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| RESEARCH ARTICLE

Ecosystems Defined and Applied to Organizations: An International Perspective

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| ABSTRACT

This article highlights the emerging applications of business ecosystems to organizations across a spectrum of disciplinaries. The article begins with a historical overview of business ecosystems, and a comparative analytical overview of the emergent intersectoral applied use of ecosystems in GCC and G20 governments. Furthermore, the article extends to illustrations of health sector ecosystems in GCC and G20 countries. It concludes with the advantages and disadvantages of vividly applying the ecosystem mindset pragmatically to organizational structures and governance.

| KEYWORDS

Business Ecosystems, Intersectoral Use of Ecosystems, GCC and G20 Governments, Organizational Structures and Governance, Health Sector, Saudi Commission for Health Specialties

| ARTICLE INFORMATION

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1. Introduction

1.1 Business Ecosystems in Historical Perspective

The notion of business ecosystems is a metaphor borrowed from biology, which emerged in the early 1990s as a replacement of the traditional approach to business strategy emphasizing offers and markets. Particularly, Moore (1993) first advanced the metaphor in a seminal paper in the *Harvard Business Review*, highlighting the failure of concepts such as networks, strategic alliances, and virtual organizations to help organizations effectively resolve modern challenges. Businesses struggled to anticipate challenges managers faced when nurturing vast and sophisticated business community networks required for continued innovation and long-term survival. Therefore, Moore sought to develop a stable structure of community leadership in tandem with fast-paced and highly dynamic business environments. Moore (1996) later expanded the original idea he advanced in the early 1990s in his classical textbook, *The Death of Competition: Leadership and Strategy in the Age of Business Ecosystems*. By death of competition, the notion of business ecosystems does not imply the complete absence of rivals in the market. In fact, Moore (1996) highlighted the increased intensity of competition but warned against managerial focus on elimination of competition at the expense of co-evolution. In other words, business ecosystems favored a constitutive rather than guarded strategic approach to management. In the emerging framework, former rivals found themselves working as allies since they were aware of their tied futures. Co-evolution involves positive collaboration for sustained survival. According to Moore (1996), this concept is based on Bateson's definition in which the phenomenon denotes "a process in which interdependent species evolve in an endless reciprocal cycle" (p.13). The pattern in co-evolution transcends competition and collaboration, tying the fates of co-evolving companies together rather than encouraging them to define their paths independently. In business, ecosystems discourage organizational leaders from focusing on micro-management. Organizations seek to benefit from the rich and dynamic opportunities in the environment in which they operate. In the information age, business ecosystems could benefit from vast amounts of data individual organizations control to strengthen their collaborative ventures and understand markets.

The concept of business ecosystems was refined further in the early 2000s. Iansiti and Levien (2004) transcended the descriptive approach by Moore, focusing on the specific networks of suppliers, distributors, competitors, service providers, and outsourcing units. Collaboration was essential for the survival of every entity in the network since all parties shared the fate of the network. The ecosystem relied on sophisticated technology to support platforms comprising services and tools other entities in the system could use to drive performance. The benefits of an ecosystem approach included information sharing, globalized procurement, distribution efficiencies, centralized buying, and optimized product mix (Iansiti & Levien, 2004). Therefore, the improved performance of a company in an ecosystem was attributable to its approach to managing the ecosystem of business partners. While Moore established the business ecological systems analogy, the originator of the idea did not theorize the concept. Parisot and Isckia (2013) outlined a critical theorization of business ecosystems validating the model both internally and externally. Particularly, no antagonistic contradictions were reported between theoretical constructs, establishing the theory of business ecosystems as a coherent model. External validation involved the ability of a theory to offer fitting solutions to perceived challenges, and Moore's metaphor-based model was found to offer a new way of thinking about competition and business continuity. The notion of business ecosystems has matured, given the expansion of research to explore deeper application of the concept. Adner (2017), for instance investigates the relationship between ecosystems and related concepts, such as networks and technology systems while Holgersson et al. (2022) investigate factors encouraging robust business ecosystems. Given the expanded research on business ecosystems, managers could explore new coordination and management strategies to leverage the benefits of the phenomenon. However, according to Gao (2021), research of corporate ecosystems is still in its budding phase. Nonetheless, since the concept has been investigated and theorized, the issue of maturity should not arise. Overall, Moore's ecosystem metaphor has been verified theoretically and researchers have expanded investigations to explore potential applications in resolving emergent challenges.

