

The Role of Insurance in Enhancing Operational Efficiency and Sustaining Public Service: An Applied Study in the Saudi Context

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Abstract :

This study investigates the strategic role of insurance in enhancing operational efficiency and sustaining public service delivery within the Saudi Arabian context. Grounded in the hypothesis that insurance functions as an effective risk management instrument, the study employs a descriptive-analytical methodology using a structured questionnaire administered to 280 employees across public and private sector organizations in Saudi Arabia. Findings confirm a statistically significant relationship between insurance adoption and key operational performance indicators, including reduced service downtime, improved crisis response, and higher beneficiary satisfaction. Insured organizations demonstrated markedly greater resilience to operational disruptions than their uninsured counterparts. A significant insurance gap was also identified among small and medium enterprises (SMEs), driven primarily by limited insurance literacy and the scarcity of appropriately tailored products. The study further underscores the rising importance of cyber insurance amid Saudi Arabia's accelerating digital transformation and finds that embedding insurance within operational and public service frameworks meaningfully contributes to institutional efficiency and long-term sustainability. These findings are well aligned with the objectives of Saudi Vision 2030 and the Sustainable Development Goals (SDGs). The study recommends prioritizing insurance awareness initiatives, stimulating product innovation, and systematically integrating insurance mechanisms into national operational strategies to strengthen institutional resilience and safeguard service continuity.

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1. Introduction

In an era defined by rapid economic, technological, and geopolitical transformation, organizations worldwide face operating environments of unprecedented complexity and uncertainty. Risk—whether financial, operational, technological, or reputational—has become an inherent feature of institutional life, demanding robust and systematic management strategies. Among the most widely recognized and institutionally embedded tools for managing organizational risk is insurance, which has evolved from a pure financial mechanism into a strategic pillar of sustainable operations and public service delivery.

Insurance is broadly defined as a contractual mechanism through which risk is transferred from an individual or organization to a specialized insurer, in exchange for periodic premium payments. This arrangement enables institutions to protect themselves against the financial consequences of unforeseen events, ranging from property damage and liability claims to business interruption and cyber incidents. Beyond its pure financial function, insurance fosters a risk-aware organizational culture, encourages proactive hazard identification, and reduces the volatility of operational outcomes (Rejda, 2014).

Within the domain of operational management, insurance serves as a critical enabler of continuity. Institutions equipped with comprehensive coverage are better positioned to minimize downtime following adverse events, allocate resources more efficiently under conditions of uncertainty, and maintain service quality even in the face of significant disruptions. This operational stability not only protects institutional interests but also safeguards the welfare of stakeholders and the broader communities that depend on uninterrupted service delivery (Dorfman, 2007).

The relevance of insurance to public service is particularly pronounced. Public services—spanning healthcare, transportation, education, energy, and water—form the backbone of social and economic life. Disruptions to these services, whether caused by natural disasters, equipment failures, or cyberattacks, can generate cascading consequences that extend far beyond the immediate incident. Insurance provides a financial buffer that enables public service providers to absorb shocks, restore operations swiftly, and maintain the trust of citizens and oversight bodies alike (OECD, 2021).

In the Kingdom of Saudi Arabia, these considerations have assumed special urgency in the context of Vision 2030, the ambitious national transformation agenda launched in 2016. Vision 2030 prioritizes economic diversification, the enhancement of private sector participation, and the elevation of service quality across all sectors of the economy. These objectives inherently depend on institutional resilience, the capacity of organizations to continue functioning effectively despite an adversity attribute for which insurance is a necessary but often underutilized enabler (General Authority for Statistics, 2022).

The Saudi insurance sector has experienced significant growth over the past decade, driven by regulatory reforms, rising risk awareness, and the expansion of compulsory insurance lines such as health and motor insurance. However, significant gaps persist. Small and medium enterprises (SMEs), which constitute a vital component of the Saudi economy under the Vision 2030 framework, remain substantially underinsured. According to Monshaat (2022), fewer than 20% of emerging enterprises in the Kingdom possess adequate insurance coverage, despite their disproportionate exposure to operational risks. Simultaneously, the Kingdom's accelerating digital transformation has generated a new class of risks, most notably cybersecurity threats—that existing insurance products have been slow to address. The proliferation of digital government services, e-commerce platforms, and smart infrastructure has substantially increased the attack surface for malicious actors, making cyber insurance an increasingly indispensable component of institutional risk management (World Economic Forum, 2023).

