



















































pertaining to indicators of sustainable healthcare institutions in Taiwan. The implementation of corporate governance has the potential to improve the environmental, social, and economic welfare through various initiatives [110].

According to DEMATEL results, within the Learning and Growth (L) perspective, the central roles among other indicators are L4: Rate of Employee Sick Leave and L2: Employee Absenteeism. The finding reveals that the rate of employee sick leave, is a paramount lagging indicator employed to evaluate private hospitals' performance. This is due to its significant impact as the primary "effect-factor" influenced by 37 distinct indicators. According to the strategy map, L4: Rate of employee-sick-leave, L2: Employee Absenteeism and L3: Staff turnover rate are all affected by many other indicators, particularly, P1: Patient satisfaction rate, P2: Patient complaints, P3: Patient retention rate and F1: Return on Investment (ROI).

The indicator with the highest value of C-R, Return on Investment (ROI), exerted the most significant influence on the remaining indicators and was identified as the primary causal factor among them. Moreover, the findings indicate that the proportion of revenue derived from repeat corporate business, the Net Promoter Score (NPS), and resource utilization are significant factors affecting the return on investment (ROI) for private hospitals. These results suggest that enhancing a hospital's reputation and market positioning through cultivating positive relationships with diverse customer segments, as well as optimizing resource utilization, may lead to increased ROI.

In the Customer/Patient perspective (P), P5: Revenue from repeat businesses (corporate business, main effect factor in this perspective), P6: Net Promoter Score (NPS) (main cause factor in this perspective) and P2: Patient Complaints rate are the most central crucial indicators. Furthermore, as per the strategy map, in order to augment the proportion of revenue generated from recurring business, three internal business process indicators have been recognized as having an impact, specifically IP10: Discharge Against Medical Advice (DAMA), IP: 15 Sentinel event rates, and IP16: Legal complaints against the hospital. Furthermore, as per the strategy map, in order to augment the proportion of revenue generated from recurring business, three internal business process indicators have been recognized as having an impact, specifically IP10: Discharge Against Medical Advice (DAMA), IP: 15 Sentinel event rates, and IP16: Legal complaints against the hospital.

In the Internal Business Process Perspective (IP), the strategy map results show that IP16: Legal complaints against the hospital, IP17: Daily staffing vs occupancy, IP1: ER waiting time, IP11: Bed occupancy rate and IP15: Sentinel event rate are the top crucial central indicators of private hospital's performance. The duration of waiting time in emergency rooms is a significant concern that impacts numerous hospitals, leading to patient dissatisfaction. In 2008, a study conducted by researchers in Ontario revealed that prolonged waiting times not only affect patient satisfaction, but also elevate the likelihood of mortality and hospital readmission for patients who have been discharged from the emergency department [111].

The present study reveals that IP1: prolonged waiting times in the emergency room have a significant impact on the turnover rate of staff, frequency of employee sick leave, and availability of training opportunities. These findings suggest that extended waiting periods not only impose physical strain and burnout on staff, but also deprive them of the time required for professional development and training, ultimately leading to elevated rates of turnover and sick leave.

### **The Prioritization of the Critical Indicators**

The study results indicate that the top ten priorities of indicators for the private hospitals are F1: Return on Investment (ROI), F4: Market Share, F3: Net Operating Profit After TAX (NOPAT), P6: Net Promoter Score (NPS), IP16: Legal complaints against the hospital, F2: Net Operating Margin, P5: % of Revenue from repeat business, P2: Patient Complaints/Incidence Rate (%), IP10: Discharge Against Medical Advice (DAMA) and IP18: Resource utilization (\$ value of outputs/net operating costs). These ten indicators are deemed to be the most crucial causal factors in the developed strategy map. With regards to the strategy map, it can be



observed that F4: Market Share, exerts an impact on P1: Patient Satisfaction Rate, P3: Patient Retention Rate, and P5: Percentage of Revenue derived from Repeat Business. The findings presented here are consistent with those reported by Wu [2011]. However, it should be noted that while Wu's study identified Market Share as the primary causal factor, this study identifies Return on Investment (ROI) as the most significant factor, with Market Share ranking second in importance.

