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The impact of strategic alliances on recovery from environmental and climate change: An approach to achieving sustainability

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ABSTRACT

Climate volatility and environmental degradation have increased the pressure for organizational adjustment, especially in resource-based economies like Iraq. Conventional market-based solutions are insufficient for addressing complex ecological issues, necessitating the development of collaborative governance systems that incorporate multi-level stakeholder participation and technological integration. This paper discusses the impact of strategic alliances on environmental recovery outcomes in the Iraqi beverage production industry, examining how different types of alliances can be more effective in ecological adaptation. A quantitative study involving 68 respondents from two Iraqi beverage companies, Al-Waha and Al-Diyar, was conducted. The sampling approach was convenience sampling, targeting organizational members with strategic decision-making authority, including board members and department heads with at least five years of experience in alliance formation, environmental compliance, and operational risk management. The study evaluated four types of alliances, investment, project, marketing, and technical, and five environmental factors: cultural, technological, social, economic, and behavioral, using structured questionnaires organized into dimensions of strategic alliance and environmental adaptation. Structural Equation Modeling was employed to analyze correlations between alliance dimensions and adaptation results. The findings indicated high effectiveness scores across all alliance types, with technical alliances receiving the highest recognition. Similar ratings were observed for environmental adaptation factors. Correlation analysis revealed significant positive relationships between strategic alliances and environmental recovery, with marketing alliances demonstrating the strongest correlation. The study concludes that strategic alliances play a vital role in environmental recovery within the Iraqi manufacturing sector by facilitating access to specialized environmental knowledge, technologies, and stakeholder networks that are often not internalized within individual organizations.

Contribution/Originality: This paper analyzes how strategic alliances (SA) can help in recovering the consequences of environmental and climate change (ECC) within an Iraqi industrial area, which in this case is a group of beverage manufacturers. It underscores the beneficial role of SAs in gaining sustainability via recovery of the impact of ECC in Iraq. These results update the perspective of the contribution of SAs to the recovery and sustainability in the Middle East, taking into account the environmental transformations.

1. INTRODUCTION

The environmental and climate changes have been increasing over the past few decades, along with the increasing intensity of competitive forces in the market, economic restructuring, and the rapid rate of digitalization. As market liberalization has intensified, unions like the United Steelworkers have begun advocating for what has been called a Green New Deal, which challenges the neoliberal ideology of ecological modernization and emphasizes systemic transitions over incremental reforms (Nugent, 2011).

However, institutional resistance to change, vested interests in existing energies, the impacts of transitional policies on various socioeconomic groups, technological path dependencies, political cycles that promote only incremental change, and nonstandard climate risks complicate the formation of strategic alliances. In Australia, for example, the contradictions between economic dependence on fossil exports and the need for decarbonization have generated new political alliances and policy networks, which emphasize alliance-building and collaborative governance as strategies for confronting entrenched climate inaction (Da Rimini, Goodman, Swarnakar, & Ylä-Anttila, 2021).

The propagation of international climate bodies and institutional environmental secretariats reflects efforts to manage the increasing ecological risks through transnational cooperation. However, these market-driven reforms have introduced new challenges, including the risk of ecological backsliding and the uneven development of renewable energy infrastructure (Androcec & Tarnik, 2007). The social issues arising from this contingency include the disruption of labor and institutional overload, which require technological solutions and policies that encompass civil society participation, indigenous groups, and the optimization of marginal sectors to develop long-term climate resilience.

This environmental governance framework is fulfilled in the Middle East, especially in Iraq, through its geopolitical weaknesses and resource needs. The Iraq-based contribution to global climate instability occurs at the expense of global warming and water scarcity (Qi & Dauvergne, 2022), since there is no civil society network or environmental movements (Della Porta & Portos, 2023), and Iraq cannot form strategic alliances due to regional considerations that override environmental priorities. The sectarianism in Iraq discourages the formation of broad-based coalitions that are needed to implement transformative environmental policies. Additionally, the destruction of the environment caused by past conflicts, such as polluted waters and ravaged agricultural land, competes with climate mitigation efforts. The following are therefore our research questions:

1) How do strategic alliances influence environmental recovery outcomes in Iraq?
2) What contextual factors optimize alliance effectiveness for ecological recovery in Iraq?

2. LITERATURE REVIEW

Although conventional alliance models have thoroughly studied market-based alliances, the emergence of climate-related issues requires the basic redefinition of the ways in which organizations can form alliances to address environmental uncertainties, regulatory forces, and sustainability goals. The present literature review summarizes current information on strategic alliances with climate adaptation needs to develop the theoretical basis for understanding environmental partnerships as unique organizational types that require special governance mechanisms, performance measures, and strategic stakeholder involvement approaches.

2.1. Strategic Alliances and Environmental Applications

Strategic alliances are intermediate forms of organizations, which are positioned between contract arrangements and integrated mergers, and aim to achieve shared goals through resource complements and effective governance (Howland et al., 2024). These cooperative agreements between two or more organizations are characterized by the sharing of experience between partners, aimed at redistributing risks and developing long-term relationships that foster trust and resource sharing (Ireland, Hitt, & Vaidyanath, 2002). Yet the process of

climate change has altered the way organizations make decisions, with extreme weather frequency, ecosystem disruption, and resource shortages posing new adaptation demands and regulatory compliance costs that are not sufficiently met through the conventional alliance structure. The reasons behind alliances include helping to penetrate the market, sharing risk, creating value through the combination of capabilities, and generating social benefits (Furrer, Tjemkes, & Henseler, 2012). These alliances are not only aimed at maximizing profits but also at carbon reduction, renewable energy, waste management, biodiversity conservation, and circular economy initiatives. Organizations also collaborate to change market structures by distributing resources, developing new skills, and transferring technology. These improvements can enhance the financial status of an organization within a competitive landscape and sustain success in business domains.

