary least-squares analysis. Therefore, the mild heteroscedasticity did not alter the substantive conclusions of the study.

Table 4. Diagnostic Assessment of Multiple Regression Assumptions

Assumption	Diagnostic procedure	Result	Assessment
Linearity	Scatterplot of standardized residuals and predicted values	No pronounced curved or systematic pattern	Supported
Normality of residuals	Shapiro–Wilk test	$W = 0.994$, $p = 0.152$	Supported
Independence of errors	Durbin–Watson statistic	2.129	Supported
Multicollinearity	Tolerance	0.676–0.755	No concern
Multicollinearity	VIF	1.325–1.478	No concern
Influential observations	Maximum Cook's distance	0.040	No influential cases
Homoscedasticity	Breusch–Pagan test	$\chi^2(4) = 11.330$, $p = 0.023$	Mild heteroscedasticity detected
Corrective procedure	HC3 robust standard errors	All predictors remained significant	Conclusions unchanged

Table 4 shows that the assumptions of linearity, normality of residuals, independence of errors, and absence of problematic multicollinearity were satisfactorily met. The Cook's distance values also indicated that the regression results were not driven by influential observations. Although the Breusch–Pagan test identified a mild departure from homoscedasticity, this issue was addressed by estimating HC3 heteroscedasticity-consistent robust standard errors. All organizational immunity dimensions remained statistically significant under the robust analysis. The regression model was therefore considered sufficiently reliable for testing the study hypotheses.

Assessment of Common Method Bias and Non-response Bias:**Common Method Bias:**

Because the predictor and outcome variables were measured using a single self-administered questionnaire completed by the same respondents, common method bias was assessed before hypothesis testing. Harman's single-factor test was initially performed using an unrotated principal component analysis in IBM SPSS Statistics Version 27. All 20 measurement items were entered simultaneously into the analysis, without specifying a predetermined number of factors.

Table 5. Harman's Single-Factor Test Results

Component	Eigenvalue	Variance explained (%)	Cumulative variance (%)
1	8.108	40.542	40.542
2	1.823	9.116	49.658
3	1.607	8.033	57.691
4	1.455	7.276	64.967
5	1.148	5.741	70.709

As shown in Table 5, the unrotated analysis produced five components with eigenvalues greater than 1. The first component explained 40.542% of the total variance, which was below the commonly applied 50% threshold. Moreover, no single component accounted for the majority of the variance in the measurement items. These findings indicate that the covariance among the variables was not dominated by one general factor and provide initial evidence that common method bias was unlikely to represent a serious concern in the present dataset.

As Harman's single-factor test alone may not provide a sufficiently sensitive assessment of common method bias, a full-collinearity VIF analysis was also conducted. Each study construct was entered as a dependent variable in a separate linear regression model, with the remaining constructs entered as predictors. The resulting variance inflation factor values were evaluated against the conservative threshold of 3.3.

Table 6. Full-Collinearity VIF Assessment

Construct	R ² from auxiliary regression	Full-collinearity VIF	Decision
Organizational Learning	0.369	1.586	No serious CMB
Organizational Knowledge	0.373	1.595	No serious CMB
Organizational Memory	0.353	1.546	No serious CMB
Organizational DNA	0.304	1.436	No serious CMB
Organizational Effectiveness	0.494	1.978	No serious CMB

Table 6 shows that the full-collinearity VIF values ranged from 1.436 for organizational DNA to 1.978 for organizational effectiveness. All values were substantially below the threshold of 3.3, indicating that neither pathological multicollinearity nor substantial common method bias was evident. When considered together with Harman's single-factor results, the findings suggest that common method bias was unlikely to materially distort the estimated relationships among the study variables.

Non-response Bias:

Non-response bias was assessed using the early–late respondent comparison approach. Respondents were ordered according to the sequence in which their completed questionnaires were recorded. The first 25% of respondents were classified as early respondents, while the final 25% were classified as late respondents. Accordingly, the analysis compared 88 early respondents with 88 late respondents. Late respondents were treated as a practical proxy for individuals who were initially less likely to participate. Independent-samples t-tests were used to compare the two groups across the five principal study constructs.