### RECOMMENDATIONS AND MANAGERIAL IMPLICATION

The findings of the study address a previously identified obstacle in the literature regarding the execution of Sustainable Balanced Scorecard (SBSC) frameworks by decision-makers [112]. This obstacle pertains to the qualitative nature of sustainability parameters, which contrasts with the typically quantitative nature of the four traditional perspectives of the Balanced Scorecard (BSC). Consequently, the study developed a SBSC model by identifying a total of 49 performance indicators for private hospitals in Egypt. The adoption of this approach is expected to yield a decrease in the amount of effort and learning curve that private hospital leaders need to undergo in identifying a suitable sustainable performance measurement framework for their respective institutions.

Additionally, DEMATEL method was employed to establish a strategy map by analyzing the causal interrelationships and influence's strengths among the SBSC indicators, based on the synthesized opinions of hospital leaders. The prioritization results suggest a viable approach for hospital administrators to optimize resource allocation towards areas that require the most improvement. The study results indicate some managerial implications as follows:

First, the DEMATEL method can offer practical guidance for prioritizing strategic initiatives of private hospitals, as the causal relationships between all indicators are logically revealed through the systematically-constructed strategy map. Particularly, in situations where there are limitations in terms of time, finances, infrastructure, and human resources, it would be beneficial for managers to prioritize key indicators that hold greater influence over the others. For example, the developed strategy map includes several leading indicators, which are performance drivers that have a specific influence on the one lagging indicator, namely the "Rate of employee-sick-leave." This outcome measure is considered a main effect-factor with a relatively lower priority. These findings suggest that as enhancement of governance control, financial performance, and patient satisfaction enhance, rate of employee sick leave decreases. Consequently, private hospitals can consider the rate of employee sick leave as a significant lagging indicator, which serves as an outcome measure for performance measurement by management.

Second, it is recommended that hospital managers prioritize the examination of interdependencies among indicators, as such interdependencies may result in positive reinforcement among indicators.

Third, the study results indicate that the evaluation of private hospitals' performance is contingent upon several key indicators, including "Governance Control Activities," "Governance Financial Activities," "Non-compliance with laws and regulations," "Return on Investment," "% of Revenue from repeat business," "Net Promoter Score (NPS)," and "Patient Complaints/Incidence Rate". The initial three crucial indicators pertain to the governance perspective of the SBSC, whereas the final three crucial indicators pertain to the customer/patient perspective, with only one indicator (ROI) pertaining to the financial perspective.

Thus, it can be inferred that private hospitals may find it more advantageous to prioritize sustainability and non-financial measures, specifically those within the governance and customer/patient perspectives, as primary outcome measures, rather than relying solely on the financial measures commonly utilized in traditional Balanced Scorecard implementations, as depicted in the top (financial perspective) of the fundamental strategy map template introduced by Kaplan and Norton [113]. Private hospitals should establish strategic objectives based on governance and customer-orientation.

## RESEARCH LIMITATION AND OPPORTUNITIES FOR FUTURE RESEARCH

This research is susceptible to the typical constraints of survey-based inquiry, which include: The DEMATEL questionnaire survey, similar to other expert questionnaires, is subject to limitations in responses due to the subjective nature of decision-making that is inherent in human consciousness. Secondly, the formation of an expert panel is bound to lead to selection bias. Thirdly, it is important to note that the subjective evaluations of various experts regarding the distinct SBSC perspectives may exhibit variations. It is possible that the critical indicators chosen by private hospitals for the SBSC may not be applicable to other sectors or institutions.

The degree of cooperation between private hospitals and external researchers is restricted, which limits access to certain information, including performance targets, strategic initiatives, and action plans of private hospitals. Thus, this study focused solely on two elements, namely performance indicators and their significance, within various sectors and institutions. In order to enhance its utility for SBSC developers in the healthcare sector, future research endeavors may extend their scope to encompass additional SBSC components, such as targets and initiatives. Furthermore, further investigation is necessary to determine the feasibility of implementing the proposed SBSC model in various countries and contexts, including both public and private healthcare facilities.