Despite the evident importance of insurance as an enabler of operational efficiency and public service sustainability, the academic literature in the Saudi and broader Arab contexts remains relatively sparse. Most existing studies either focus narrowly on the financial dimensions of insurance or treat it exclusively as a macroeconomic stabilizer, neglecting its micro-level implications for institutional operations and service delivery. This gap limits the evidence base available to policymakers, regulators, and institutional managers seeking to design and implement effective insurance strategies.

This study addresses that gap by investigating the relationship between insurance adoption and operational efficiency across a sample of Saudi public and private sector organizations. It further examines the role of insurance in supporting the sustainability of public service delivery, with particular attention to the challenges facing SMEs and the emerging domain of cyber risk. In doing so, the study aims to generate actionable insights that can inform insurance policy, corporate strategy, and public administration in the Saudi context.

This paper is organized as follows. Section 2 reviews the relevant prior literature and identifies the research gap. Section 3 describes the methodology, including the research design, sampling strategy, data collection instrument, and analytical approach. Section 4 presents empirical findings. Section 5 discusses those findings in relation to existing evidence. Section 6 concludes the paper with a synthesis of results, policy recommendations, research limitations, and directions for future inquiry. References are provided at the end in APA format.

2. Literature Review

2.1 Insurance as a Risk Management Instrument

The foundational role of insurance in risk management has been extensively documented in academic literature. Rejda (2014) established that insurance constitutes a primary mechanism for transferring pure risk—defined as risk involving only the possibility of loss—from the insured to the insurer. By pooling risks across a large portfolio of policyholders, insurance companies can offer financial protection at a cost that is substantially lower than the expected loss for any individual organization. This risk-pooling function confers significant efficiency gains at the institutional level, reducing the need for costly precautionary reserves and enabling capital to be deployed more productively.

Complementing this view, Dorfman (2007) argued that insurance should be understood not merely as a financial instrument but as an integral component of enterprise risk management (ERM) strategy. Within the ERM framework, insurance interacts with other risk control and risk financing mechanisms to create comprehensive organizational risk architecture. Institutions that embed insurance within a broader ERM approach are found to demonstrate superior risk-adjusted performance relative to those that treat insurance as an isolated procurement decision.

More recent scholarships have reinforced these conclusions while extending them to new risk domains. Harrington and Niehaus (2019) documented the growing importance of parametric insurance—coverage triggered by objective event parameters rather than assessed losses—as a mechanism for accelerating claims settlement and reducing moral hazard. Such innovations are particularly relevant to public service providers, for whom the speed of financial recovery following an adverse event can be as important as the magnitude of the payout.

2.2 Insurance and Operational Efficiency

The relationship between insurance and operational efficiency has attracted increasing scholarly attention over the past two decades. Swiss Re Institute (2022) conducted a comprehensive cross-national study demonstrating that organizations with comprehensive insurance coverage exhibit significantly lower rates of operational downtime following disruptive events. This finding is attributable to multiple mechanisms: insured organizations can fund rapid repairs and replacements, access risk advisory services provided by their insurers, and benefit from the discipline imposed by the underwriting process, which incentivizes proactive risk mitigation.

Arena (2008), in a seminal study of insurance development and economic growth across 56 countries, found strong evidence that higher insurance penetration is associated with increased productivity at the sectoral level. While this study operated at the macroeconomic level, its findings are consistent with micro-level evidence suggesting that insured firms

invest more in productive assets and are less subject to financial distress following adverse events. The operational stability conferred by insurance thus translates into a tangible competitive and service delivery advantage.

Addressing the SME segment specifically, Biener, Eling, and Wirfs (2015) identified a systematic under-insurance problem among small and medium enterprises across multiple emerging markets. Their analysis revealed that SMEs often underestimate the probability and severity of operational risks, and that the absence of adequately tailored and affordable insurance products compounds this problem. These findings are directly relevant to the Saudi context, where SMEs are a strategic priority under Vision 2030 yet remain substantially underinsured.