Table 7. Comparison of Early and Late Respondents Across the Study Constructs

Construct	Early respondents Mean	Early SD	Late respondents Mean	Late SD	t	df	Sig.
Organizational Learning	3.440	1.108	3.602	1.041	−0.999	174	0.319
Organizational Knowledge	3.469	1.126	3.568	1.169	−0.575	174	0.566
Organizational Memory	3.384	0.988	3.554	1.124	−1.069	174	0.287
Organizational DNA	3.551	1.035	3.571	1.138	−0.121	174	0.904
Organizational Effectiveness	3.403	1.082	3.548	1.145	−0.863	174	0.389

Note. Early respondents: $n = 88$; late respondents: $n = 88$. Equal variances were assumed because Levene's tests were not statistically significant.

The independent-samples t-test results presented in Table 7 revealed no statistically significant differences between early and late respondents across any of the study constructs. The significance values ranged from 0.287 to 0.904 and were therefore all greater than the significance level of 0.05. The mean differences between the two groups were also small. These findings indicate that late respondents did not differ systematically from early respondents in their evaluations of organizational learning, organizational knowledge, organizational memory, organizational DNA, or organizational effectiveness. Therefore, there was no statistical evidence that non-response bias materially affected the principal study variables.

Hypothesis Testing:**Main Hypothesis Test:**

H₀₁: There is no statistically significant effect of organizational immunity, with its combined dimensions (organizational learning, organizational knowledge, organizational memory, and organizational DNA), on organizational effectiveness in Jordanian public universities.

Table 8. Multiple Linear Regression Results Using HC3 Robust Standard Errors

Predictor	B	HC3 robust SE	β	Robust t	Sig.	95% robust CI	Tolerance	VIF
Constant	0.076	0.173	—	0.440	0.660	[-0.264, 0.416]	—	—
Organizational Learning	0.265	0.055	0.249	4.785	< .001	[0.156, 0.374]	0.684	1.463
Organizational Knowledge	0.242	0.052	0.243	4.673	< .001	[0.140, 0.344]	0.676	1.478
Organizational Memory	0.206	0.054	0.201	3.839	< .001	[0.101, 0.312]	0.682	1.465
Organizational DNA	0.248	0.052	0.237	4.776	< .001	[0.146, 0.351]	0.755	1.325

Model statistics: $R = 0.703$; $R^2 = 0.494$; Adjusted $R^2 = 0.489$; $F(4,345) = 84.360$; $p < .001$; Durbin-Watson = 2.129.

The multiple linear regression model was statistically significant, $F(4,345) = 84.360$, $p < .001$. The four dimensions of organizational immunity collectively explained 49.4% of the variance in organizational effectiveness, with an adjusted R^2 of 0.489. Because mild heteroscedasticity was detected, coefficient inference was based on HC3 robust standard errors.

All four dimensions retained positive and statistically significant effects. Organizational learning had the strongest standardized effect ($\beta = 0.249$, $t = 4.785$, $p < .001$), followed by organizational knowledge ($\beta = 0.243$, $t = 4.673$, $p < .001$), organizational DNA ($\beta = 0.237$, $t = 4.776$, $p < .001$), and organizational memory ($\beta = 0.201$, $t = 3.839$, $p < .001$). The VIF values ranged from 1.325 to 1.478, while the tolerance values ranged from 0.676 to 0.755, confirming that multicollinearity did not affect the estimated regression coefficients. Accordingly, the main null hypothesis and its four sub-hypotheses were rejected.

Sub-Hypothesis 1

H₀₁₋₁: There is no statistically significant effect of organizational learning on organizational effectiveness in Jordanian public universities.

Table 9. Sub-Hypothesis 1 Test

Indicator	Value
B	0.265
β	0.249
t	4.785
Sig.	< .001
Decision	Reject the null hypothesis

The results revealed that organizational learning had a positive and statistically significant influence on organizational effectiveness, $B = 0.265$, standardized $\beta = 0.249$, and $t = 4.785$ at $p < .001$. We infer that high levels of organizational learning are related to greater organizational effectiveness after adjustment for the other dimensions in the model. Thus, the null sub-hypothesis was rejected.