## REFERENCES

1. Chang D-S, Wang W-S, Wang R (2017) Identifying critical factors of sustainable healthcare institutions' indicators under Taiwan's national health insurance system. *Soc Indic Res* 140(1): 287-307.
2. Khan M, Hussain M, Gunasekaran A, Ajmal MM, Helo PT (2018) Motivators of social sustainability in healthcare supply chains in the UAE-stakeholder perspective. *Sustain Prod Consum* 14: 95-104.
3. Delai I, Takahashi S (2011) Sustainability measurement system: A reference model proposal. *Soc Responsib J* 7(3): 438-471.
4. Northcott D, Taulapapa TM (2012) Using the balanced scorecard to manage performance in public sector organizations. *Int J Public Sect Manag* 25(3): 166-191.
5. Porter ME (2010) What is value in health care. *N Engl J Med* 363(26): 2477-2481.
6. Habib AM, Shahwan TM (2020) Measuring the operational and financial efficiency using a Malmquist data development analysis: A case of Egyptian hospitals. *Benchmarking Int J* 27(9): 2521-2536.
7. Behrouzi F, Ma'aram A (2019) Identification and ranking of specific balanced scorecard performance measures for hospitals: A case study of private hospitals in the Klang Valley area, Malaysia. *Int J Health Plann Manag* 34: 1364-1376.
8. Gumbus A, Bellhouse D, Lyons B (2003) A three-year journal to organizational and financial health using balanced scorecard: A case study at a Yale New Haven System hospital. *J Bus Econ Stud* 9(2): 54-64.
9. Sargeant J (2012) Qualitative Research Part II: Participants, Analysis, and Quality Assurance. *J Grad Med Educ* 4(1): 1-3.
10. Markazi-Moghaddam N, Arab M, Ravaghi H, Rashidian A, Khatibi T, et al. (2016) A Knowledge Map for Hospital Performance Concept: Extraction and Analysis: A Narrative Review Article. *Iran J Public Health* 45(7): 843-854.
11. Veillard J, Champagne F, Klazinga N, Kazandjian V, Arah OA, et al. (2005) A Performance Assessment Framework for Hospitals: The WHO Regional Office for Europe PATH Project. *Int J Qual Health Care* 17(6): 487-496.

12. Cinaroglu S, Baser O (2018) Understanding the relationship between effectiveness and outcome indicators to improve quality in healthcare. *Total Qual Manag Bus Excell* 29(11-12): 1294-1311.
13. Gu X, Itoh K (2018) Performance measures for a dialysis setting. *J Renal Care* 44(1): 52-59.
14. Gu X, Itoh K (2016) Performance indicators: healthcare professionals' views. *Int J Health Care Qual Assur* 29(7): 801-815.
15. Núñez A, Neriz L, Mateo R, Ramis F, Ramaprasad A (2018) Emergency departments key performance indicators: A unified framework and its practice. *Int J Health Plann Manag* 33(4): 915-933.
16. Peixoto MGM, Musetti MA, Mendonça MCA (2018) Multivariate analysis techniques applied for the performance measurement of Federal University Hospitals of Brazil. *Comput Ind Eng* 126: 16-29.
17. Soysa IB, Jayamaha NP, Grigg NP (2018) Developing a strategic performance scoring system for healthcare nonprofit organizations. *Benchmarking* 25(9): 3654-3678.
18. Si S-L, You X-Y, Liu H-C, Huang J (2017) Identifying key performance indicators for holistic hospital management with a modified DEMATEL approach. *Int J Environ Res Public Health* 14(8): 934.
19. Schwartz R, Deber R (2016) The Performance Measurement: Management Divide in Public Health. *Health Policy* 120(3): 273-280.
20. Zidarov D, Sicotte C, Menon A, Hallé MC, Poissant L (2016) Factors influencing use of a performance measurement system in a rehabilitation hospital. *J Hosp Admin* 5(5): 7.
21. Naranjo-Gil D (2016) The Role of Management Control Systems and Top Teams in Implementing Environmental Sustainability Policies. *Sustainability* 8(4): 359.
22. de Harlez Y, Malagueño R (2016) Examining the Joint Effects of Strategic Priorities, Use of Management Control Systems, and Personal Background on Hospital Performance. *Manag Account Res* 30: 2-17.
23. Liu YM (2017). Using balanced scorecard to help improving the quality of care and service for the private clinics in Taiwan. Johns Hopkins University.
24. Santos EF, Catânio AR, Pizzo JCM (2019) Análise das modificações do BSC a partir de uma revisão sistemática da literatura de periódicos nacionais, XXVI Congresso brasileiro de custos-Curitiba, PR, Brasil. pp: 26.
25. Neda V, Cankar SS, Linšak Z (2019) Effectiveness Measurement Using DEA & BSC Methods in Public Health Services. *NISPAcee J Public Admin Policy* 12(1): 199-216.
26. Malbašić I, Marimon F (2019) A simplified balanced. balanced scorecard. *Eur Account Manag Rev* 5(2): 38-60.
27. Catuogno S, Arena C, Saggese S, Sarto F (2017) Balanced performance measurement in research hospitals: The participative case study of a hematology department. *BMC Health Serv Res* 17(522): 1-11.
28. Gurd B, Gao T (2008) Lives in the balance: An analysis of the balanced scorecard (BSC) in healthcare organizations. *Int J Prod Perform Manag* 57(1): 6-21.
29. Delen D, Dorokhov O, Dorokhova L, Dinçer H, Yuksel S (2020) Balanced scorecard-based analysis of customer expectations for cosmetology services: A hybrid decision modeling approach. *J Manag Anal* 7(4): 1-33.
30. Cobbold I, Lawrie G (2003) The development of the Balanced Scorecard as a strategic management.