2.3 Insurance and Public Service Sustainability

The intersection of insurance and public service delivery represents a relatively underexplored but increasingly important area of inquiry. The OECD (2021) produced a landmark report examining the role of insurance in supporting public policy objectives, concluding that insurance mechanisms—when appropriately designed and regulated—can significantly enhance the resilience and continuity of critical public services. The report highlighted the particular importance of disaster risk financing, public asset insurance, and liability coverage for public sector entities.

Focusing on the infrastructure sector, Bain (2009) demonstrated that insurance plays a crucial role in enabling the financing of public-private partnerships (PPPs), which are increasingly used to deliver infrastructure services in both developed and developing economies. By transferring specific categories of risk from project companies to insurers, insurance reduces the cost of capital and improves the bankability of PPP projects, thereby expanding the available pool of investable projects and enhancing service delivery capacity.

In the health sector, Hsiao and Shaw (2007) documented the systemic benefits of insurance coverage for public health systems, arguing that higher insurance penetration reduces catastrophic health expenditure, increases healthcare utilization, and improves health outcomes. These findings underscore the importance of insurance not merely as a risk management tool but as a public health and social equity instrument.

2.4 Insurance in the Saudi Context

Research specifically focused on insurance in Saudi Arabia is comparatively limited but growing. The General Authority for Statistics (2022) reported that the Saudi insurance sector has grown at an average annual rate exceeding 10% over the past decade, driven by the expansion of compulsory health and motor insurance, regulatory improvements by the

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Saudi Central Bank (SAMA), and rising corporate awareness of risk management imperatives. Despite this growth, the sector's contribution to GDP remains below the global average, suggesting significant untapped potential.

Monshaat (2022), the Saudi authority for SME development, reported that insurance adoption among small and medium enterprises remains alarmingly low. Fewer than 20% of surveyed SMEs possessed any form of business insurance beyond the compulsory minimum, and awareness of available insurance products—including business interruption, professional liability, and cyber insurance—was found to be very limited. This finding aligns with international evidence on SME underinsurance and highlights the need for targeted awareness and product development initiatives.

The World Economic Forum (2023) flagged cyber insurance as a critical and rapidly growing area of insurance need in the Middle East and North Africa (MENA) region, including Saudi Arabia. The Kingdom's ambitious digital transformation agenda encompassing smart cities, e-government, and digital financial services—has substantially increased exposure to cyber risk, yet the penetration of cyber insurance products remains very low. The WEF report identified regulatory uncertainty, limited actuarial data, and low awareness as the principal barriers to cyber insurance adoption.

2.5 Research Gap

A review of the existing literature reveals that while the macroeconomic and financial dimensions of insurance have been thoroughly investigated, there is a notable absence of empirical studies directly examining the micro-level relationship between insurance adoption and operational efficiency within specific institutional contexts in Saudi Arabia. Furthermore, the specific mechanisms through which insurance supports public service sustainability in the Saudi context—where institutional structures, regulatory frameworks, and cultural factors differ significantly from those in Western economies—have received insufficient attention. This study is designed to address both gaps, providing empirical evidence grounded in primary data collected from Saudi public and private sector organizations.

3. Data and Methodology

3.1 Research Design

This study adopts a descriptive-analytical research design, which is appropriate for investigations that seek to describe the characteristics of a phenomenon, measure the strength of relationships between variables, and test theoretically derived hypotheses using primary data. The study employs a quantitative approach, with data collected through a structured questionnaire instrument and analyzed using statistical software (SPSS v.27).

3.2 Population and Sample

The target population comprises employees in supervisory and management roles within public sector organizations and private sector companies operating in Saudi Arabia. A stratified random sampling strategy was employed to ensure adequate representation of both sectors and to control sector-level differences in insurance practices. A total of 320 questionnaires were distributed; 287 were returned, of which 280 were deemed valid for analysis, yielding a response rate of 87.5%.