2. Literature Review and Methodology

2.1 Intersectoral Use of Ecosystems in GCC and G20 Governments

The use of ecosystems in the GCC and G20 countries helps to identify the popularity of the strategy in different regions around the world as shown in table 1 that follows. Various studies have focused on the deployment of the approach in GCC countries (Darwish et al., 2020; Solovieva et al., 2020). In the GCC, the sectoral focus of investigators was entrepreneurship and technological innovation. The findings of the research revealed the beneficial role of the GCC's oil wealth on inter-sectoral implementation of ecosystems. Similarly, government support of entrepreneurship ecosystems was confirmed in the GCC. However, while evidence of intersectoral implementation of ecosystems was confirmed in the GCC, the region needed to develop robust ecosystems linking specific sectors, including scientific research, education, and production sectors. The majority of studies reported increased intersectoral implementation of ecosystems by G20 countries (Kraemer, 2017; Li et al., 2021; UN Economic and Social Commission for Asia and the Pacific, 2021; Xiong et al., 2023). The inter-sectoral use of ecosystems in G20 countries showed more variety compared to the case in the GCC. Particularly, the sectors relying on robust ecosystems in these countries included tourism, finance and environment, entrepreneurship, finance and industrial sectors, and the ocean economy involving human exploitation of ocean resources for economic survival. Ecosystems were especially influential in the growth of the Chinese economy, with results from Li et al's (2021) study indicating the environmental protection division transformed from a sector with weak power of dispersion ties to one with strong power and weak sensitivity dispersion. The transformation could be attributed to the support of the environmental protection sector by the financial sector. This support, as Li et al. (2021) report, climaxed in 2015, and began to drop over the next three years until 2018. Overall, the results reiterate the crucial role the financial sector plays in sustaining robust ecosystems, but future studies need to focus on the role of other sectors, such as research and development, in increasing the viability of ecosystems.

2.1.1 A Comparative Analytical Overview and Findings

Table 1: ***Intersectoral Use of Ecosystems in GCC and G20 Governments***

Authors	Title	Country/Countries/Region	Sector	Findings
Darwish et al. (2020)	Entrepreneurship Ecosystem in GCC and India: A Perspective	GCC and India	Entrepreneurship	1. The GCC entrepreneurship ecosystems benefit immensely from the vast oil reserves in the region. 2. GCC entrepreneurship ecosystems receive substantial government support. 3. GCC entrepreneurship ecosystems have the advantage of established physical and service infrastructures
UN Economic and Social Commission for Asia and the Pacific (2021)	Toward a Roadmap for Inclusive Business in Wellness Tourism in Indonesia	Indonesia	Tourism	The Indonesian government has identified four strategic intervention areas to enhance inclusive business in tourism including the following: 1. Incentives – These incentives are used to motivate traditional wellness tourism companies to embrace inclusive practices. 2. Market connections and capacity building – The government seeks to provide platforms for technical assistance and capacity building. 3. Information and awareness- Inform budding wellness tourism players about the benefits of inclusive business practices. 4. Strategic commitment and coordination.
Solovieva et al. (2020)	Gulf Innovation Systems: Formation Features and Development Prospects	GCC	Technological innovation	The GCC should implement an ecosystem linking scientific research, education, and production sectors.
Li et al. (2021)	Linkage Analysis between Finance and Environmental Protection Sectors in China: An Approach to Evaluating Green Finance	China	Finance and Environment	Between 2002 and 2018, the Chinese green financial sector grew with strong forward and weak backward ties reversing the earlier established trend of weak backward and strong forward ties. The growth was attributable to a robust finance and environment ecosystem.
Xiong et al. (2023)	The Impact of Green Finance on the Optimization of Industrial Structure: Evidence from China	China	Finance and Industrial Sectors	Green finance not only benefited China's industrial structure but also enhanced the ecological environment.
Kraemer (2017)	A Sustainable Ocean Economy, Innovation and Growth: A G20 Initiative	G20	Ocean Economy	In the Ocean economy involving human exploitation of ocean resources for economic survival, designating some areas as marine protected areas generates economic benefits to individual sectors and to the surrounding community.

