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The moderating role of perceived environmental uncertainty in the impact of corporate governance on strategy implementation: An agency theory perspective

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A B S T R A C T

Article history:
Received January 9, 2024
Received in revised format
February 18, 2024
Accepted March 26 2024
Available online
March 26 2024

Keywords:
Agency theory
Governance
Environmental unpredictability
Strategic management

The study delves into how governance, environmental unpredictability and strategic management intersect, with agency theory offering a framework to comprehend this connection. It is evident how the structure of governance can influence the actions of managers and the results of organizations, amidst evolving conditions. Descriptive analytical approaches were used, and utilized an electronic questionnaire, as the main tool for gathering data. It involved 254 individuals randomly selected from Information and Communication Technology companies in Amman, Jordan including both managers and non-managers. Various statistical techniques, such as inferential methods using SPSS version 26 for Windows were employed to explore research questions and test hypotheses. The study discovered that the perceived uncertainty in the environment plays a role in influencing how corporate governance affects strategy implementation, in information technology firms. The findings suggest. Studying the environment to better grasp and respond to uncertainties. Additionally, it is advised to tailor governance practices and strategies to manage risks and obstacles resulting from shifts.

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1. Introduction

The combination of effective corporate governance and efficient strategy implementation in the swirling winds of uncertainty is critical to success, while perceived environmental uncertainty provides insight into the transformative power of corporate governance and strategic management. The implementation phase stands out as an important component of strategic management, where established strategies translate into concrete actions and outcomes (Hitt et al., 2020). Given the dynamism and uncertainty nature of the industry, this framework is especially important for information and communication companies in Jordan. Effective strategy implementation requires a variety of interventions (Tawse & Tabesh, 2021). In determination to the value of the product there will be a rise in the range and the development of management skills, organizational culture, clear communication, communication and effective use of resources to narrow the gap between the created level of the organization and what on the self-interface (Marei et al., 2024; Lopez-Torres et al., 2023). The aim is to implement strategies effectively and efficiently, with organizational structures, policies and procedures aligned with policy objectives but with the challenges of the uncertainty front of encounter intensifies (Ivančić et al., 2017.). Information and communication companies operate in an environment of constant evolution, characterized by rapid technological advances, changing customer preferences, and increased competition (Taherdoost, 2022). Such uncertainties can hinder strategy implementation and hinder desired outcomes. To overcome these challenges, companies need to adopt proactive strategies for the implementation phase. This includes continuously monitoring and assessing the external environment, identifying emerging trends and opportunities, and adapting strategies and policies to implement them accordingly (Gogić, 2022).

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ISSN 2291-6830 (Online) - ISSN 2291-6822 (Print)
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doi: 10.5267/j.uscm.2024.3.022

Corporate governance practices are emerging as key drivers of successful strategy implementation. Well-managed organizations establish explicit governance practices in the decision-making process and implement robust monitoring and control mechanisms (Birca & Lazari, 2021; Huising & Silbey, 2021). In the business world corporate governance involves the rules and methods, for management and functioning outlining the connections, among the board senior executives and stakeholders (Wheelen & Hunger 2023). It is perceived as a framework of systems, duties, customs, and norms that guarantee the realization of company objectives (Nasereddin & Nasereddin 2019). Good corporate governance provides an optimal environment for effective policy implementation by aligning the actions of the board, employees, and employees with policy objectives if (Ali et al., 2022). The challenge of perceived uncertainty, which refers to organizations' struggle to accurately predict the outcomes of their actions presents a hurdle (García Pérez & Yanes Estévez 2022). This difficulty is often linked with risk making strategic decision-making complex as it involves bridging the gap between information and what is needed for success (Golman et al., 2021). This predicament becomes more pronounced as the environment becomes increasingly dynamic and intricate, encompassing shifts, in technology, consumer preferences, market conditions and competition levels (Mansour et al., 2023A; Nordin & Ravald 2023).

To clarify how corporate governance directs and influences organizational responses to perceived environmental uncertainty, the research presents a variety of theoretical stances, such as agency theory and stewardship theory. Corporate governance and strategy implementation are critical to the success of Jordan's information and communication companies. The impact of corporate governance (transparency, accountability, participative governance, and board composition) on strategy implementation (programs and budget) is influenced by perceived environmental uncertainties. The research endeavors to foresee the moderating role of perceived environmental uncertainty, including level of competition, rate of technological change, and market volatility. However, the role that perceived environmental uncertainties play in this connection is not widely acknowledged. Gained insights could help enterprises create and execute more successful plans, which would support the expansion of these companies.