31. Speckbacher G, Bischof J, Pfeiffer T (2003) A descriptive analysis on the implementation of balanced scorecards in German-speaking countries. *Manag Account Res* 14(4): 361-388.
32. Morisawa T (2002) Building performance measurement systems with the balanced scorecard approach. *NRI Papers* 45: 1-15.
33. Costa RLD, Pereira L, Dias Á, Gonçalves R, Jerónimo CH (2022) Balanced scorecard adoption in healthcare. *Int J Electron Healthc* 12(1): 22-40.
34. Meliones JN, Ballard R, Liekweg R, Burton W (2001) No mission, no margin: It's that simple. *J Health Care Finance* 27(3): 21-29.
35. Jones MLH, Filip SJ (2000) Implementation and outcomes of a balanced scorecard model in women's services in an academic health care institution. *Qual Manag Health Care* 8(4): 40-51.
36. Curtright JW, Stolp-Smith SC, Edell ES (2000) Strategic performance management: Development of a performance measurement system at the Mayo Clinic. *J Healthc Manag* 45(1): 58-68.
37. Kershaw R, Kershaw S (2001) Developing a balanced scorecard to implement strategy at St Elsewhere Hospital. *Manag Account Quart* 2(2): 28-35.
38. Pham CD, Vu S, Pham YTK, Vu NT (2020) Evaluating Performance of Vietnamese Public Hospitals Based on Balanced Scorecard. *J Asian Finance Econ Bus* 7(6): 339-349.
39. Aujiropongpan S, Meesook K, Theinsathid P, Maneechot C (2020) Performance Evaluation of Community Hospitals in Thailand: An Analysis Based on the Balanced Scorecard Concept. *Iran J Public Health* 49(5): 906-913.
40. Sukma DI (2020) Implementation of the Balanced Scorecard Approach in Industries: A Systematic Literature Review. *Indones J Indust Eng Manag* 1: 105-115.
41. Shukri NFM, Ramli A (2015) Organizational structure and performances of responsible Malaysian healthcare providers: A balanced scorecard perspective. *Procedia Econ Finance* 28: 202-212.
42. Meena K, Thakkar J (2014) Development of balanced scorecard for healthcare using interpretive structural modeling and analytic network process. *J Adv Manag Res* 11(3): 232-256.
43. Tabrizipour IAP, Fazli S, Alvandi M (2012) Using combined approach of FAHP-BSC to evaluate the performance of Hashemi Nejad hospital Tehran. *Health Inf Manag* 9(3): 327-338.
44. Raeisi AR, Yarmohammadian MH, Bakhsh RM, Gangi H (2012) Performance evaluation of Al-Zahra academic medical center based on Iran balanced scorecard model. *J Educ Health Promot* 1: 1.
45. Smith M, Loonam J (2016) Exploring strategic execution: A case study on the use of the balanced scorecard within an Irish hospital. *J Strategy Manag* 9(4): 406-428.
46. Perkins M, Grey A, Remmers H (2014) What do we really mean by "Balanced Scorecard"? *Int J Prod Perform Manag* 63(2): 148-169.
47. Akkermans HA, van Oorschot KE (2005) Relevance assumed: a case study of balanced scorecard development using system dynamics. *J Oper Res Soc* 56(8): 931-941.
48. Bukh PN, Malmi T (2005) Re-examining the cause-and-effect principle of the balanced scorecard (Chapter 4), in Jonsson, S. and Mouritsen, J. (Eds), *Accounting in Scandinavia, The Northern Lights*, Liber and Copenhagen Business School Press, Malmö. Pp: 87-113.
49. Yang M, Tung Y (2006) Using path analysis to examine causal relationships among balanced scorecard performance indicators for general hospitals: The case of a public hospital system in Taiwan. *Health Care Manag Rev* 31(4): 280-288.