According to the resource-based perspective of strategic alliances, imperfect mobility, imitability, and substitutability of pooled resources, as well as aggregate alliances among firms, increase value creation (Das & Teng, 2000a). Resources located within interfirm networks, rather than at individual firms, can influence access to information regarding potential partners (Dussauge, Garrette, & Mitchell, 2000; Gulati, 1999; Simonin, 1999; Teece, Pisano, & Shuen, 1997). Key areas of alliances are their rationale, formation, structural preferences, and performance results. The resource portfolios of partner firms dictate their structural preferences in all different types of alliances, such as equity joint ventures, minority equity alliances, bilateral contract-based alliances, and unilateral contract-based alliances.

2.2. Knowledge Transfer and Governance in Environmental Partnerships

Knowledge ambiguity serves as a mediating variable in the effectiveness of knowledge transfer between alliance partners; this depends on tacitness, asset specificity, prior experience, complexity, partner protectiveness, cultural distance, and organizational distance, and is moderated by collaborative know-how, learning capacity, and the duration of the alliance (Simonin, 1999). The main antecedents of risk management are trust and control mechanisms, whereby goodwill and competence trust are combined with behavior control, output control, and social control to reduce relational as well as performance risks (Das & Teng, 2001). Environmental partnerships require additional trust dimensions, such as long-term commitment to sustainability, transparency in environmental reporting, and adherence to evolving regulatory standards. Effective alliance management involves selecting suitable partners, developing social capital and knowledge, and fostering trust-based relationships to ensure maximum cooperation and achieve competitive advantages (Ireland et al., 2002). Nonetheless, internal tensions may also be considered sources of instability in alliances, manifesting as conflicts between collaboration and competition, rigidity and flexibility, and short-term and long-term orientations (Das & Teng, 2000b). These tensions imply that environmental alliances require specific management strategies that aim for multi-stakeholder and long-term sustainability, which differ from traditional business collaborations.

Enyinnah, Adefulu, Asikhia, and Onyia (2020) have designed a four-dimensional framework that covers various strategies of alliance setups concerning the availability of resources, governance systems, and performance measurement systems. Climate change adaptation involves the involvement of technological, social, economic, and behavioral forces, which influence the formation and performance of alliances.

The investment alliances are capital pooling agreements whereby the companies build capabilities and sell products using a resource commitment undertaken jointly. Such structures form financial dependencies that cushion long-term obligations in unfortunate events where access to capital and schemes of sharing risks dictate the expectation of returns on investments (ROI) throughout the funding periods. Durability of commitment is also expensive because when investment is abandoned, protective reactions are costly to reduce additional losses.

Marketing alliances are tasks that organize marketing efforts in targeted markets, which include a brand compatibility check and growth plans on the markets that lead to consumer trust by sharing resources. Technical alliances stimulate learning and development of innovation opportunities by developing a dynamic economic

environment brought about by knowledge transfer mechanisms. Measurement of absorptive capacity pays attention to outside knowledge acquisition, which involves organizational practices and procedures through which the exploitation of external sources of knowledge can be realized. The performance of technology transfer relies on the capabilities of innovation building, the complementarity of experts, and IPR management systems that enable operational integration.

The intersection of disparate knowledge enhances innovative performance by predetermining new ideologies and opportunities through technological advancement (Sun, Zhang, & Chen, 2022). Project alliance is conceived, with projects combining together via regulatory associations or via contractual associations where the parties establish a sharing of the common gains and overcoming of common losses (Enyinnah et al., 2020).

Lack of professional capacity becomes the leading obstacle (Emami, Welsh, Davari, & Rezazadeh, 2022). Whereas exploration-oriented alliances seek new services and market entry prospects, and investment alliances build capabilities for new prospects, neither frameworks do not encompass measuring climate adaptation and sustainability performance. Nissen (2020) offers the basic building blocks on which theoretical extensions are needed to absorb sound environmental partnerships.

2.3. Multi-Dimensional Antecedents in Climate Alliance Performance

Climate change is not something that occurs only in the natural world. Climate change is also a result of social factors, and it affects social systems as well. Therefore, social processes should be considered when managing climate change. Such social dimensions are often overlooked, but they influence stakeholders' decisions to participate or not in adaptation efforts. These stakeholders are the first line of users and decision-makers, and societal adaptation presents a global challenge from an environmental philosophical perspective (Martinez, 2014).

Technological aspects include infrastructure preparedness, adoption rate, and compatibility demands, as well as cybersecurity provisions and automation integration demands. Social aspects include stakeholder involvement, community tolerance, together with social capital creation to reduce demographic consequences and create a sense of cohesion.