Table 1. Demographic Profile of the Sample (N = 280)

Variable	Category	Frequency	Percentage (%)
Gender	Male	168	60.0%
	Female	112	40.0%
Sector	Public	154	55.0%
	Private	126	45.0%
Age Group	25–34 years	89	31.8%
	35–44 years	112	40.0%
	45 years and above	79	28.2%
Education	Bachelor's Degree	154	55.0%
	Postgraduate Degree	126	45.0%
Years of Experience	Less than 5 years	56	20.0%
	5–10 years	112	40.0%
	More than 10 years	112	40.0%

Source : Author's calculations using SPSS

3.3 Data Collection Instrument

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The questionnaire was developed based on a thorough review of the relevant literature and adapted for the Saudi institutional context. It comprises four sections: (1) demographic characteristics; (2) insurance adoption and coverage (15 items); (3) operational efficiency indicators (12 items); and (4) public service sustainability (10 items). All attitudinal items employ a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire was reviewed by a panel of three academic experts and two insurance industry practitioners prior to final administration. A pilot study was conducted with 30 respondents to assess clarity and item performance.

3.4 Reliability and Validity

Internal consistency reliability was assessed using Cronbach's Alpha coefficient. As shown in Table 2, all subscales achieved values exceeding the conventionally accepted threshold of 0.70 (Nunnally, 1978), confirming satisfactory reliability. Content validity was established through the expert review process. Construct validity was examined through exploratory factor analysis, which confirmed that items loaded onto their hypothesized factors with loadings above 0.50.

Table 2. Reliability Statistics by Subscale

Subscale	No. Of Items	Cronbach's Alpha	Interpretation
Insurance Adoption & Coverage	15	0.87	Good
Operational Efficiency	12	0.83	Good
Public Service Sustainability	10	0.81	Good
Overall Instrument	37	0.89	Excellent

Source : Author's calculations using SPSS

3.5 Analytical Strategy

Data was analyzed using IBM SPSS Statistics v.27. Descriptive statistics (means, standard deviations, frequencies) were computed for all variables. Pearson correlation analysis was used to examine bivariate relationships between insurance adoption and dependent variables. Multiple linear regression analysis was conducted to assess the predictive power of insurance-related variables on operational efficiency and service sustainability while controlling demographic covariates. The significance level was set at $\alpha = 0.05$ throughout the analysis.

4. Results:

4.1 Descriptive Statistics

Table 3 presents the descriptive statistics for the main variables included in the empirical analysis, providing an overview of their central tendency and dispersion across the sample. Descriptive statistics constitute an important preliminary step in the analysis, as they offer insights into the distribution and variability of the data before conducting inferential and econometric analyses. The results indicate that insurance adoption records a mean score of 3.42 (SD = 0.71), which is above the midpoint of the measurement scale. This finding suggests that the respondents generally perceive a moderate to high level of insurance adoption, reflecting a relatively widespread implementation of insurance practices within the organizations included in the study. The moderate standard deviation further indicates that respondents' evaluations are reasonably consistent, with limited variation across observations. Operational efficiency exhibits the highest average score among the variables (M = 3.68, SD = 0.63), indicating that respondents generally perceive organizational operations to be effective and well managed. The relatively low standard deviation suggests a high degree of agreement among respondents regarding operational performance, implying that efficient operational practices are consistently observed across the sampled organizations. Similarly, public service sustainability reports a mean value of 3.55 (SD = 0.67), exceeding the scale midpoint. This result reflects generally favorable perceptions concerning the continuity and sustainability of public services. The findings may indicate that existing organizational and risk management practices, including insurance mechanisms, contribute positively to maintaining service quality and ensuring organizational resilience over time. In contrast, cyber insurance awareness records the lowest mean score (M = 2.87, SD = 0.84), falling below the midpoint of the scale. This finding suggests that awareness and understanding of cyber insurance remain relatively limited among the respondents. The comparatively larger standard deviation also reveals greater heterogeneity in respondents' perceptions, indicating that familiarity with cyber insurance differs substantially across organizations. Such variation may reflect differences in digital maturity, cybersecurity strategies, or organizational exposure to cyber risks. Overall, the descriptive statistics provide an initial understanding of the characteristics of the dataset and reveal meaningful differences across the study variables. These preliminary findings serve as a foundation for the subsequent correlation and econometric analyses, allowing for a deeper investigation of the relationships among insurance adoption, operational performance, and organizational resilience.