50. United Nations (2015) Sustainable development goals. Available online at: <https://sustainabledevelopment.un.org/>
51. Bergman J-P, Knutas A, Luukka P, Jantunen A, Tarkiainen A, et al. (2016) Strategic interpretation on sustainability issues-eliciting cognitive maps of boards of directors. *Corp Gov Int J Bus Soc* 16(1): 162-186.
52. Galpin T, Whittington JL, Bell G (2015) Is your sustainability strategy sustainable? Creating a culture of sustainability. *Corp Gov Int J Bus Soc* 15(1): 1-17.
53. Szekely F, Strelbel H (2013) Incremental, radical and game-changing: Strategic innovation for sustainability. *Corp Gov Int J Bus Soc* 13(5): 467-481.
54. Trifilova A, Bessant J, Jia F, Gosling J (2013) Sustainability-driven innovation and the climate savers' program: Experience of international companies in China. *Corp Gov Int J Bus Soc* 13(5): 599-612.
55. Faber N, Jorna R, Van Engelen J (2005) The sustainability of 'sustainability' - A study into the conceptual foundations of the notion of sustainability. *J Environ Assess Policy Manag* pp: 1-34.
56. Glavic P, Lukman R (2007) Review of sustainability terms and their definitions. *J Clean Prod* 15(18): 1875-1885.
57. Talbot D, Raineri N, Daou A (2020) Implementation of sustainability management tools: The contribution of awareness, external pressures, and stakeholder consultation. *Corp Soc Responsib Environ Manag* 28(1): 71-81.
58. Eriksson D, Svensson G (2016b) The process of responsibility, decoupling point, and disengagement of moral and social responsibility in supply chains: Empirical findings and prescriptive thoughts. *J Bus Ethics* 134(2): 281-298.
59. Tate WL, Bals L (2016) Achieving shared triple bottom line (TBL) value creation: Toward a social Resource-Based view (SRBV) of the firm. *J Bus Ethics* 152(3): 1-24.
60. Hueskes M, Verhoest K, Block T (2017) Governing public-private partnerships for sustainability: An analysis of procurement and governance practices of PPP infrastructure projects. *Int J Project Manag* 35(6): 1184-1195.
61. Nikolaou IE, Evangelinos KI, Allan S (2013) A reverse logistics social responsibility evaluation framework based on the triple bottom line approach. *J Clean Prod* 56: 173-184.
62. Kwakye G, Brat GA, Makary MA (2011) Green Surgical Practices for Health Care. *Arch Surg* 146(2): 131-136.
63. Taylor A (2006) Sustainability indicator frameworks in Alberta: Setting the context and identifying opportunities. Drayton Valley: The Pembina Institute.
64. Atan T (2014) Leadership, change, and wisdom. *J Bus Adm Educ* 5: 158-170.
65. Vesty G, Brooks A (2016) St George Hospital: Flexible budgeting, volume variance, and balanced scorecard performance measurement. *Issues Account Educ* 32(3): 103-116.
66. Yuen PP, Ng AW (2012) Towards a balanced performance measurement system in a public health care organization. *Int J Health Care Qual Assur* 25(5): 421-430.
67. Koff E, Lyons N (2020) Implementing value-based health care at scale: The NSW experience. *Med J Aust* 212(3): 104-106 e101.
68. Porter ME, Teisberg EO (2006) *Redefining Health Care: Creating Value-Based Competition on Results*. Harvard business press.
69. Duckett S, Beaumont M, Bell G, Gunn J, Murphy A, et al. (2015) Leading Change in Primary Care: Boards of Primary Health Networks Can Help Improve the Australian Health