Economic issues involve the availability of resources, volatility exposure, and flexibility of costs, as well as encouraging the diversification of revenues and dampening dependency risks. Behavioral dimensions examine decision patterns, risk perception, and adaptive flexibility, alongside learning orientation and implementation effectiveness (Adger, Barnett, Brown, Marshall, & O'brien, 2013; Camare & Lane, 2015; Gifford, Kormos, & McIntyre, 2011; Hough, Green, & Plumlee, 2015).

Therefore, climate change necessitates intergovernmental coordination in decision-making, forming part of a multi-level, multi-agency governance framework that encourages organizations, markets, norms, and societal structures to develop a climate strategy aimed at achieving a sustainable competitive advantage (Wittneben, 2012). Achieving strategic benefits in combating climate change requires fundamental changes within organizations, including the selection of operations, employment practices, organizational structure, training, and employee participation in defining and implementing innovative strategies (Hottman, 2019). Business and society maintain a symbiotic relationship, and climate change remains one of the most complex international environmental issues to predict.

Organizational strategies are affected by the expectations of decision makers regarding the future status of their organizations and the environments in which they operate. Environmental change is not a new concept, nor is its management in highly disturbed environments, and it may lead to a wide-ranging surprise in the global system. Under these threats posed by climate and environmental change and their unexpected effects on the world's population, the inevitability of controlling adaptation provides new justifications for transformations to support sustainable development by distinguishing between three basic dimensions of the adaptation problem related to differential responsibility, unequal and weak global production, and unequal power relations in the decision-making

and adaptation processes. Based on the resource-based view, organizations adopt innovative methods to control pollution and resource use, support sustainability, and implement alternative environmental innovation measures to reduce environmental impact through the responsible use of natural resources, including energy, and by proposing new products and services that promote a better ecological continuum (Albitar, & Hussainey, 2023).

The convergence of climate urgency and organizational adaptation needs necessitates the development of a comprehensive theoretical framework that addresses how environmental alliances form, operate, and attain sustainability outcomes.

The present empirical study of the linkages between motivations for forming alliances, governance, multi-dimensional performance variables, and climate adaptation efficiency assumes that the success of environmental alliances depends on technological capacities, social involvement processes, economic resilience factors, and behavioral modification strategies in specialized governance systems geared toward long-term sustainability goals.

3. METHODOLOGY

3.1. Research Design

This research is a quantitative study as it examines the statistical relationships between dimensions of strategic alliances and factors of environmental adaptation in Iraqi beverage manufacturing firms. The study employs the resource-based theoretical model by Das and Teng to analyze strategic alliances as an organizational framework that integrates the firms' resources to achieve better operational efficiency and performance in the marketplace. Using Al-Waha Company, which manufactures soft drinks, and Al-Diyar Production Company, which produces Pepsi in Baghdad, as case studies.

These companies were selected based on their relative market standings, similar production and distribution networks, and approved strategic alliance operations. The companies have various manufacturing sites that produce cola, Pepsi-Cola, Crystal Beverages, and juice products, and sell them across distribution channels spread throughout Iraq and neighboring markets.

The beverage manufacturing industry is an ideal sector for conducting strategic alliance studies, which involve high capital demands, multiplex supply chain management, demanding regulatory compliance requirements, and volatile markets.

The similarity of the business models of the companies allows them to be compared under a certain level of control regarding the alliance strategy, and the level of operations enables significant statistical analysis due to their quantity of operations at the regional level.

3.2. Sampling Strategy and Participant Selection

The study employs convenience sampling, where the sample comprises members of organizations with strategic decision-making powers and operational information regarding alliance formations and environmental compliance. The sampling frame includes board members and department heads of companies with firsthand experience in strategic partnerships, environmental regulations, and operational risk management.

The last sample will be a group of 68 respondents who were chosen based on their participation in strategic decision-making and their professionalism in environmental compliance and operational management. The selection criteria used to select participants are as follows: a) at least five years of relevant experience in the organization; b) personal experience in strategic planning and forming alliances; c) operational understanding of the need to comply with environmental regulations; and d) the authority to allocate resources and make decisions regarding partners. This specific sampling method will ensure the collection of data from knowledgeable individuals regarding expenses, advantages, risks, and the need to implement alliance formation.

3.3. Research Instrument and Hypotheses

The research instrument will be a structured questionnaire divided into demographics, components of strategic alliance, and factors of environmental adaptation. The strategic alliance construct encompasses four business divisions, as defined by Enyinnah et al. (2020), as outlined above. Each dimension includes five measurement items designed to capture specific alliance formation capabilities and performance outcomes. Environmental adaptation factors include regulatory compliance**,** technology integration**,** market positioning**,** resource management**, and** risk mitigation, as in Table 1.

Table 1. Topics of the questionnaire form.

Axis	Variables	The components	Items	Scale
First		Gender, age, qualification, length of actual service, training courses		
Second research variables	Strategic alliances	Investment alliance	5	Enyinnah et al. (2020)
		Project alliance	5	
		Marketing alliance	5	
		Technical alliance	5	
	Environmental and climate changes	Cultural factor	5	Adger et al. (2013)
		Technological factor	5	Arrow (2009)
		Social factor	5	Gifford et al. (2011)
		Economic factor	5	Martinez-Porchas and Martinez-Cordova (2012)
		Behavioral factor	5	

3.4. Research Model

Descriptive methods (Arithmetic Mean and Standard Deviation) were used, as well as analytical methods to test the hypotheses of association, influence, and mediating relationships between the main research variables, using statistical programs such as SPSS and AMOS. A research model was developed to describe the influential role of strategic alliances in recovery from environmental and climate change. It was built by collecting solid administrative literature related to the research specialization of strategic management and quality management. In light of the research objectives, a hypothetical model was built that shows the influential relationship of strategic alliances in recovery from environmental and climate change, as shown in Figure 1.

