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Information Systems Capability, Market Expansion, and Profitability in Indonesian State-Owned Pharmaceutical Cases: The Proposed Mediating Role of Sales Growth

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Abstract: The link between information systems, market expansion and profitability is often described through sales growth, but annual reports rarely provide the measures needed to identify that mechanism. This study examines the evidential status of the proposed pathway in Kimia Farma and Phapros using a longitudinal documentary comparison of public reports for 2021–2025. Technology and market access narratives are read alongside revenue and the latest comparable financial figures. Phapros' 2025 revenue increased by 26.34 percent and its net margin returned to positive territory. Kimia Farma's revenue decreased by 7.20 percent while its net loss margin improved. The contrasting patterns show that revenue growth is neither a necessary description of margin recovery nor sufficient evidence of a mediated effect. Reported enterprise systems, electronic commerce and distribution arrangements suggest plausible operational links, but deployment, customer conversion and causal timing remain unobserved. The study contributes an identification audit that distinguishes a theoretically plausible pathway from a tested mediation claim. It identifies the operational and longitudinal evidence required for subsequent empirical testing.

Keywords: Information Systems, Market Expansion, Sales Growth, Profitability, Mediation Identification.

INTRODUCTION

A firm may extend its market access through digital channels without earning a higher margin, and it may improve its margin while selling less. These possibilities complicate the claim that information systems capability produces profitability through sales growth. The present article examines what public reports can establish about that proposed mechanism in Kimia Farma and Phapros. The question is whether the documented sequence and available measures support a mediated explanation, or instead support several distinct routes to reported recovery. The word proposed is retained in the title because no indirect effect is identified or estimated.

Digital transformation involves changes in organisational arrangements and value creation as well as the adoption of technology. Reviews distinguish this process from the narrower conversion of information into digital form and show why its consequences depend on strategy, organisational design and the environment (Vial, 2019; Verhoef et al., 2021; Hanelt et al., 2021; Gong & Ribiere, 2021; Nadkarni & Prügl, 2021; Kraus et al., 2021; Kraus et al., 2022). The distinction matters for corporate reporting: describing an application is evidence of disclosure, but it does not establish the application's use, quality or financial contribution.

The resource based view explains why a purchased system does not automatically generate an advantage. Complementary skills, routines and organisational assets shape the use of technological resources (Barney, 1991; Bharadwaj, 2000; Wade & Hulland, 2004; Melville et al., 2004). Dynamic capabilities provide a related account of how firms identify opportunities and reconfigure resources (Teece et al., 1997; Teece, 2007). Information systems research also distinguishes system quality and information quality from organisational learning and strategic integration (DeLone & McLean, 2003; Tippins & Sohi, 2003; Bharadwaj et al., 2013). These distinctions require a reporting measure to be narrower than the capability it is intended to represent.

Marketing research connects market orientation and marketing capabilities to performance, while financial approaches examine how market based assets and advertising expenditure may enter shareholder value (Morgan et al., 2009; Morgan, 2012; Srivastava et al., 1998; Joshi & Hanssens, 2010). In digital settings, social media strategy, content, analytics and customer value creation provide different pathways rather than a single marketing expenditure mechanism (Dwivedi et al., 2021; Li et al., 2021; Hollebeek & Macky, 2019; Saura, 2021; Matarazzo et al., 2021; Ritter & Pedersen, 2020). Selling expenses therefore cannot be treated as a direct measure of digital marketing capability.

Evidence on analytics and artificial intelligence reinforces the need to measure resources and their organisational deployment separately. Reviews and capability studies address the processes through which information is converted into operational choices (Collins et al., 2021; Mikalef & Gupta, 2021; Mikalef et al., 2020; Wamba et al., 2017). A pharmaceutical firm can describe a digital infrastructure while leaving the extent of data integration, managerial adoption and customer conversion unreported. Pharmaceutical innovation also carries development costs and long lead times, making a contemporaneous revenue comparison a limited representation of the innovation process (DiMasi et al., 2016).

Indonesian studies help locate the analysis in its commercial and accounting setting. Research on over the counter medicines examines consumer responses to halal labels, brands and prices; it does not estimate the financial return to digital transformation (Ismail et al., 2022). Work on impairment allowances in state owned pharmaceutical firms highlights a separate financial reporting issue (Sova et al., 2023). A recent study of online reviews, website quality and trust provides consumer level evidence about purchasing mechanisms, rather than a transferable firm level coefficient (Ismail et al., 2026). These three studies motivate attention to trust, product signals and reporting quality without supplying observations for the present cases.

METHODS

The study is an exploratory longitudinal documentary comparison, conducted from publicly accessible reports retrieved on 2 October 2026. Kimia Farma and Phapros are purposively selected because their reports contain financial statements, technology narratives, product information and share trading summaries. Phapros is consolidated within Kimia Farma; the cases are analytically nested and are never pooled as independent firms. Bio Farma and Indofarma are outside the analysed corpus. The design follows document analysis and case based theory development, with literature used as an interpretive framework rather than

presented as a systematic review (Bowen, 2009; Eisenhardt, 1989; Eisenhardt & Graebner, 2007).