Sub-Hypothesis 2

H₀₁₋₂: There is no statistically significant effect of organizational knowledge on organizational effectiveness in Jordanian public universities.

Table 10. Sub-Hypothesis 2 Test

Indicator	Value
B	0.242
β	0.243
t	4.673
Sig.	< .001
Decision	Reject the null hypothesis

Organizational knowledge had a significant positive effect on organizational effectiveness ($B = 0.242$, standardized $\beta = 0.243$) and $t = 4.673$ at $p < .001$. This implies that the ability of the university to generate, share, and apply organizational knowledge significantly increased organizational effectiveness. Therefore, the null sub-hypothesis was rejected.

Sub-Hypothesis 3

H₀₁₋₃: There is no statistically significant effect of organizational memory on organizational effectiveness in Jordanian public universities.

Table 11. Sub-Hypothesis 3 Test

Indicator	Value
B	0.206
β	0.201
t	3.839
Sig.	< .001
Decision	Reject the null hypothesis

The findings showed that organizational memory positively and significantly predicted organizational effectiveness with $B = 0.206$, standardized $\beta = 0.201$, and $t = 3.839$ at $p < .001$. This dimension had the weakest standardized effect of the four; however, it remained a useful predictive component. Hence, the null sub-hypothesis was rejected.

Sub-Hypothesis 4

H₀₁₋₄: There is no statistically significant effect of organizational DNA on organizational effectiveness in Jordanian public universities.

Table12. Sub-Hypothesis 4 Test

Indicator	Value
B	0.248
β	0.237
t	4.776
Sig.	< .001
Decision	Reject the null hypothesis

Results showed that organizational DNA had a positive and statistically significant effect on organizational effectiveness ($B = 0.248$), standardized $\beta = 0.237$, $t = 4.776$ at $p < .001$. This implies that more clarity in organizational structure, information flow, and role configuration was positively related to organizational effectiveness. Hence, the null sub-hypothesis was rejected.

Discussion:

The findings indicate that organizational immunity constitutes an important internal capability through which Jordanian public universities enhance their organizational effectiveness. This relationship should not be interpreted merely as evidence that the four dimensions are statistically associated with performance. Rather, it suggests that universities become more effective when they are able to identify institutional challenges, learn from their experience, mobilize relevant knowledge, preserve useful organizational lessons, and coordinate these capabilities through clear internal structures. From the perspective of Dynamic Capabilities Theory, these dimensions enable universities to sense changes in their environment, respond to emerging demands, and reconfigure their routines and resources when existing practices are no longer sufficient (Teece et al., 1997; Teece, 2007). Organizational effectiveness therefore appears to result not only from the availability of financial, human, or technological resources, but also from the institution's ability to renew and coordinate those resources over time.

This interpretation is particularly relevant to Jordanian public universities, which operate within a context characterized by increasing demands for educational quality, administrative accountability, digital transformation, responsiveness to labor-market needs, and more efficient use of limited institutional resources. These pressures require universities to balance continuity with adaptation. They must preserve stable academic and administrative procedures while also responding to regulatory reforms, technological developments, changing student expectations, and intensified performance evaluation. In such a context, organizational immunity provides a useful explanation of why some universities may respond to institutional pressures more effectively than others. Universities that possess stronger internal learning and knowledge systems are more capable of converting external pressures into planned organizational responses rather than fragmented or reactive administrative decisions. This interpretation is consistent with evidence that institutional effectiveness in Jordanian public universities has remained at a moderate level and that deeper organizational capabilities are needed to support sustainable improvement (Al-Momani & Battah, 2020).

Organizational learning emerged as the most influential dimension, which can be explained by its dynamic role in modifying established routines and improving institutional responses. Learning allows a university to examine the outcomes of previous decisions, recognize recurring administrative or academic problems, and adjust its procedures based on accumulated evidence. In Jordanian public universities, where many decisions are implemented through formal administrative levels, committees, and institutional regulations, effectiveness may depend heavily on whether experience is converted into actual procedural improvement. When universities review previous initiatives, evaluate unsuccessful practices, and circulate lessons across administrative units, they become less likely to repeat ineffective approaches. The importance of organizational learning is therefore not limited to employee development; it lies in its ability to transform individual and departmental experience into institution-wide improvement. This interpretation supports Pedraja-Rejas et al. (2025), who linked organizational learning with innovation and institutional performance, and Pinheiro and Alves (2024), who emphasized that learning within educational institutions gradually reshapes organizational practice.