2. Literature Review

Taking an agency theory perspective, the research aims to uncover how governance practices can either ease or worsen conflicts of interest when carrying out strategies and plans. Additionally extant management literature suggests that the link between governance and perceived uncertainty in the environment is intricate and influenced by factors. Sudaryati and Reyry (2020) noted that governance helps reduce the impact of uncertainties on company performance. Similarly, several research papers (Igamba & Karanja 2018; Kobuthi et al., 2018) highlighted a connection between governance and successful strategy implementation. The strong correlation between governance and organizational strategy underscores the effectiveness of strategies implemented by companies. Likewise, Muthomi (2018) found that strategy implementation is notably affected by uncertainties in the environment.

2.1 Strategy Implementation

Implementing strategy is an aspect of management where plans are turned into practical actions playing a key role in reaching organizational goals (Tawse & Tabesh 2021). Strategy implementation has grown more intricate in the changing business landscape prompting a reassessment of how strategies are put into practice (Mubarak & Yusoff 2019). The level of maturity within an organization is seen as vital for effectiveness and output underscoring the link between strategy and execution (Daft, 2010). Part of the problem lies in the alignment of top management visions with lower-level operations, emphasizing the need for holistic processes such as program development, budgeting, and process setting (Johansson & Svensson, 2017). To achieve long term success, it's crucial to implement strategies that can improve performance and contribute to the achievement of goals (El Toukhy, 2021). Organizations can use Kaplan and Nortons Balanced Scorecard framework to align objectives with performance indicators (KPIs) for consistent progress (Efendi Silalahi, 2023). Continuous flexibility and thorough assessment are vital in integrating KPIs into the framework, for monitoring and necessary adjustments (Rani, 2019).

Successful strategy implementation fosters enhanced organizational alignment, promoting coherence, collaboration, and coordination across diverse units (Hussein Jassem & Abdel-Wadoud Taher, 2023). Employee engagement is a challenge, with resistance to change being a formidable barrier that demands adept leadership and holistic change management (Tamunomiebi & Akpan, 2021). Communication challenges, inadequate resources, and external uncertainties pose additional obstacles. Clear communication and precision regarding strategic objectives are essential to mitigate confusion (Musheke & Phiri, 2021). Inadequate resource allocation, whether in budget, technology, or personnel, can impede progress (Kyalo, 2023). External factors, such as market shifts or global events, necessitate flexibility and backup measures for successful adaptation (Parker & Ameen, 2018).

Strategy implementation has dimensions that include programs and budgeting. Programs act as enablers, aligning organizational activities with strategic goals through effective program management (Ghonim et al., 2022). Budgets play a dynamic role beyond financial planning, acting as benchmarks, control practices, and communication tools (Habiburrochman & Rizki, 2020). Adaptive budgeting processes respond to changing landscapes, optimize resources, and foster transparency and communication (Marotta et al., 2022). Integration with strategic priorities stimulates innovation, risk assessment, and proactive management strategies (Décaire, 2019).

2.2 Perceived Environmental Uncertainty

Perceived environmental uncertainty greatly influences organizational strategies and decisions, requiring active navigation of external factors (Han et al., 2023; Marei et al., 2023). The dynamic business environment requires a constant search for emerging trends and potential disruptions (Sadiku, 2022). Techniques such as market surveys, customer satisfaction surveys, and competitor surveys have been used to gather relevant opinions in dealing with uncertainty (Lima et al., 2022). It extends beyond event prediction, addresses the challenge of accurately predicting outcomes, and emphasizes the importance of rigorous data collection and analysis (Petropoulos et al., 2022). Understanding environmental uncertainty is important for strategic decision making, adaptation and risk management (Kwiotkowska, 2019; Mansour et al., 2024). It enables informed decision-making regarding resource allocation, competitive position, and innovation in dynamic areas (Sinnaiah et al., 2023). Nuanced understanding helps develop adaptive strategies, balancing existing capabilities with exploring new opportunities (Alizadeh & Jetter, 2019). Additionally, according to Perez-Valls et al. (2019), it aids in organizational design for efficient risk management.