2.2 Ecosystems in the Health Sector Across GCC and G20 Countries

Since its emergence, the ecosystem model has widely been investigated as an alternative to corporate competitiveness, but the concept has drawn the interest of scholars seeking to improve efficiency in healthcare. An overview of related applications is shown in table 2 that follows. In the GCC, Saudi Arabia and the UAE have led in research, a trend attributable to their economic leadership

in the region given they are the two leading economies in the Gulf. However, compared to Saudi Arabia, the UAE has a notable establishment of accelerators to drive the country's vision 2071 health initiative (New Zealand Trade and Enterprise, 2021). Particularly, the UAE has five accelerators, including Dubai Future Foundation, Dubai Future Accelerators, Dubai SME-Ztartup, Hub 71, and Area 2071. Dubai Future Accelerators was launched in 2016 to increase private sector, government, and entrepreneur collaboration. The initiative involves various government agencies in the UAE finding a challenging aspect of healthcare and teaming up with different health sector players in the private sector to find a solution. The program's duration lasts between six to nine weeks. The government provides several incentives to motivate private sector entity participation, including airfares, accommodation, and the opportunity to meet funders. More importantly, since the model brings together health experts with similar interests, the proposed solutions are highly innovative. Outside of the GCC, G20 countries have focused on various aspects of health sector ecosystems, including value creation, model approaches, innovation, and digitization (Balla et al., 2023; Ding et al., 2024; Lepore et al., 2023; Roth et al., 2024; Sarma & Kaul, 2023). Digitization of healthcare has received notable attention, given its potential to resolve some of the challenges, such as rising cost, facing communities around the world. Overall, researchers should focus on ways through which emergent healthcare ecosystems contribute to strategic and competitiveness aimed at improving the healthcare in national and regional systems.

2.2.1 A Comparative Analytical Overview and Findings

Table 2: *Health Sector Ecosystems in the GCC and G20*

Authors	Title	Country/Countries/Region	Sector	Findings
Roth et al. (2023)	Value Creation Mechanisms in a Social and Health Care Innovation Ecosystem – An Institutional Perspective	Finland (G20)	Healthcare (value creation)	In institutionally diverse social and healthcare innovation ecosystems public, private, and civil society interests should be balanced.
New Zealand Trade and Enterprise (2021)	Healthcare in the UAE and Saudi Arabia: What's the Opportunity	Saudi Arabia and the UAE	Healthcare (Ecosystem accelerators)	Government initiatives played a central role in the success of ecosystems in the two GCC member states. In the UAE, these initiatives included Area 2071 and Hub 71, while Saudi Arabia had the National Transformation Program.
Balla et al. (2023)	Business Ecosystems in Healthcare Industry: A Framework of Analysis	Romania	Healthcare	The linear model of ecosystem development characterized by a gradual expansion of business interests is superior to the classical model that leverages technology and strategies such as mergers and acquisition to remain competitive.
Lepore et al. (2023)	Uncovering the Potential of Innovation Ecosystems in the Healthcare Sector after the COVID-19 Crisis	Italy	Healthcare and Innovation Ecosystems	Innovation ecosystems comprising artefacts, activities, actors, and institutions help to overcome the challenges of adopting AI solutions in healthcare.
Ding et al. (2024)	Digital Economy and High-quality Development of the Healthcare Industry	China	Healthcare and the digital economy	Development of the digital economy was reported to have a positive effect on the medical and health sectors.
Sarma and Kaul (2023)	How can the G20 Build Stronger Digital Health Systems?	G20	Healthcare and Digital Systems	G20 countries should implement strategies, such as the promotion of digital public infrastructure, to advance digital health.