The significant role of organizational knowledge can be interpreted through the Knowledge-Based View, which regards knowledge as a strategic organizational resource whose value depends on its integration and practical application (Grant, 1996). Public universities possess substantial academic, administrative, technical, and regulatory knowledge, but this knowledge is often distributed across faculties, departments, administrative directorates, and different managerial levels. Consequently, the effectiveness of the university depends not simply on possessing knowledgeable employees, but on whether their expertise is accessible to decision-makers and shared across organizational boundaries. In the Jordanian public university context, stronger knowledge systems may reduce duplication, support consistency in administrative decisions, and improve coordination between academic and administrative units. The finding therefore suggests that organizational knowledge contributes to effectiveness when it is transformed from dispersed individual expertise into an institutionally available resource. This interpretation is consistent with Al-Kurdi et al. (2020) and Quarchioni et al. (2022), who demonstrated that knowledge sharing and knowledge management strengthen coordination, decision-making, and institutional development in higher education.

Organizational DNA also contributed meaningfully to organizational effectiveness because it represents the internal architecture through which learning and knowledge are converted into coordinated action. Universities may possess valuable experience and qualified personnel, yet still fail to achieve their objectives when responsibilities are unclear, information moves slowly, authority is excessively fragmented, or administrative units operate in isolation. Organizational DNA therefore provides the structural and cultural conditions that determine how effectively institutional capabilities are used. In Jordanian public universities, where organizational activities are often conducted through formal hierarchies and multiple administrative levels, clarity in decision rights, communication channels, role expectations, and coordination mechanisms becomes especially important. The result implies that institutional effectiveness improves when employees understand who is responsible for decisions, how information should be communicated, and how different units contribute to common university objectives. This interpretation supports Al-Khasabah (2025), who demonstrated the relevance of organizational DNA to institutional excellence and organizational agility in Jordanian public universities.

Organizational memory had the weakest relative contribution, although it remained an important component of organizational effectiveness. This finding does not imply that accumulated institutional experience is unimportant. Rather, it indicates that stored experience has limited value unless it is retrieved, shared, and incorporated into current decision-making. Public universities generate substantial organizational memory through regulations, committee reports, strategic plans, accreditation processes, previous projects, and the experience of long-serving employees. However, this knowledge may remain passive when it is stored in documents, concentrated among particular individuals, or lost following administrative and leadership changes. The comparatively weaker role of organizational memory may therefore reflect a gap between preserving experience and actively using it. Its contribution to organizational effectiveness is likely to become stronger when universities connect their records and previous lessons with continuous learning, knowledge-sharing systems, and current administrative practices. This interpretation is consistent with Walsh and Ungson's (1991) view that organizational memory supports performance only when retained information can be effectively retrieved and used, as well as with the findings of (Gharib et al., 2025).

The relative order of the four dimensions provides an additional theoretical insight. Organizational learning and knowledge produced stronger contributions than organizational memory, suggesting that organizational effectiveness in public universities depends more heavily on active and continuously renewed capabilities than on the passive possession of previous experience. Organizational DNA occupied an important intermediate position because it determines whether learning and knowledge can be translated into institutional action. The findings therefore suggest that the four dimensions should not be treated as isolated organizational practices. Learning produces and updates knowledge, knowledge informs current decisions, memory preserves accumulated lessons, and organizational DNA coordinates the use of these capabilities. The effectiveness of organizational immunity consequently depends on the interaction among its dimensions rather than on the strength of any single dimension.