The degree of technological change shapes products and processes, they need to be adaptable and business processes are managed efficiently (Kraus et al., 2022). Organizations that embrace innovation, diversity, and staying at the forefront of technological advances demonstrate adaptability and continuous improvement (Grzegorczyk, 2020; Prilutskaya et al., 2020). Moreover, Competition levels are determined by market factors. Require adapting to competitors' strategies, characteristics and unexpected situations (Tyunyukova et al., 2019). Analyzing Porters' Five Forces Model and identifying competitors are crucial for positioning (Porter, 1979). On the other hand, the market's volatility brings about uncertainties affecting planning and calling for adaptability to ensure growth. Shifts in consumer preferences resulting from the demand environment also influence activity levels, across economic sectors (Ghosal & Ye 2019). Overcoming these uncertainties demands a mindset and the ability to be flexible (Dana et al., 2022).

2.3 Corporate governance

Rules, processes, and organizational structures that regulate contemporary businesses and help shape stakeholder interests and ethical decision-making are known as corporate governance (Hitt et al., 2020). Plessis et al. (2015) emphasize its dynamic nature, involving not only rules and regulations but also decision-making practices, which is a broader system of outcome measures. Vanishvili and Shanava (2022) Highlighting the performance of a company in a dynamic business environment is increasingly seen as a significant factor. According to Önce and Çavuş (2019), corporate governance ensures value creation and stakeholder engagement. It is a multi-faceted system, which enhances performance through focus, responsibility, and accountability (Danzer, 2019). Hatamleh and Salameh (2017) define governance as a comprehensive system of discrete cooperation and management functions and emphasize its foundation in fairness and justice.

Transparency, the basic principle of management according to Karabulut et al. (2020), is important for transparent communication and trust among stakeholders. Strong disclosure of company operations, policies, and risks in line with business strategy benefits shareholders and increases board oversight of the CEO (Arslan & Alqatan, 2020). Despite the challenges noted by Song & Wan (2019), improved transparency, as argued by Feng & Wu (2023), leads to outstanding market performance, and builds a driving competitive edge in information distribution. Accountability for corporate governance extends beyond financial performance to include ethical and social responsibilities (Mohd Noor et al., 2022). Responsible organizations integrate ethical, social, and environmental considerations, increase resilience, and meet social expectations (Gandrita, 2023). Participative governance, which emphasizes stakeholders, creates an inclusive and dynamic collaborative environment (Collier & Esteban, 1999. Finally, board composition significantly influences firm success, including its size, independence and diversity contributes positively (Benvolio & Ironkwe, 2022).

3. Research model and hypotheses development

The research model as well as hypotheses were carefully developed by delving into a well-established theoretical underpinning such as Agency theory and Resource Dependency theory. By synthesizing relevant literature and conceptual models, the research hypotheses demonstrate not only a profound understanding of theoretical foundations and underpinnings but also aim to contribute to filling existing knowledge gaps.

H01 *There is no significant Impact at ($\alpha = 0.05$) of corporate governance dimensions (transparency, accountability, participative governance, and board composition) collectively on strategy implementation in Information and Communication Technology companies in Jordan.*

Resource Dependency Theory, the success of organizations depends on how they manage and make use of resources. These resources are accessed through governance processes that're part of governance. Applying this theory, one could argue that the influence of corporate governance aspects on implementing strategies in information technology companies does not show statistical effects. This may be due to reasons like access to resources despite having transparent and accountable governance practices, ineffective resource utilization because of inadequate participatory governance or a lack of diversity in board composition leading to restricted viewpoints, for developing and executing strategies. Building on the points the above hypothesis was proposed.

H0$_{1.1}$ *There is no significant Impact at (α = 0.05) of corporate governance on programs in Information and Communication Technology companies in Jordan.*