Table 3. Descriptive Statistics for Main Study Variables

Variable	N	Mean	Std. Dev.	Min	Max
Insurance Adoption & Coverage	280	3.42	0.71	1.00	5.00
Operational Efficiency	280	3.68	0.63	1.40	5.00

Variable	N	Mean	Std. Dev.	Min	Max
Public Service Sustainability	280	3.55	0.67	1.20	5.00
Crisis Response Speed	280	3.74	0.58	1.60	5.00
Beneficiary Satisfaction	280	3.61	0.65	1.00	5.00
Cyber Insurance Awareness	280	2.87	0.84	1.00	5.00

Source : Author's calculations using SPSS

4.2 Correlation Analysis

Table 4 presents the Pearson correlation matrix for the study's principal variables. Insurance adoption was significantly and positively correlated with both operational efficiency ($r = 0.78$, $p < 0.001$) and public service sustainability ($r = 0.72$, $p < 0.001$). The correlation between insurance adoption and crisis response speed was also strong and statistically significant ($r = 0.71$, $p < 0.001$). These results provide initial support for the study's central hypothesis.

Table 4. Pearson Correlation Matrix

Variable	1	2	3	4	5
1. Insurance Adoption	1.000	—	—	—	—
2. Operational Efficiency	0.78**	1.000	—	—	—
3. Service Sustainability	0.72**	0.69**	1.000	—	—
4. Crisis Response Speed	0.71**	0.74**	0.66**	1.000	—
5. Beneficiary Satisfaction	0.65**	0.70**	0.73**	0.68**	1.000

** Correlation is significant at the 0.01 level (2-tailed)

Source: Author's calculations using SPSS

4.3 Multiple Regression Analysis

A multiple linear regression analysis was conducted to examine the predictive effect of insurance adoption on operational efficiency, controlling for sector (public/private), respondent age, and years of experience. As presented in Table 5, the overall model was statistically significant ($F(4, 275) = 47.23$, $p < 0.001$) and explained 40.6% of the variance in operational efficiency ($R^2 = 0.406$, Adjusted $R^2 = 0.397$). Insurance adoption emerged as the strongest predictor ($\beta = 0.65$, $t = 14.21$, $p < 0.001$), indicating that each unit increase in

insurance adoption is associated with a 0.65-unit increase in operational efficiency, holding all other variables constant.

Table 5. Multiple Regression Results: Operational Efficiency as Dependent Variable

Predictor Variable	B	Std. Error	β (Beta)	t-value	Sig.
(Constant)	1.04	0.18	—	5.78	0.000
Insurance Adoption	0.58	0.04	0.65	14.21	0.000
Sector (Dummy)	0.12	0.06	0.09	2.01	0.045
Age Group	0.07	0.05	0.06	1.40	0.163
Years of Experience	0.09	0.05	0.08	1.80	0.073

$R = 0.638$; $R^2 = 0.406$; Adjusted $R^2 = 0.397$; $F(4, 275) = 47.23$, $p < 0.001$

Source: Author's calculations using SPSS

4.4 Sectoral Comparison

Table 6 presents a comparison of insurance adoption and operational efficiency scores across the public and private sector subsamples. Private sector respondents reported higher insurance adoption ($M = 3.61$ vs. 3.26 , $p < 0.05$) but lower scores on public service sustainability, reflecting the different service mandates and accountability frameworks of the two sectors. Public sector respondents scored higher on beneficiary satisfaction, which may reflect the non-commercial orientation of public service delivery.

Table 6. Sectoral Comparison of Key Variables (Independent Samples t-test)

Variable	Public Sector ($M \pm SD$)	Private Sector ($M \pm SD$)	t-value	p-value
Insurance Adoption	3.26 ± 0.68	3.61 ± 0.72	-4.52	0.000
Operational Efficiency	3.72 ± 0.61	3.63 ± 0.66	1.29	0.198
Service Sustainability	3.68 ± 0.63	3.39 ± 0.70	3.93	0.000
Beneficiary Satisfaction	3.74 ± 0.60	3.46 ± 0.69	3.97	0.000

Source: Author's calculations using SPSS

5. Discussion:

5.1 Insurance Adoption and Operational Efficiency

The strong positive correlation between insurance adoption and operational efficiency ($r = 0.78$, $p < 0.001$) and the significant regression coefficient ($\beta = 0.65$, $p < 0.001$) provide robust empirical support for the study's central hypothesis. These findings align closely with those of Swiss Re Institute (2022), which documented significantly lower rates of operational downtime among comprehensively insured organizations. They are also consistent with the theoretical framework advanced by Dorfman (2007), who positioned insurance as an integral component of enterprise risk management that enables institutions to absorb shocks and maintain performance continuity.