These findings extend the literature by demonstrating that organizational immunity can be understood as an integrated dynamic capability rather than merely as a metaphor for organizational protection. Previous studies have often examined learning, knowledge, memory, or organizational DNA separately, or linked organizational immunity with outcomes such as loyalty, innovation, agility, and institutional excellence. The present findings show that these dimensions also provide a coherent explanation of overall organizational effectiveness when examined simultaneously. This supports AlDalaen and Allafy (2021), who identified a relationship between organizational immunity and organizational effectiveness in Jordanian universities, while extending their work by clarifying the relative and complementary contributions of the individual dimensions.

From a practical perspective, the findings suggest that Jordanian public universities should avoid treating organizational improvement as a series of isolated administrative initiatives. Improving effectiveness requires an integrated system in which institutional experience is regularly evaluated, knowledge is shared across units, previous lessons remain accessible, and decision-making structures enable timely and coordinated action. Greater attention should therefore be given to mechanisms such as post-project reviews, institutional knowledge repositories, cross-unit learning forums, succession and handover procedures, and clearer information and authority flows. Such mechanisms would help universities move from reactive problem-solving toward a more systematic ability to anticipate challenges and sustain institutional improvement.

Overall, the findings demonstrate that organizational effectiveness in Jordanian public universities is shaped by the quality of their internal organizational capabilities. Although the empirical results arise from the Jordanian higher education context, the theoretical interpretation may also be relevant to other public and knowledge-intensive institutions operating under reform pressures, resource limitations, and increasing accountability. Nevertheless, the specific institutional and administrative characteristics of Jordanian public universities remain important for understanding why learning, knowledge, internal coordination, and the active use of accumulated experience emerged as central determinants of organizational effectiveness.

Conclusion:

Based on the study findings, it can be concluded that organizational immunity is an organizational factor that is important in explaining organizational effectiveness in Jordanian public universities. The results indicated a favorable and statistically significant influence of organizational immunity and its multiple dimensions on organizational effectiveness. This suggests that a university's capacity to develop an organizational system with learning, knowledge management, institutional retention and clarity of the internal structure is positively related to achieving its aims more efficiently and flexibly.

Theoretically, the present research extends the role of organizational immunity in explaining organizational effectiveness, considering that it can act as a predictor in shaping and enhancing organizational effectiveness. Managerially, university leaders are provided with evidence for the significance of organizational learning, knowledge management, organizational memory, and organizational DNA to enhance organizational effectiveness and sustainable long-term performance.

The findings also revealed that the facets of organizational immunity differ in the strength of their respective effects on organizational effectiveness. Organizational learning was identified as the strongest factor, indicating that the university's ability to learn continually from experience, conduct reviews of its processes, and improve the institutional responses is the key factor in institutional performance. Thus, in universities, organizational effectiveness is related not only to the presence of resources or processes but also to the existence of active and continuous learning processes in the organization.

The findings further confirm that the research results show that organizational knowledge has a positive and statistically significant effect on organizational effectiveness; organizational knowledge sharing and the use of knowledge in decision-making improve organizational quality and coordination and thus are related to performance. That is, a university whose institutional knowledge can be better managed is empowered to tackle issues and effectively direct human and organizational resources to meet goals.

The study also concludes that organizational DNA is one of the dimensions that have a positive and significant impact on organizational effectiveness, demonstrating the significance of a clear organizational structure, roles, authority, and communication patterns in increasing university effectiveness. This finding verifies that the internal architecture of the institution does not consist merely of an administrative setup but rather a governing framework through which knowledge, experience, and learning are turned into observable institutional performance.

Similarly, the findings showed that organizational memory had a positive and statistically significant impact on organizational effectiveness, but its relative effect was lower than that of the other dimensions. This suggests the important role of prior experiences and learned lessons in nurturing institutional performance for long-term gains, although the importance and positive contribution of prior knowledge would be further enhanced when it is associated with continuous learning and knowledge sharing rather than with passively stored experience.

As a whole, these findings offer an important general conclusion: organizational effectiveness in Jordanian public universities is not shaped by a single dimension but from the combination of the dimensions of organizational immunity (as a multidimensional organizational capability). In other words, attempts to enhance organizational effectiveness should no longer rely on superficial or merely formal administrative interventions but on a more integrated organizational environment that learns, creates knowledge, preserves experience, and functions on a structured and transparent internal foundation.

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