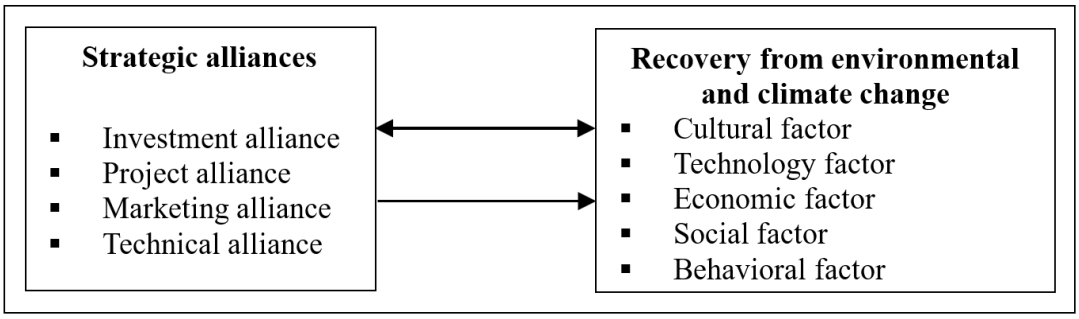

Figure 1. Research model.

3.5. Research Hypotheses

H_1: Strategic alliances moderate environmental recovery outcomes differently across alliance types.

H_2: Alliance portfolio configurations outperform single alliances under environmental stress.

The measurement framework employs five-point Likert scales to quantify responses. Instrument validation includes content validity assessment through industry expert review and reliability testing, utilizing Cronbach's alpha coefficients. This is evidenced by the fact that the strategic alliance scale has an acceptable internal

consistency (0.80), whereas the environment adaptation scale shows a higher level of reliability (0.89), surpassing the general expectations of using this scale in business research.

3.6. Data Collection Procedures and Compliance

Data is collected using standard survey administration procedures so that all participants go through a similar experience throughout the organization. The administration of the questionnaire will entail a briefing on the objectives of the research, confidentiality of the data, and voluntary participation. The respondents are given ample time to complete the questionnaire without interference with operations. This approach considers compliance issues, including informed consent, protection of individual response secrecy, and anonymity in reporting research findings.

Data confidentiality is explicitly assured to participants, and the identification of organizations is based on industry features rather than specific performance analysis of individual companies. The research protocol will include information about participants' withdrawal rights and safeguarding data collection processes, ensuring that these procedures do not negatively affect the normal functioning of the business.

3.7. Statistical Analysis Framework

The research indicates that the aspects of strategic alliance positively influence environmental performance. The analytical methodology involves a Structural Equation Modelling (SEM) strategy to measure and test the dependence between the dimensions of strategic alliance and the results of environmental adaptation. SEM is an analysis conducted simultaneously on multiple performance variables. Statistical analysis will use SPSS software to screen preliminary data, describe data, and examine correlations, whereas AMOS software will be used to test the theoretical framework using structural equation modelling. The analysis method focuses on the direct impacts of alliance dimensions on environmental performance.

In resource-based alliance theory and environmental adaptation frameworks, model evaluation processes involve goodness-of-fit tests, tests of significance of the parameters, and business interpretation of the coefficients of the pathways. In this way, particular alliance strategies that provide quantifiable business value in environmental adaptation programs can be determined.

The study variables were measured using a five-point Likert scale, and Table 2 provides an explanation of the measures used, including values of Cronbach's alpha, which is used to determine the stability of the scale. As can be seen, the values in the table are statistically acceptable.

Table 2. Measures of stability.

Scale	Paragraphs	Cronbach alpha
Strategic alliances	20	0.80
Environmental and climate change	25	0.89

4. RESULTS

4.1. Descriptive Statistics and Variable Assessment

The descriptive analysis provides comprehensive informational content on the overall perception of the participants regarding the strategic alliance dimensions and environmental adaptation factors. It presents weighted arithmetic means and standard deviations that reflect the level of understanding and the tendencies of response patterns within the study sample.

Table 3 shows levels, standard deviation, and means of responses. The success of investment alliances can be seen through the convenience of raising capital as well as the risk-sharing process, which had a weighted mean of 4.50 with a lower deviation of 0.31, indicating that the participants were sufficiently aware of the complementarity of resources and governance conditions. Investment alliances are identified by the participants as the basic means of

improving organizational operations in the form of strategic resource pooling arrangements that support the maximization of ROI regarding activity in the partnership relations.

The project alliance coordination capabilities demonstrate high levels of organizational recognition, with a mean score of 4.38 and a standard deviation of 0.84, showing a uniformity of views among the participants on what should be within the scope and the effectiveness of milestone coordination. These results highlight organizational efforts to harmonize product offerings and allocate influence spheres based on geographical location to form new partnerships and enter into new contracts based on profit sharing and loss distribution.