3. Conclusion

3.1 Advantages and Disadvantages of Applying the Ecosystem Mindset to Organizational Structures and Governance

While the ecosystem mindset generates several benefits for an organization, the management metaphor does not come without certain demerits. According to Sjordin et al. (2024), application of the ecosystem mindset in business practice helps businesses develop foresight capabilities and integrate easily in the market. The foresight capabilities of ecosystems are attributable to

scouting where businesses systematically search for partners, or allies, aligned with the internal needs of the business. This process requires extensive gathering of market insights. Foresight capabilities are also linked to partnership cultivation and exploratory relationship development. In other words, managers are compelled to think ahead, helping them to develop an accurate picture of the business several years into the future. Concerning ecosystem integration capabilities, this merit is attributed to the need to formulate routines supporting robust cross-functional partnerships. The ecosystem mindset is also linked to value creation (Gao, 2021; Hysing, 2021; Jacobides et al., 2018; Trischler et al., 2023). Such value is created in the collaborative partnerships which support teams of experts working together to deliver set goals. However, while ecosystems are credited with the above advantages, the mindset has the disadvantage of challenging trust and control over innovative ideas (Cobben & Roijakkers, 2019). In other words, organizations have to grapple with the reality of sharing the spoils of innovative research and development and ideas. Another demerit closely related to lack of trust and inability to retain control over access to innovations is the potential of opportunistic behavior. Therefore, firms should select partners to collaborate with carefully to avoid striking agreements with allies with less value-addition. Lenkenhoff et al. (2018) also describe other challenges linked to digital business ecosystems, including interoperability problems and actor-related challenges. Interoperability is linked to the inherent incompatibilities in information technologies. For instance, while business may find collaboration with a certain partner or certain partners productive, they may soon realize exchanges between employees could be hindered due to a mismatch in software or information technology hardware. Therefore, businesses intending to collaborate should invest in digital data interfaces to ensure complementarity. Actor-related challenges, on the other hand, arise because of individual-level behavior, engagement, and attitudinal differences. Therefore, when seeking partners, firms should prioritize cohesion-enhancing competences such as connectivity, subordination, and communalism. Overall, the ecosystem mindset could help organizations to enhance continuity, and the drawbacks of the model could easily be remedied through strategic selection of partners.

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References

[1] Adner, R. (2017). Ecosystem as structure: An actionable construct for strategy. *Journal of Management*, *43*(1), 39–58. https://doi.org/10.1177/0149206316678451
[2] Balla, A., Taucean, I., Dermol, V., & Avasilcai, S. (2023). Business ecosystems in healthcare industry: A framework of analysis. *Technology, Innovation, and Industrial Management*. Economic, Social and Environmental Sustainability: The Role of Technology and Political Dialogue, Valetta, Malta.
[3] Cobben, D., & Roijakkers, N. (2019). The dynamics of trust and control in innovation ecosystems. *International Journal of Innovation*, *7*(1), Article 1. https://doi.org/10.5585/iji.v7i1.341
[4] Darwish, S., Raman, R., Gomes, A. M., & Nawaz, N. (2020). Entrepreneurship ecosystem in GCC and India: A perspective. *Journal of Statistics Applications & Probability*, *10*(1), 185–201.
[5] Ding, Z., Qu, X., & Li, C. (2024). Digital economy and high-quality development of the healthcare industry. *Frontiers in Public Health*, *12*. https://doi.org/10.3389/fpubh.2024.1331565
[6] Gao, R. (2021). The theory and development of business ecosystems. *International Conference on Economic Management and Cultural Industry*, *203*, 2255–2260.
[7] Holgersson, M., Baldwin, C. Y., Chesbrough, H., & Bogers, M. L. A. M. (2022). The forces of ecosystem evolution. *California Management Review*, *64*(3), 5–23. https://doi.org/10.1177/00081256221086038
[8] Hysing, E. (2021). Challenges and opportunities for the Ecosystem Services approach: Evaluating experiences of implementation in Sweden. *Ecosystem Services*, *52*, 101372. https://doi.org/10.1016/j.ecoser.2021.101372
[9] Iansiti, M., & Levien, R. (2004). Strategy as ecology. *Harvard Business Review*, *82*(3), 68–78.
[10] Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, *39*(8), 2255–2276. https://doi.org/10.1002/smj.2904
[11] Kraemer, R. A. (2017). *A sustainable ocean economy, innovation and growth: A G20 initiative* (Policy Brief No. 113). Center for International Innovation. https://publications.iass-potsdam.de/rest/items/item_2521907_4/component/file_2521905/content
[12] Lenkenhoff, K., Wilkens, U., Zheng, M., Süße, T., Kuhlenkötter, B., & Ming, X. (2018). Key challenges of digital business ecosystem development and how to cope with them. *Procedia CIRP*, *73*, 167–172. https://doi.org/10.1016/j.procir.2018.04.082
[13] Lepore, D., Frontoni, E., Micozzi, A., Moccia, S., Romeo, L., & Spigarelli, F. (2023). Uncovering the potential of innovation ecosystems in the healthcare sector after the COVID-19 crisis. *Health Policy*, *127*, 80–86. https://doi.org/10.1016/j.healthpol.2022.12.001
[14] Li, L., Wu, W., Zhang, M., & Lin, L. (2021). Linkage Analysis between Finance and Environmental Protection Sectors in China: An Approach to Evaluating Green Finance. *International Journal of Environmental Research and Public Health*, *18*(5), 2634. https://doi.org/10.3390/ijerph18052634
[15] Moore, J. F. (1993, May/June). Predators and prey: A new ecology of competition. *Harvard Business Review*, 75–86.
[16] Moore, J. F. (1996). *The death of competition: Leadership and strategy in the age of business ecosystems*. Harper Business.