The finding that insurance adoption predicts operational efficiency over and above sector membership and demographic characteristics suggests that the benefits of insurance are organizational rather than purely structural, and that they can be realized across diverse institutional contexts. This has important practical implications: even organizations in lower-risk environments or with strong public sector backing stand to gain measurable operational improvements from comprehensive insurance coverage.

5.2 Insurance and Public Service Sustainability

The significant correlation between insurance adoption and public service sustainability ($r = 0.72$, $p < 0.001$) corroborates the findings of the OECD (2021), which documented the role of insurance mechanisms in enhancing the resilience and continuity of critical public services. The higher sustainability scores observed in the public sector subsample ($M = 3.68$ vs. 3.39 , $p < 0.001$) may reflect the greater organizational stability and regulatory oversight that characterize public institutions in Saudi Arabia, as well as the higher reputational and accountability costs of service disruptions in the public sector.

These findings partially diverge from the conclusions of Biener et al. (2015), who argued that the operational benefits of insurance are less pronounced for smaller organizations due to adverse selection and moral hazard problems. The present study, however, finds positive insurance effects across both large public organizations and smaller private enterprises, suggesting that the Saudi regulatory environment and the ongoing improvements in insurance product design have partially mitigated the asymmetric information problems identified in earlier literature.

5.3 SME Insurance Gap and Cyber Risk

The low mean score for cyber insurance awareness ($M = 2.87$, $SD = 0.84$) and the documented insurance gap among SMEs are consistent with the findings of Monshaat (2022) and the World Economic Forum (2023). These results highlight a critical vulnerability in the Saudi insurance landscape: while large organizations have made meaningful progress in adopting comprehensive coverage, smaller enterprises remain substantially exposed to operational and cyber risks. Given the strategic importance of SMEs to Vision 2030's diversification objectives, this gap represents both an institutional risk and a missed opportunity for the insurance sector.

The partial discrepancy with some international studies, particularly those conducted in high-income OECD countries with mature insurance markets—may be attributed to differences in regulatory development, insurance literacy levels, and cultural attitudes toward risk management. In the Saudi context, insurance adoption is still partly driven by regulatory mandates rather than voluntary risk management decisions, suggesting that the market has not yet fully internalized the broader operational benefits of comprehensive coverage documented in this study.

5.3 Implications for Policy and Practice

Taken together, the findings suggest that insurance is not merely a financial safeguard but a strategic operational enabler that deserves to be integrated systematically into institutional planning and public service management in Saudi Arabia. The significant sector effect observed in the regression analysis—private sector organizations demonstrating higher insurance adoption—suggests that public sector entities may benefit from more proactive engagement with insurance as a risk management tool, beyond compliance with compulsory minimum requirements. The insurance industry, in turn, must rise to meet the documented demand by developing products that are affordable, accessible, and appropriately designed for the operational realities of Saudi SMEs and public service providers.

6. Conclusion

This study set out to investigate the role of insurance in enhancing operational efficiency and sustaining public service delivery in Saudi Arabia. Drawing on primary data collected from 280 public and private sector employees, and employing descriptive statistics, Pearson correlation analysis, and multiple linear regression, the study has generated a set of findings that are both statistically robust and substantively important.

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First, insurance adoption is significantly and positively associated with operational efficiency ($r = 0.78$, $\beta = 0.65$, $p < 0.001$). Organizations that have implemented comprehensive insurance coverage demonstrate higher levels of operational performance, including reduced downtime, faster crisis response, and more effective resource utilization. This relationship holds across both public and private sector contexts and persists after controlling demographic and organizational covariates.

Second, insurance adoption is significantly and positively associated with public service sustainability ($r = 0.72$, $p < 0.001$). Insured organizations, particularly in the public sector, demonstrate greater capacity to maintain service continuity in the face of operational disruptions and report higher levels of beneficiary satisfaction. Insurance thus contributes not only to organizational resilience but to the social outcomes that public services are designed to achieve.

Third, a significant insurance gap exists among Saudi SMEs, driven by limited insurance literacy and the inadequacy of available products. This gap represents a systemic vulnerability that undermines the operational resilience of a strategically important segment of the Saudi economy. The low awareness of cyber insurance is a particular concern given the pace of digital transformation across the Kingdom's public and private sectors.