The integration of marketing alliances attains an impressive level of recognition by the participants, with a mean of 4.47 and a tight response, as indicated by a standard deviation of 0.33. This emphasizes the importance of brand compatibility factors and market expansion plans.

Resource sharing by organizations within collaborative structures demonstrates their in-depth knowledge of consumer trust development. The highest recognition among the dimensions of the alliance has been given to technical alliance capabilities, which have a mean score of 4.53 and a standard deviation of 0.36. This outstanding concurrence indicates that organizations are committed to expertise complementation through IP management systems and operational integration plans.

The aggregate measure of strategic alliance effectiveness scores 4.47 with a low standard deviation of 0.26, which shows that the principles of resource complementarity and diversified portfolios are important among the participants. The cultural factor measurement recorded a mean of 4.50 and a standard deviation of 0.37, which was indicative of the knowledge of the participants on the adaptability requirements and communication effectiveness principles. Organizations are aware of the cultural practices and values as the source of social behaviors that effectively support the policies of climate change and environmental recovery.

There is significant recognition of economic factor issues, with a mean score of 4.38 and a standard deviation of 0.45, indicating that the organization values the challenges related to resource availability and the risks associated with volatility. Participants acknowledge that economic factors are primary drivers of climate and environmental change recovery.

The social factor integration has a mean score of 4.40 and a standard deviation of 0.40, reflecting participants' commitment to stakeholder engagement and community involvement. The technological factor assessment shows a mean of 4.49 and a standard deviation of 0.40, with organizations recognizing that improved compatibility, cybersecurity, and automation strategies contribute to climate change recovery. The consensus response demonstrates organizational dedication to adopting modern technology to enhance natural hazard management and industrial process automation. Behavioral factors receive the highest recognition within environmental dimensions, with a mean score of 4.50 and a standard deviation of 0.41.

Table 3. Means, standard deviations, and the level of responses.

No.	Dimension	Mean	S.D.	Answer level
1	Investment alliance	4.50	0.31	Very high
2	Project alliance	4.38	0.36	Very high
3	Marketing alliance	4.47	0.33	Very high
4	Technical alliance	4.53	0.36	Very high
	Strategic alliances	4.47	0.26	Very high
5	Cultural factor	4.50	0.37	Very high
6	Technology factor	4.49	0.40	Very high
7	Economic factor	4.38	0.45	Very high
8	Social factor	4.40	0.40	Very high
9	Behavioral factor	4.50	0.41	Very high
	Environmental and climate change	4.45	0.33	Very high

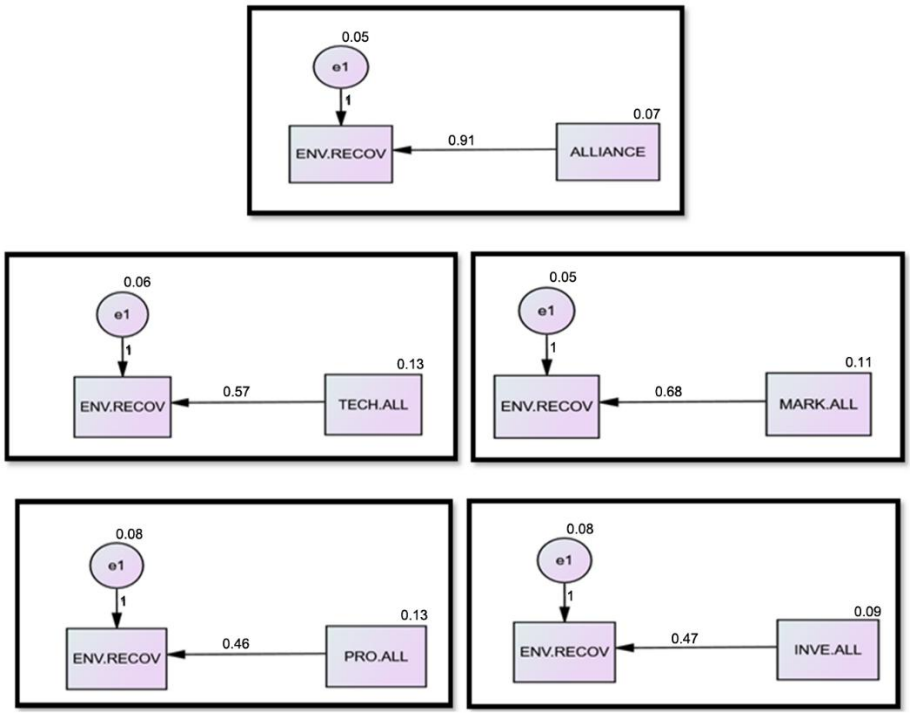

Figure 2. Testing the mean and sub-hypothesis of influence.

4.2. Testing Hypotheses

There was a significant correlation between strategic alliances and recovery from environmental and climate change, with four sub-hypotheses emerging from our hypothesis. Table 4 indicates the results of the correlations between the study variables, and there are positive and significant correlations between strategic alliances and recovery from environmental and climate change at both the overall level and the level of sub-dimensions. Accordingly, the researcher infers that the above hypothesis is rejected, meaning that there is a significant correlation between strategic alliances and recovery from environmental and climate change.

Table 4. Testing correlations between study variables.