[17] New Zealand Trade and Enterprise. (2021). *Road to expo 2020: Healthcare in the UAE and Saudi Arabia*. https://assets.ctfassets.net/pn8wbiqtnzw9/5bhy7J7Et1VltWREDb5J5U/083c4053674bca5472f0981a344ad3b3/Healthcare_in_the_UAE_and_Saudi_Arabia_____October_2021.pdf
[18] Parisot, X., & Thierry, I. (2013). *Critical theorization of business ecosystems* (B. Letaifa, T. Gratacap, & T. Isckia, Eds.; pp. 21–38). de Boeck.
[19] Roth, M., Vakkuri, J., & Johanson, J.-E. (2024). Value creation mechanisms in a social and health care innovation ecosystem – an institutional perspective. *Journal of Management and Governance*. https://doi.org/10.1007/s10997-024-09696-x
[20] Sarma, A., & Kaul, V. (2023). *How can the G20 build stronger digital health systems?* Orfonline.Org. https://www.orfonline.org/expert-speak/how-can-the-g20-build-stronger-digital-health-systems
[21] Sjödin, D., Liljeborg, A., & Mutter, S. (2024). Conceptualizing ecosystem management capabilities: Managing the ecosystem-organization interface. *Technological Forecasting and Social Change*, *200*, 123187. https://doi.org/10.1016/j.techfore.2023.123187
[22] Solovieva, Y. V., Korenevskaya, A. V., & Lebedeva, N. E. (2020). Gulf innovation systems: Formation features and development prospects. *European Research Studies Journal*, *23*(1), 419–428.
[23] Trischler, J., Røhnebæk, M., Edvardsson, B., & Tronvoll, B. (2023). Advancing public service logic: Moving towards an ecosystemic framework for value creation in the public service context. *Public Management Review*, *0*(0), 1–29. https://doi.org/10.1080/14719037.2023.2229836
[24] UN Economic and Social Commission for Asia and the Pacific. (2021). *Towards a roadmap for inclusive business in wellness tourism in Indonesia*.
[25] https://www.unescap.org/sites/default/d8files/knowledge-products/IB%20Indonesia_Roadmap%20report_webFINAL.pdf
[26] Xiong, X., Wang, Y., Liu, B., He, W., & Yu, X. (2023). The impact of green finance on the optimization of industrial structure: Evidence from China. *PLOS ONE*, *18*(8). https://doi.org/10.1371/journal.pone.0289844