Care System. Available online at: [https://ahha.asn.au/sites/default/files/docs/policy-issue/leading\\_change\\_in\\_primary\\_care.pdf](https://ahha.asn.au/sites/default/files/docs/policy-issue/leading_change_in_primary_care.pdf)

70. Kim JY, Farmer P, Porter ME (2013) Redefining global health-care delivery. *Lancet* 382(9897): 1060-1069.

71. Filho WL, Platje J, Gerstlberger W, Ciegis R, Kaaria J, et al. (2016) The role of governance in realizing the transition towards sustainable societies. *J Clean Prod* 113: 755-766.

72. Cervero-Licerias F, McKee M, Legido-Quigley H (2015) The effects of the financial crisis and austerity measures on the Spanish health care system: A qualitative analysis of health professionals' perceptions in the region of Valencia. *Health Policy* 119(1): 100-106.

73. Clemens T, Michelsen K, Commers M, Garel P, Dowdeswell B, et al. (2014) European hospital reforms in times of crisis: Aligning cost containment needs with plans for structural redesign? *Health Policy* 117(1): 6-14.

74. Crema M, Verbano C (2015) How to combine lean and safety management in health care processes: A case from Spain. *Saf Sci* 79: 63-71.

75. Sampalli T, Fox RA, Dickson R, Fox J (2012) Proposed model of integrated care to improve health outcomes for individuals with multi morbidities. *Patient Prefer Adherence* 6: 757-764.

76. Msengi I, Doe R, Wilson T, Fowler D, Wigginton C, et al. (2019) Assessment of knowledge and awareness of "sustainability" initiatives among college students. *Renew Energy Environ Sustain* 4: 6.

77. Sajjad A, Shahbaz W (2020) Mindfulness and social sustainability: An integrative review. *Soc Indic Res* 150(1): 73-94.

78. Lopez-Valeiras E, Gomez-Conde J, Lunkes RJ (2018) Employee reactions to the use of management control systems in hospitals: Motivation vs. threat. *Gaceta Sanitaria* 32: 129-134.

79. Harenstam A (2017) Inclusion, sustainability, and equality: How can research contribute? *Soc Health Vulnerability* 8(Suppl 1): 1332856.

80. Angerer S, Waibel C, Stummer H (2019) Discrimination in health care: A field experiment on the impact of patients' socioeconomic status on access to care. *Am J Health Econ* 5(4): 407-427.

81. Martin S, Siciliani L, Smith P (2020) Socioeconomic inequalities in waiting times for primary care across ten OECD countries. *Soc Sci Med* 263: 113230.

82. Acharya S (2018) Health equity in India: An examination through the lens of social exclusion. *J Soc Incl Stud* 4(1): 104-130.

83. Salas RN, Maibach E, Pencheon D, Watts N, Frumki H (2020) A pathway to net zero emissions for healthcare. *BMJ* 371: m3785.

84. Sherman JD, Thiel C, MacNeill A, Eckelman MJ, Dubrow R, et al. (2020) The green print: Advancement of environmental sustainability in healthcare. *Resour Conserv Recycl* 161(2): 104882.

85. Thakur V (2021) Framework for PESTEL dimensions of sustainable healthcare waste management: Learnings from COVID-19 outbreak. *J Clean Prod* 287: 125562.

86. Alkan-Olsson J, Hilding-Rydevik T, Aalbu H, Bradley K (2004) Indicators for sustainable development. Paper for discussion presented to the European Regional Network on Sustainable Development (Draft Version). Nordic Center for Spatial Development.