Dependent variable Independent variable	Recovery from environmental and climate change Correlation value
Investment alliance	0.44**
Project alliance	0.50**
Marketing alliance	0.70**
Technical alliance	0.62**
Strategic alliances	0.74**

Note: ** It means that the level of significance is less than 0.01.

Table 5. Results of the test of strategic alliance in recovery from environmental and climate change.

Dimensions			Estimate	S.E.	C.R.	R^2	P
INVE.ALL	→	ENV.RECOV	0.47	0.117	4.010	0.19	***
PRO.ALL	→	ENV.RECOV	0.46	0.098	4.677	0.25	***
MARK.ALL	→	ENV.RECOV	0.68	0.085	8.024	0.49	***
TECH.ALL	→	ENV.RECOV	0.57	0.088	6.443	0.38	***
STRA.ALL	→	ENV.RECOV	0.91	0.103	8.868	0.55	***

Note: **^ It means that the level of significance is less than 0.01.

Strategic alliances have a significant impact on recovery from environmental and climate change, with four sub-hypotheses emerging from the main hypothesis. To test the above hypothesis and its sub-hypotheses, the researcher

employed structural equation modeling, whether at the total or sub-level. Figure 2 and Table 5 show the results of testing the sub-hypothesis.

It can be seen that strategic alliance and its four dimensions (investment, project, marketing, and technical) have strong positive impacts (0.91, 0.47, 0.46, 0.68, and 0.57, respectively) on the realization of environmental recovery and climate recovery at the level of statistical significance (1%). This implies that ecological and climate recovery can be achieved through the manipulation of strategic alliances and the aspects attached to them by organizations. According to the coefficient of determination (R^2), strategic alliances and their dimensions explain 55%, 19%, 25%, 49%, and 38% of the variance in environmental and climate recovery results, respectively.

5. DISCUSSION

Environmental alliances can be effective when they reach a compromise between economic profit and environmental value creation. (Jolink & Niesten, 2021). This observation is also supported by the synergistic approach to low-carbon innovation systems, where government support, R&D capabilities, and cross-stakeholder cooperation introduce order parameters that facilitate systemic change (Yin, Zhao, Xi, & Zhang, 2019). Moreover, the examples of intermediaries in the digital platform of carbon trading, the process of standardization, and the strategies of multi-stakeholder engagement are illustrative of how strategic alliances can establish the required infrastructure for effective environmental governance (Tanveer, Ishaq, & Hoang, 2024). Thus, it is the strategic alliance that offers the collaborative model that will enable the mobilization of various resources, knowledge, and capabilities needed to make a significant impact on the environment.

The fact that businesses have yet to reach the size necessary to sustain the environment indicates a correlation between the formation of alliances and ecological effects. An example of sustainability change is the Portuguese nautical stations, where environmental education takes center stage, and the adoption of sustainable transport remains low (Hussain, Al-Hakeem, Shaheed, Amanah, & Fadhil, 2024; Pereira et al., 2022). This trend indicates that although organizations are forming environmental alliances, they may be engaging in activities that are visible and less risky, rather than undertaking transformative changes that require significant structural reengineering. The issue becomes more complex when it involves knowledge acquisition in international strategic alliances, as partners must balance technical, cultural, and informal relationship-building aspects to establish meaningful collaboration (Aslam, Ali, Qammar, Kiwan, & Dhir, 2022). Besides, the variability of the effect of relationship capital variables, including trust and commitment, on the performance of an alliance suggests that effective environmental relationships demand a long-term commitment to investing in relationships (Prabhudesai, Pangarkar, Prasad, & Sinha, 2023). The scope of the situation is broader than alliances and requires systemic environmental considerations that are essential in business models and operational practices.

The ineffective deployment of capital and resource pooling are indicators of the necessity to have integrated mechanisms that can match various organizational capabilities to long-term environmental goals. The case study of the business model developments of electric utilities by 756 cross-boundary transactions illustrates how organizations can centralize sustainable energy operations through renewable generation, smart management, and emerging technologies, developing new bundling strategies to supplement rather than abolish existing capabilities (Pereira, Niesten, & Pinkse, 2022). The relevance of leadership in shaping organizational CSR strategies, particularly in terms of strategic alliances, is extremely important, as societal and cultural factors pose challenges in how leaders navigate sustainability issues and integrate environmental goals with operational realities (Silvestri & Veltri, 2020). In addition, the use of modified total interpretive structural modeling to determine technological aspects for attaining Sustainable Development Goals reveals that a successful environmental transformation requires a hierarchical interpretation of factor dependencies and systematic methods of resource allocation (Rajan, 2022). The challenge, however, is not how to establish environmental alliances but how to build governing institutions, a process of resource integration, and leadership capacity to establish stable, sustainable environments

through joint action with the same scale and urgency as key issues of the modern environmental condition (Amanah, Hussein, & Bannay, 2022)

6. CONCLUSIONS

The statistical analysis shows that the companies view climate and environmental change as an opportunity for investment rather than a problem to be solved. This reflects an international trend that necessitates global concerted initiatives to enforce mitigation measures and adaptation strategies, as these issues pose significant impacts on human existence. The companies and organizations studied recognize the need to revitalize consumer and manufacturer awareness regarding the optimal use of advanced technology, as evidenced by various technical alliance models and future potential movements toward clean energy sources. However, the analysis reveals that these companies have not prioritized marketing alliances or the distribution of market control areas to achieve market equilibrium, despite expressing intentions to shift to renewable energy sources. This transition has been hindered by substantial challenges. Additionally, findings indicate a lack of understanding of climate and environmental change among strategic decision-makers within the sampled companies.