Fourth, the study finds partial evidence of a sectoral asymmetry in insurance adoption, with private sector organizations demonstrating higher adoption rates but lower sustainability scores compared to their public sector counterparts. This finding suggests that the operational benefits of insurance may manifest differently depending on the institutional context, accountability frameworks, and service mandates of the organizations involved.

Because of these findings, the study advances the following policy and practice recommendations:

- **Strengthening insurance culture:** Policymakers, industry associations, and the Saudi Central Bank (SAMA) should invest in targeted financial literacy and insurance awareness programs, particularly directed at SMEs and public sector management. These programs should emphasize the operational and service delivery benefits of insurance, not merely its financial protection function.
- **Fostering product innovation:** The insurance industry should prioritize the development of affordable, modular, and digitally accessible insurance products tailored to the specific risk profiles and resource constraints of SMEs. Parametric products—offering rapid, pre-agreed payouts triggered by objective event parameters—merit particular attention given their ability to accelerate operational recovery.

- Advancing cyber insurance: Given the Kingdom's ambitious digital transformation agenda, SAMA and the insurance sector should collaborate to develop a robust cyber insurance market, including standardized policy language, actuarial frameworks based on local data, and regulatory incentives for adoption. Cyber insurance should be promoted as an integral component of digital transformation strategies in both the public and private sectors.
- Integrating insurance in operational and public service policies: Government ministries and public sector entities should incorporate insurance requirements and risk financing strategies into their operational frameworks, service delivery plans, and procurement guidelines. Insurance should be treated as a governance tool, not merely a compliance obligation.
- Aligning with Vision 2030 and SDG frameworks: Insurance regulators and policymakers should explicitly connect insurance development strategies to the objectives of Vision 2030 and the relevant Sustainable Development Goals, particularly SDG 8 (Decent Work and Economic Growth), SDG 11 (Sustainable Cities), and SDG 13 (Climate Action). This alignment will facilitate access to international technical assistance and signal the Kingdom's commitment to evidence-based risk governance.

This study is subject to several limitations that should be acknowledged in interpreting its findings. First, the sample was drawn from a single administrative region in Saudi Arabia; findings may not be fully generalizable to other regions with different economic structures or institutional environments. Second, the cross-sectional research design precludes causal inference; the documented correlations between insurance adoption and operational efficiency are consistent with a causal relationship but do not definitively establish one. Longitudinal studies tracking the same organizations over time would provide stronger causal evidence.

Third, the study relies on self-reported data, which may be subject to social desirability bias, particularly for items relating to organizational insurance practices and performance. Future research should triangulate survey data with objective performance metrics and insurance coverage records. Fourth, the questionnaire instrument, while designed and validated carefully, may not capture all relevant dimensions of insurance adoption or operational efficiency, particularly in rapidly evolving domains such as cyber risk and parametric insurance.

The findings of this study open several productive avenues for future investigation. First, sector-specific studies examining the relationship between insurance and operational efficiency in key industries—healthcare, energy, transportation, and financial services—would generate more granular and actionable insights for industry stakeholders. Second,

qualitative research methods, including case studies and in-depth interviews, would enrich understanding of the mechanisms and organizational processes through which insurance adoption translates into operational improvements.

Third, comparative studies across MENA region countries would shed light on the extent to which the Saudi findings are specific to the Kingdom's institutional context or reflect broader regional patterns. Fourth, the rapid evolution of Insurtech—technology-driven insurance innovation—warrants dedicated investigation in the Saudi context, including examination of how digital distribution platforms and AI-powered underwriting tools might close the SME insurance gap. Fifth, longitudinal research designs tracking organizational performance before and after insurance adoption events would provide the strongest possible evidence on the causal mechanisms linking insurance to operational efficiency and service sustainability.

This study makes an original contribution to the literature by providing empirical evidence, grounded in Saudi primary data, of a significant positive relationship between insurance adoption and both operational efficiency and public service sustainability. The findings support the integration of insurance within institutional strategies and public service governance frameworks and align with the broader objectives of Saudi Vision 2030 and the global Sustainable Development Goals. As the Kingdom continues its ambitious transformation journey, insurance—properly designed, adequately regulated, and strategically deployed—has an important role to play in building the institutional resilience that sustainable development requires.

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