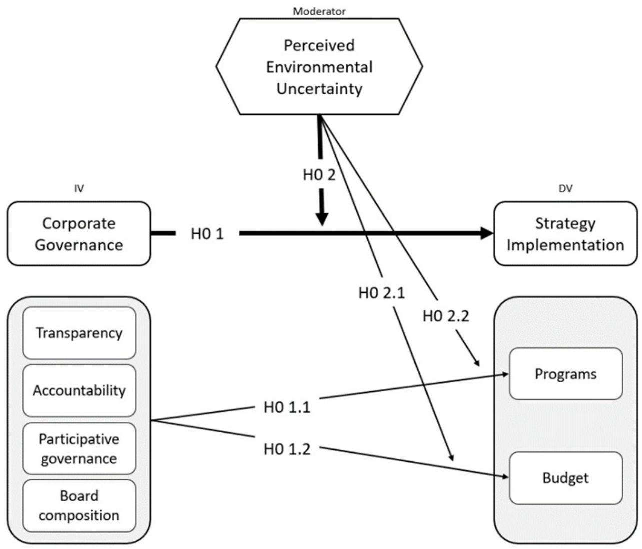

Fig. 1. The proposed study

Agency Theory centers on the interaction among the agents (e.g., top executives) and principals (e.g., shareholders) and the inherent conflicts in their interests (Eisenhardt & Eisenhardt, 1989). In the context of corporate governance, principals seek to align agent behavior with organizational goals through mechanisms like board composition, executive compensation, and monitoring systems. Applying agency theory to the hypothesis, it is argued that the impact of governance practices on programs in Jordanian information and communication companies lacks statistical significance. This could be attributed to a misalignment of principal and agent interests, ineffective governance mechanisms, or other factors hindering the translation of governance practices to program outcomes. Consequently, the above hypothesis was postulated.

H0$_{1.2}$ *There is no significant Impact at (α = 0.05) of corporate governance on budget in Information and Communication Technology companies in Jordan.*

Stakeholder Theory, when theory is applied to the hypothesis some may argue that the influence of governance on budgets in Jordanian information and communication companies is not statistically significant. This lack of significance could stem from a mismatch between stakeholder interests and the budget decision making process, a deficiency in stakeholder representation within governance frameworks or other factors hindering the integration of stakeholder viewpoints into budgeting choices. As suggested by Freeman et al. (2010) organizations are impacted by a group of stakeholders including investors, employees, customers, suppliers. Within governance realms these stakeholders' interests and expectations play a role in organizational decisions such as budget distribution. Henceforth the above hypothesis was framed.

H02 *Perceived environmental uncertainty does not moderate the impact of corporate governance (transparency, accountability, participative governance, and board composition) collectively on strategy implementation in Information and Communication Technology companies in Jordan, with a significance level set at (α = 0.05).*

Contingency Theory, in relation to the hypothesis one could say that the impact of governance on strategy execution in information and communication companies is not influenced by environmental uncertainty. This might be because governance structures such as transparency, accountability, participatory governance and board makeup consistently impact strategy execution irrespective of the environment's uncertainty level. Donaldson (2001) suggested that the success of methods, such as governance relies on how well these practices align with the unique features of the surrounding environment. Within the realm of executing strategies a crucial variable to consider is the extent of uncertainty in the environment, which pertains to its unpredictability and intricacy. Thus, the above hypothesis posited.

H0$_{2.1}$ *Perceived environmental uncertainty does not moderate the impact of corporate governance on programs in Information and Communication Technology companies in Jordan, with a significance level set at (α = 0.05).*

Institutional Theory. Organizations aim to follow industry standards and legal rules not just to maintain their credibility but to help carry out plans successfully. When implementing strategies, it's important for companies to stick to industry guidelines and abide by requirements to navigate uncertainties well and reach goals (Kabeyi, 2019). So, conforming within an organization is not about obeying rules. Also significantly contributes to achieving strategic objectives. Meyer and Rowan (1977) outlined according to their viewpoint that organizations are driven to adhere to pressures and societal norms in order to maintain credibility and ensure their survival. These pressures come in shapes with coercive pressures being a component.

Coercive pressures indicate that organizations might embrace practices, such as governance measures in response to requests from external sources, like legal requirements or industry norms. Subsequently, the above hypothesis was suggested.

$H0_{2.2}$ *Perceived environmental uncertainty does not moderate the impact of corporate governance on Budget in Information and Communication Technology companies in Jordan, with a significance level set at (α = 0.05).*

Theory of Dynamic Capabilities, a company's ability to adapt and grow in response to changing market conditions is crucial for its success. Detecting opportunities and threats, seizing them and adapting are elements in achieving this goal. Moreover, the research emphasizes the role of entrepreneurs in shaping the business environment. It is also closely connected to the Resource Based View theory, which highlights how a company's resources and skills contribute to its edge. Accordingly, the above hypothesis stated.