7. RECOMMENDATIONS

Climate and environmental changes represent a multi-layered degradation phenomenon, which should be addressed through shared damage strategies to solve the issue of fair distribution of resources in affected industries and areas. The adaptation culture should be encouraged by companies as part of production trends and consumption habits. Market proportionality should be carried out with a sage geographical influence zone allocation and in favor of project alliances, which can help in product development that is environmentally friendly. Organizations should give higher priority to energy conservation policies and program development that involve systematic recycling measures by installing artificial intelligence, data science software, and electronic waste management systems. The nature of environmental protection and sustainability microcosm that requires integrated social and economic interventions on the levels of national governance is still a moot issue between damage reduction strategies, carbon emission reduction, and attaining zero emissions without disrupting environmental harmony, as national governance levels still have not fully comprehended the concept of institutional flexibility.

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Institutional Review Board Statement: The study protocol was approved by the IRB of Faculty of Management and Economics, Kerbala University, Iraq. Informed verbal consent was obtained from all participants, and all data were anonymized to protect participant confidentiality.
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The authors declare that they have no competing interests.
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REFERENCES

Adger, W. N., Barnett, J., Brown, K., Marshall, N., & O'brien, K. (2013). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change, 3*(2), 112-117. https://doi.org/10.1038/nclimate1666

Albitar, K., & Hussainey, K. (2023). Sustainability, environmental responsibility and innovation. *Green Finance, 5*(1), 85–88.

Amanah, A. A., Hussein, S. A., & Bannay, D. F. (2022). Role of proactive behavior in entrepreneurial alertness: A mediating role of dynamic capabilities. *Problems and Perspectives in Management, 20*(4), 127–137. https://doi.org/10.21511/ppm.20(4).2022.10

Androcec, I., & Tarnik, T. (2007). Power plants on the liberalized Croatian electricity market and environmental protection. *Energy and Sustainability, 105*, 427-436. https://doi.org/10.2495/ESUS070421

Arrow, K. J. (2009). Some developments in economic theory since 1940: An eyewitness account. *Annual Review of Economics, 1*, 1–16. https://doi.org/10.1146/annurev.economics.050708.143405

Aslam, M. S., Ali, I., Qammar, A., Kiwan, L., & Dhir, A. (2022). How knowledge acquisition creates a competitive edge? A qualitative inquiry from international consultancy alliance. *International Marketing Review, 39*(3), 653-681. https://doi.org/10.1108/IMR-03-2021-0111

Camare, H. M., & Lane, D. E. (2015). Adaptation analysis for environmental change in coastal communities. *Socio-Economic Planning Sciences, 51*, 34-45. https://doi.org/10.1016/j.seps.2015.06.003

Da Rimini, F., Goodman, J., Swarnakar, P., & Ylä-Anttila, T. (2021). Climate policy networks in Australia: Dynamics of failure and possibility. *Australian Journal of Politics & History, 67*(2), 295-311. https://doi.org/10.1111/ajph.12725

Das, T. K., & Teng, B.-S. (2000a). Instabilities of strategic alliances: An internal tensions perspective. *Organization Science, 11*(1), 77-101. https://doi.org/10.1287/orsc.11.1.77.12570

Das, T. K., & Teng, B.-S. (2000b). A resource-based theory of strategic alliances. *Journal of Management, 26*(1), 31-61. https://doi.org/10.1177/014920630002600105

Das, T. K., & Teng, B.-S. (2001). Trust, control, and risk in strategic alliances: An integrated framework. *Organization Studies, 22*(2), 251-283. https://doi.org/10.1177/0170840601222004

Della Porta, D., & Portos, M. (2023). Rich kids of Europe? Social basis and strategic choices in the climate activism of fridays for future. *Italian Political Science Review/Rivista Italiana di Scienza Politica, 53*(1), 24-49. https://doi.org/10.1017/ipo.2021.54

Dussauge, P., Garrette, B., & Mitchell, W. (2000). Learning from competing partners: Outcomes and durations of scale and link alliances in Europe, North America and Asia. *Strategic Management Journal, 21*(2), 99-126.

Emami, A., Welsh, D. H., Davari, A., & Rezazadeh, A. (2022). Examining the relationship between strategic alliances and the performance of small entrepreneurial firms in telecommunications. *International Entrepreneurship and Management Journal, 18*(2), 637-662. https://doi.org/10.1007/s11365-021-00781-3

Enyinnah, N., Adefulu, A., Asikhia, O., & Onyia, V. (2020). Strategic alliance and market share of selected microfinance banks in Lagos Nigeria. *International Journal of Research Science and Management, 7*(2), 50-59.

Furrer, O., Tjemkes, B., & Henseler, J. (2012). A model of response strategies in strategic alliances: A PLS analysis of a circumplex structure. *Long Range Planning, 45*(5-6), 424-450. https://doi.org/10.1016/j.lrp.2012.10.003

Gifford, R., Kormos, C., & McIntyre, A. (2011). Behavioral dimensions of climate change: drivers, responses, barriers, and interventions. *Wiley Interdisciplinary Reviews: Climate Change, 2*(6), 801-827. https://doi.org/10.1002/wcc.143

Gulati, R. (1999). Network location and learning: The influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal, 20*(5), 397-420.