87. Preston CC, Colman AM (2000) Optimal number of response categories in rating scales: reliability, validity, discriminating power, and respondent preferences. *Acta Psychologica* 104(2000): 1-15.



88. Berk RA (1990) Importance of expert judgment in content-related validity evidence. *West J Nurs Res* 12(5): 659-671.
89. Nunnally J (1978) *Psychometric Methods*, McGraw-Hill, New York.
90. Creswell JW (2014) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, 4<sup>th</sup> ed., Sage Publications, Thousand Oaks, London.
91. Denscombe M (2010) *The Good Research Guide: For Small-Scale Social Research Projects*, 4<sup>th</sup> ed., McGraw-Hill Education, Berkshire.
92. Chang D-S, Chen S-H, Hsu C-W, Hu A (2015) Identifying strategic factors of the implantation CSR in the airline industry: The case of Asia-Pacific airlines. *Sustainability* 7(6): 7762.
93. Lin Z, Yu Z, Zhang L (2014) Performance outcomes of balanced scorecard application in hospital administration in China. *China Econ Rev* 30: 1-15.
94. Liou JJH (2015) Building an effective system for carbon reduction management. *J Clean Prod* 103: 353-361.
95. Tseng M-L (2008) Application of ANP and DEMATEL to evaluate the decision-making of municipal solid waste management in metro Manila. *Environ Monit Assess* 156(1): 181-197.
96. Wu W-W (2008) Choosing knowledge management strategies by using a combined ANP and DEMATEL approach. *Expert Syst Appl* 35(3): 828-835.
97. Golcuk I, Baykasoglu A (2016) An analysis of DEMATEL approaches for criteria interaction handling within ANP. *Expert Syst Appl* 46: 346-366.
98. Wu W-W, Lee Y-T (2007) Developing global managers' competencies using the fuzzy DEMATEL method. *Expert Syst Appl* 32(2): 499-507.
99. Tzeng GH, Chiang CH, Li CW (2007) Evaluating intertwined effects in e-learning programs: A novel hybrid MCDM model based on factor analysis and DEMATEL. *Expert Syst Appl* 32(4): 1028-1044.
100. Kala D, Bagri SC (2016) Designing the strategy map for hotels with key performance indicators of balanced scorecard using DEMATEL technique. *Int J Bus Excell* 10(2): 240-263.
101. Shieh JI, Wu HH, Huang KK (2010) A DEMATEL method in identifying key success factors of hospital service quality. *Knowledge-Based Syst* 23(3): 277-282.
102. Ozdemir M, Celikbilek Y (2021) DEMATEL: Decision Making Trial and Evaluation Laboratory Technique in R. Available online at: <https://CRAN.R-project.org/package=dematel>
103. Slowikowski K (2021) ggrepel: Automatically Position Non-Overlapping Text Labels with 'ggplot2'. Available online at: <https://CRAN.R-project.org/package=ggrepel>
104. Wickham H (2009) *ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag New York. Available online at: <https://cran.r-project.org/web/packages/ggplot2/index.html>
105. Malekzadeh G, Kazemi M, Lagzian M, Mortazavi S (2016) Modeling organizational intelligence using DEMATEL method in Iranian public universities. *J Model Manag* 11(1): 134-153.
106. Naqi SA, Lento C (2018) Developing a strategy map for environmental consulting firms. *Int J Prod Perform Manag* 67(7): 00-00.
107. Al-Mawali H (2021) Environmental cost accounting and financial performance: The mediating role of environmental performance. *Accounting* 7(3): 535-544.
108. Wu W-W (2012) Segmenting critical factors for successful knowledge management implementation using the fuzzy DEMATEL method. *Appl Soft Comput* 12(1): 527-535.

109. Pencheon D (2015) Making health care more sustainable: The case of the English NHS. *Public Health* 129(10): 1335-1343.
110. Laupacis A, Born K (2011) The risks of emergency department overcrowding.
111. Hansen EG, Schaltegger S (2016) The sustainability balanced scorecard: A systematic review of architectures. *J Bus Ethics* 133(2): 193-221.
112. Kaplan RS, Norton DP (2004) *Strategy maps: Converting intangible assets into tangible outcomes*. Harvard Business Press.