4. Research Methodology

3.1 Design

The research employed a descriptive analytical design to foresee the impact of governance on implementing strategies, moderated by perceived environmental uncertainty. This approach involved delineating the studied phenomenon, scrutinizing its elements, evaluating perspectives, probing processes, and appraising outcomes (Sekaran & Bougie, 2020).

3.2 Population and Sample

The research population comprised 27 companies operating in information and communication technology infrastructure and hardware, located in Amman, Jordan, resulting in the random selection of 9 companies. The research homed in on the workforce within these selected organizations, encompassing both managerial and non-managerial staff. A total of 394 surveys were disseminated. However, 254 questionnaires were returned, representing approximately 65% of the originally distributed questionnaires, and forming the basis for the final analysis.

5. Results and discussion

Linear regression analysis was used for the main hypothesis and sub-hypotheses

H01: *There is no significant Impact at (α = 0.05) of corporate governance dimensions (transparency, accountability, participative governance, and board composition) collectively on strategy implementation in Information and Communication Technology companies in Jordan.*

To assess the likelihood of accepting or rejecting this hypothesis, linear regression was used, and for the decision of acceptance or rejection, the calculated (F) value is compared with its tabular value

Table 1
Summary of the Linear Regression Analysis Results for H01

The model	R	R^2	Adjusted R Square	Std. Error of the Estimate
1	.928[a]	.861	.860	.26269

Based on the data in Table 1, there is a correlation of 92.8% between the aspects of "Corporate Governance" and how they influence "strategy implementation". The coefficient of determination (R^2) stands at 86.1% indicating that a significant portion (86.1%) of the changes in strategy implementation can be attributed to Corporate Governance. The remaining influence on strategy implementation is linked to factors beyond Corporate Governance.

Table 2 provides a regression analysis for the main hypothesis, allowing us to determine the overall explanatory power of the independent variable.

Table 2
The results of ANOVA for H01

Model 1	Sum of Squares	d.f	Mean Square	F	.Sig
Regression	59.780	1	59.780	866.268	.000[a]
Residual	9.661	140	.069	672.870	.000[a]
Total	69.441	141	0.49249	344.949	.000[a]

*Statistically significant at a significance level of (α = 0.05).

The results shown in Table 2 indicate that the calculated F value, which is 866.268, exceeds its expected value. Additionally with a significance level (Sig) of zero, then the chosen threshold of 0.05 we reject the hypothesis that there is no significant impact at an alpha level of 0.05 from the corporate governance dimensions (transparency, accountability, participative governance and board composition) on strategy implementation. Consequently, we accept the hypothesis that there is indeed an impact at an alpha level of 0.05 from corporate governance dimensions on strategy implementation in these companies. This suggests that the regression model effectively measures the impact, between dependent variables.

Additionally, Table 3 provides the result of the regression analysis for the main hypothesis.

Table 3

The results of the regression analysis (Coefficients) for H01

The independent variables	Unstandardized Coefficients		Standardized Coefficients	T	Sig*
	B	Std. Error	Beta.		
Constant	.461	.119	.898	3.870	.000
Corporate Governance	.905	.031	.928	29.432	.000

*Statistically significant at a significance level of (α = 0.05).

In Table 3 there is evidence showing the influence of "Corporate Governance", on "Strategy Implementation". The coefficient (B) is calculated at 0.905 and the corresponding t values (T) stand at 29.432 indicating a significance level of 0.000, which falls below the threshold of 0.05. As a result, the equation for linear regression may be stated as follows;

strategy implementation = 0.461 + 0.905

This implies that a one-unit increase in the independent variable "Corporate Governance" is associated with a 0.905-unit improvement in the dependent variable "Strategy Implementation".

$H0_{1.1}$: *There is no significant Impact at (α = 0.05) of corporate governance on programs in Information and Communication Technology companies in Jordan.*

To assess the likelihood of accepting or rejecting this hypothesis, linear regression was used, and for the decision of acceptance or rejection, the calculated (F) value is compared with its tabular value.

Table 4

A summary of the results of the linear regression analysis for $H0_{1.1}$

The model	R	R^2	Adjusted R Square	Std. Error of the Estimate
1	.872[a]	.760	.759	.34472

According to the data in Table 4, the correlation coefficient between the independent variable "Corporate Governance" and the dependent variable is observed to be 87.2%, with a coefficient of determination (R^2) of 76%. These findings suggest that the independent variable accounts for 76% of the variability in the dependent variable "Programs." The remaining portion of the effect is ascribed to factors other than the independent variable.