Hottman, A. (2019). Strategic approaches for sustainable organisational change. *Journal of Environmental Management and Sustainability, 12*(3), 45–58.

Hough, C., Green, K., & Plumlee, G. (2015). Impact of ethics environment and organizational trust on employee engagement. *Journal of Legal, Ethical and Regulatory Issues, 18*(3), 45–62.

Howland, F., Le Coq, J. F., Collazos, S., Arana, J., Blundo, G., Castellanos, A., & Martinez Baron, D. (2024). How can regional policy help address climate impacts in agriculture? Evaluating the climate-smart agriculture strategy for Central America (EASAC). *Climate Policy, 24*(10), 1426-1442. https://doi.org/10.1080/14693062.2024.2395911

Hussain, Z. N., Al-Hakeem, L. M., Shaheed, J. M., Amanah, A. A., & Fadhil, A. H. (2024). The impact of dynamic capabilities on achieving a sustainable competitive advantage. *Journal of Modern Project Management, 12*(1), 29–39.

Ireland, R. D., Hitt, M. A., & Vaidyanath, D. (2002). Alliance management as a source of competitive advantage. *Journal of Management, 28*(3), 413-446. https://doi.org/10.1016/S0149-2063(02)00134-4

Jolink, A., & Niesten, E. (2021). Sustainable development and business models of entrepreneurs in the organic food industry. *Business Strategy and the Environment, 30*(1), 118–134.

Martinez-Porchas, M., & Martinez-Cordova, L. R. (2012). World aquaculture: Environmental impacts and troubleshooting alternatives. *The Scientific World Journal, 2012*(1), 389623. https://doi.org/10.1100/2012/389623

Martinez, J. (2014). Environmental philosophy and social dynamics: Rethinking adaptation to climate change. *Environmental Ethics, 36*(2), 123–140.

Nissen, H. (2020). Alliance motivators and strategic collaboration: Revisiting the typology of inter-organizational partnerships. *Strategic Management Journal*, *41*(8), 1376–1399.

Nugent, J. P. (2011). Changing the climate: Ecoliberalism, green new dealism, and the struggle over green jobs in Canada. *Labor Studies Journal*, *36*(1), 58-82. https://doi.org/10.1177/0160449X10392528

Pereira, E., Martins, R., Marques, J. F., Flores, A., Aghdash, V., & Mascarenhas, M. (2022). Portugal nautical stations: Strategic alliances for sport tourism and environmental sustainability. *Frontiers in Sports and Active Living*, *4*, 982691. https://doi.org/10.3389/fspor.2022.982691

Pereira, G. I., Niesten, E., & Pinkse, J. (2022). Sustainable energy systems in the making: A study on business model adaptation in incumbent utilities. *Technological Forecasting and Social Change*, *174*, 121207. https://doi.org/10.1016/j.techfore.2021.121207

Prabhudesai, R., Pangarkar, N., Prasad, C. V., & Sinha, A. K. (2023). Performance impact of behavioural factors in alliances by SMEs: an empirical analysis. *International Journal of Productivity and Performance Management*, *72*(6), 1819-1839. https://doi.org/10.1108/IJPPM-06-2021-0341

Qi, J. J., & Dauvergne, P. (2022). China's rising influence on climate governance: Forging a path for the global South. *Global Environmental Change*, *73*, 102484. https://doi.org/10.1016/j.gloenvcha.2022.102484

Rajan, R. S. (2022). Leveraging technological factors and strategic alliances to achieve sustainable development goals. *Journal for International Business and Entrepreneurship Development*, *14*(1), 106-124. https://doi.org/10.1504/JIBED.2022.124241

Silvestri, A., & Veltri, S. (2020). Exploring the relationships between corporate social responsibility, leadership, and sustainable entrepreneurship theories: A conceptual framework. *Corporate Social Responsibility and Environmental Management*, *27*(2), 585-594. https://doi.org/10.1002/csr.1822

Simonin, B. L. (1999). Ambiguity and the process of knowledge transfer in strategic alliances. *Strategic Management Journal*, *20*(7), 595-623.

Sun, Z., Zhang, L., & Chen, Y. (2022). Project alliances and collaborative contracting: A review of key success factors and governance mechanisms. *International Journal of Project Management*, *40*(5), 435–447.

Tanveer, U., Ishaq, S., & Hoang, T. G. (2024). Enhancing carbon trading mechanisms through innovative collaboration: Case studies from developing nations. *Journal of Cleaner Production*, *482*, 144122. https://doi.org/10.1016/j.jclepro.2024.144122

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509-533.

Wittneben, B. B. F. (2012). The climate change arena: Directing the politics of adaptation. *Business & Society*, *51*(3), 355–371.

Yin, H., Zhao, J., Xi, X., & Zhang, Y. (2019). Evolution of regional low-carbon innovation systems with sustainable development: An empirical study with big-data. *Journal of Cleaner Production*, *209*, 1545-1563. https://doi.org/10.1016/j.jclepro.2018.11.001