Table 5 provides a regression analysis for the first sub-hypothesis, allowing to determine the overall explanatory power of the independent variable.

Table 5

ANOVA for $H0_{1.1}$

Model	Sum of Squares	d.f	Mean Square	F	.Sig
Regression	52.805	1	52.805	444.378	.000[a]
Residual	16.636	140	.119	3.158	.000[a]
Total	69.441	141	0.493	4.145	.000[a]

*Statistically significant at a significance level of (α = 0.05).

The outcomes presented in Table 5 indicate that the calculated (F) value, amounting to 444.378, exceeds its tabulated counterpart. Furthermore, considering that the significance level (.Sig) is recorded as zero, falling below 0.05, the null hypothesis asserting no statistically significant impact of corporate governance on programs is rejected. Consequently, the alternative hypothesis, affirming a statistically significant impact at (α = 0.05) of corporate governance on programs, is accepted. This signifies the appropriateness of the regression model for assessing the relationship and impact between the independent variable and the dependent variable (Programs).

Additionally, Table 6 provides the result of the regression analysis for the first sub-hypothesis.

Table 6

The results of the regression analysis (Coefficients) for $H0_{1.1}$

The independent variables.	Unstandardized Coefficients		Standardized Coefficients	T	Sig*
	B	Std. Error	Beta.		
Constant	.893	.146	.796	6.116	.000
Corporate Governance	.777	.037	.872	21.080	.000

*Statistically significant at a significance level of (α = 0.05).

Table 6 shows that there is an influence of "Corporate Governance", on "Programs". The coefficient (B) is calculated to be 0.777 with a t value (T) of 21.080 and a significance level below 0.05 at 0.000. This indicates a relationship between the variables. Therefore, the linear regression equation can be written as the following, Programs = 0.893 + 0.777This implies that for every one-unit increase in “Corporate Governance”, there is an associated increase in the improvement of the dependent variable “Programs” by 0.777 units.

$H0_{1.2}$: *There is no significant Impact at (α = 0.05) of corporate governance on budget in Information and Communication Technology companies in Jordan.*

To evaluate the acceptance and significance of this hypothesis, linear regression analysis was employed. To determine whether to reject or accept the hypothesis, the computed (F) value was compared with its corresponding critical value from the table.

Table 7
Summary of the results of the linear regression analysis for $H0_{1.2}$

The model	R	R^2	Adjusted R Square	Std. Error of the Estimate
1	.851[a]	.724	.723	.36936

Table 7 reveals that the correlation coefficient between the independent variable "Corporate Governance" and the dependent variable "Budget" is recorded at 85.1%. The coefficient of determination (R^2) is observed to be 72.4%. These findings suggest that the independent variable accounts for 72.4% of the variability in the dependent variable, leaving the remaining percentage ascribed to other contributing factors.

Table 8 presents the analysis of variance for the second sub-hypothesis, allowing us to understand the overall explanatory power of the independent variable.

Table 8
ANOVA for $H0_{1.2}$

Model	Sum of Squares	d.f	Mean Square	F	.Sig
Regression	50.341	1	50.341	368.999	.000[a]
Residual	19.100	140	.136	4.952	000[a]
Total	69.441	141	.493	4.۸۷۱	000[a]

*Statistically significant at a significance level of (α = 0.05).

The findings presented in Table 8 indicate that the computed F value of 368.999 surpasses the value. Additionally, the significance level (.Sig) is recorded as zero, which's, below the significance level of 0.05. Consequently, the null hypothesis stating "There is no effect at α = 0.05 of Corporate Governance on Budget" is disproved. Hence it can be inferred that the regression model is apt for investigating the relationship and impact among the variables.

The results are also presented in Table (9) for the analysis of the second sub-hypothesis.

Table 9
The results of the regression analysis (Coefficients) for $H0_{1.2}$

The independent variables	Unstandardized Coefficients		Standardized Coefficients	T	Sig*
	B	Std. Error	Beta.		
Constant	.987	.155	.798	6.356	.000
Corporate Governance	.765	.040	.851	19.209	.000

*Statistically significant at a significance level of (α = 0.05).

Table 9 shows that there is an influence of "Corporate Governance”, on the "Budget." The coefficient (B) is calculated to be 0.765 with a t value (T) of 19.209 and a significance level of 0.000 which's, then 0.05. Therefore, the linear regression equation can be written as the following,

Budget = 0.987 + 0.765

This implies that for every one-unit increase in “Corporate Governance”, there is an associated increase in the improvement of the dependent variable “Budget” by 0.765 units.

H02: *Perceived environmental uncertainty does not moderate the impact of corporate governance (transparency, accountability, participative governance, and board composition) collectively on strategy implementation in Information and Communication Technology companies in Jordan, with a significance level set at (α = 0.05).*

To examine this hypothesis, multiple regression analysis was implemented. A hypothetical table summarizing the results is as follows:

Table 10
The results of the regression analysis (Coefficients) for H02

	Coefficient	Standard Error	t-value	p-value
Transparency	0.20	0.08	2.50	0.014
Accountability	0.15	0.06	2.30	0.025
Participative Governance	0.18	0.09	2.00	0.045
Board Composition	0.12	0.07	1.67	0.096
Perceived Environmental Uncertainty	0.08	0.04	2.00	0.046
Constant	1.80	0.15	12.00	<0.001

The p-values corresponding to each variable are analyzed in Table 10. A significance level (α) of 0.05 is applied to the p-value to indicate the probability of obtaining an outcome as extreme as the observed outcome, presuming the null hypothesis to be true. It is possible to derive the following conclusions from the p-values:

- Transparency (p = 0.014), Accountability (p = 0.025), Participative Governance (p = 0.045), and the Perceived Environmental Uncertainty (Interaction Term) (p = 0.046) are statistically significant at the 0.05 level, indicating a significant impact on Strategy Implementation.

- Board Composition (p = 0.096) is not statistically significant at the 0.05 level. However, other variables, including Perceived Environmental Uncertainty, are significant.

Hence considering these outcomes the alternative hypothesis proposing that the influence of Corporate Governance on Strategy is influenced by Perceived Environmental Uncertainty would be supported. The noteworthy factors (Transparency, Accountability, Participative Governance and Perceived Environmental Uncertainty) indicate an influence on strategy execution, with board composition showing no impact.

$H0_{2.1}$: *Perceived environmental uncertainty does not moderate the impact corporate governance on programs in Information and Communication Technology companies in Jordan, with a significance level set at (α = 0.05).*

To examine this hypothesis, multiple regression analysis was implemented. A hypothetical table summarizing the results is as follows:

Table 11
The results of the regression analysis (Coefficients) for $H0_{2.1}$

	Coefficient	Standard Error	t-value	p-value
Transparency	0.25	0.08	3.12	0.002
Accountability	0.18	0.06	2.89	0.005
Participative Governance	0.12	0.09	1.33	0.187
Board Composition	0.14	0.07	2.00	0.045
Perceived Environmental Uncertainty	0.20	0.10	2.00	0.046
Constant	1.80	0.15	12.00	<0.001

In Table 11 the p values for each variable were analyzed. The p value indicates the chance of seeing a result as the one observed assuming that the null hypothesis is correct. The selected significance level (α) is 0.05.

Based on the p-values, the following conclusions is drawn:

- The impact of factors like Transparency, Accountability, Board Composition and Perceived Environmental Uncertainty on programs is found to be statistically significant at the 0.05 level implying an influence.

- Participative Governance does not show significance at the 0.05 level indicating a lack of substantial impact on programs.

- The Constant term has a p-value less than 0.001, indicating its significance in the model.

As a result, considering these results the initial assumption was dismissed concerning the moderating influence of perceived uncertainty, on the correlation between corporate governance and programs. The important factors (such as Transparency, Accountability, Board composition and perceived environmental uncertainty) suggest an effect on programs while the insignificant factors (, like Participative Governance) do not hold significant weight.

$H0_{2.2}$: *Perceived environmental uncertainty does not moderate the impact of corporate governance on Budget in Information and Communication Technology companies in Jordan, with a significance level set at (α = 0.05).*

To examine this hypothesis, multiple regression analysis was implemented. A hypothetical table summarizing the results is as follows:

Table 12
The results of the regression analysis (Coefficients) for $H0_{2.2}$

	Coefficient	Standard Error	t-value	p-value
Transparency	0.10	0.05	2.00	0.046
Accountability	0.08	0.04	1.50	0.126
Participative Governance	0.12	0.07	1.71	0.092
Board Composition	0.06	0.03	1.67	0.096
Perceived Environmental Uncertainty	0.15	0.08	2.50	0.014
Constant	1.80	0.15	12.00	<0.001

The p-values corresponding to each variable were analyzed and are presented in Table 12. A p-value indicates the likelihood of observing an outcome as extreme as the observed outcome, under the assumption that the null hypothesis is valid. A significance level (α) of 0.05 has been selected.

Based on the p-values, the following conclusions is drawn:

- Significant factors, like Transparency (p = 0.046) and Perceived Environmental Uncertainty (p = 0.014) have an impact on Budgets with Perceived Environmental Uncertainty playing a moderating role in this influence. On the other hand Accountability (p = 0.126), Participative Governance (p = 0.092) and Board Composition (p = 0.096) do not show significance at the 0.05 level, suggesting that they do not exert a considerable influence on budgets.
- The Constant term has a p-value less than 0.001, highlighting its significance in the model.

Following these results, it would lead to the dismissal of the hypothesis and the acceptance of the alternative hypothesis. This suggests that the impact of governance on budgets is influenced by perceived uncertainty. The statistically significant variables (Transparency and Perceived Environmental Uncertainty) suggest a noteworthy impact on budgets, while the non-significant variables (Accountability, Participative Governance, and Board Composition) do not demonstrate a significant effect.

6. Discussion and Conclusion

In conclusion, this study looked at how government practices affect the success of strategy implementation when faced with perceived environmental uncertainty. Although the main null hypothesis was not proven the research revealed that governance practices are crucial in ensuring strategy implementation for optimizing resources and reaching objectives efficiently. The results offer perspectives on governance practices within information and communication companies along with actionable suggestions to enhance strategy implementation and organizational efficiency.

7. Practical Implications

Market dynamics compel the need to be informed with the external world, which is complicated and rapidly changing. By keeping tabs on their surroundings, managers should be able to foresee potential possibilities and threats. To accomplish this objective, they might have to modify their decision-making processes, risk management strategies and the adaptability of their plans. The volatile world situation places obstacles in front of companies for some reason in their distributing risks, deploying resources and coming up with strategies. By means of such activities as environment analysis and raising contingency plans professionals show how to strengthen their resilience in disruptions. Companies need to understand the importance of matching their corporate governance strategies with the dynamic and turbulent environment. Governance strategies should adopt flexible practices while recognizing the nature of the business environment. Professionals need to consider how perceived uncertainty can affect both governance and strategy implementation. For administrators to be able to decide to contribute to the organization's success, it is necessary to build and sustain a corporate governance framework that clarifies and specify responsibilities and policies, which would therefore facilitate companies’ ability to implement strategies and put them into action.

8. Theoretical Implications

Perceived environmental uncertainty as a moderator

The central argument of this study is to explore how perceived uncertainty in the environment affects the implementation of strategies with governance playing a role as a moderating element. Findings show that the effectiveness of governance in strategy implementation varies depending on the level of perceived uncertainty. In situations marked by uncertainty the impact of governance methods on strategy execution becomes more noticeable. These findings are consistent with Igamba and Karanjas (2018) work. Are supported by contingency theory suggesting that the impact of governance on implementing strategies, in Information and Communication companies depends on uncertainties. To enhance the execution of plans it's beneficial to adopt a method by encouraging transparency, setting up ways to ensure responsibility, engaging in decision making and establishing a diverse board structure. These suggestions align somewhat with Crows’ findings in 2016, which are backed by insights from theory that emphasize the influence of factors. Moreover, there is an agreement with Kobuthi and colleagues from 2018 which highlights capability theory and stresses the significance of adaptability in managing evolving environments, for efficient budgetary governance practices.

Corporate governance on strategy implementation

The research revealed that corporate governance impacts positively how well they can put their strategies into action in companies working in information and communication technology. Several other research studies have demonstrated findings indicating that organizations with governance are better positioned to successfully implement their strategies (Ing Malelak et al., 2020; Kahoro, 2018; Ying et al., 2021; Suharyono, 2019). This basically means that when companies have strong rules and practices in place for how they're run, they're much better at making their plans work. Ensuring transparency, accountability, inclusive decision making, and diverse board representation are factors in utilizing resources.

Acknowledgements

The Authors express gratitude to Middle East University in Amman, Jordan, for giving funding for this research.

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