The archive includes Kimia Farma’s 2021, 2022, 2023 and 2025 annual reports, its reissued 2023 financial statements, and Phapros’ 2021, 2022, 2024 and 2025 reports (PT Kimia Farma Tbk, 2022; PT Kimia Farma Tbk, 2023; PT Kimia Farma Tbk, 2024a; PT Kimia Farma Tbk, 2024b; PT Kimia Farma (Persero) Tbk, 2026; PT Phapros Tbk, 2022; PT Phapros Tbk, 2023; PT Phapros Tbk, 2025; PT Phapros Tbk, 2026). Revenue context covers 2021–2025. Main financial comparisons use the latest accessible 2023–2025 comparative figures; the detailed expense, cash flow and valuation comparisons use 2024–2025. Earlier figures are not combined indiscriminately with later restatements. Amounts are converted to billions of Indonesian rupiah; ratios are recalculated from the underlying amounts.

Narrative evidence is read in context and classified as an organisational responsibility, an implemented activity or a quantified outcome. Searches in extracted report text locate candidate passages; inspection of the surrounding section determines eligibility. Training for community partners is excluded from company capability evidence. A missing disclosed amount remains missing, and the study does not invent a technology budget, customer conversion rate or innovation outcome. Coding is a single analytical reading; no independent second coder or interrater statistic is claimed.

The analysis uses transparent ratios and within case changes, with no regression coefficients or significance tests. A few nested corporate cases do not provide a basis for conventional cluster robust inference (Colin Cameron & Miller, 2015). Nor can contemporaneous annual comparisons identify a causal indirect effect, which requires stronger assumptions and a defensible temporal structure (VanderWeele, 2016). Corporate disclosure and earnings quality literature inform the separation of reported narratives, measurement choices and financial outcomes (Healy & Palepu, 2001; Dechow et al., 2010). The literature synthesis is purposive and its scope is disclosed explicitly (Snyder, 2019).

Sales growth is current revenue divided by prior year revenue, minus one, multiplied by 100. Profitability is examined through profit in currency units and net margin. The analysis checks whether the observed trajectories are compatible with a proposed growth pathway and records the measures and timing that remain absent; it does not estimate a mediation model.

RESULTS AND DISCUSSION

Table 1. Measurement scope and evidential status

Measure	Observed evidence	Interpretation
Digital capability	Systems, governance and channel narratives	Disclosure evidence; direct capability unmeasured
Financial outcomes	Latest comparable statements for 2023–2025	Descriptive outcomes within each reporting perimeter
Expense and valuation detail	Comparable 2024–2025 notes and share summaries	Observed ratios; no identified treatment effect
Reporting context	Revenue and archive for 2021–2025	Statement vintages retained; no interpolation

Source: Authors’ measurement audit of the public reports (PT Kimia Farma (Persero) Tbk, 2026; PT Phapros Tbk, 2026; PT Kimia Farma Tbk, 2024b; PT Phapros Tbk, 2025).

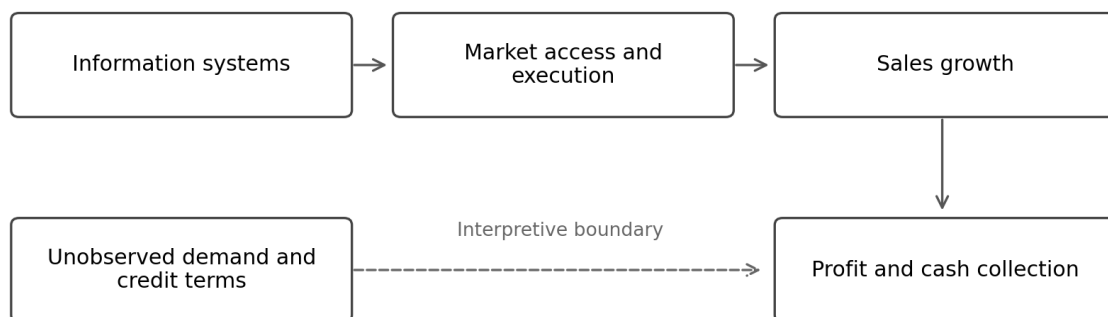
From technology resources to market access

Information systems can support inventory visibility, forecasting, coordination and customer access. An implemented enterprise system may shorten processing or improve availability, while an electronic sales channel may reduce the effort required to find or order a product. These mechanisms are distinct: the first changes the operation behind a transaction and the second changes access to the transaction. A capability construct should capture reliable

use and organisational coordination, rather than merely the names of the systems reported (Tippins & Sohi, 2003; DeLone & McLean, 2003; Melville et al., 2004).

Kimia Farma's report describes responsibilities for application integration, infrastructure, information security and technology governance. Phapros reports enterprise system training and digital customer access, including electronic commerce for over the counter products. This is documentary support for an operational pathway, but it does not measure the share of orders processed by each system or the proportion of customers obtained through the digital channel (PT Kimia Farma (Persero) Tbk, 2026; PT Phapros Tbk, 2026).

Market expansion is therefore not coded as a simple synonym for revenue growth. It could involve new territories, products, customer segments or access points. Revenue can increase in an existing market because prices or order sizes rise; the customer base can expand while revenue falls because prices decline. The present corpus has product and channel narratives, but lacks a consistent annual series of new customer acquisition and digital channel revenue. Any equation that treats total revenue growth as observed market expansion would be a construct substitution.



Source: Authors' conceptual synthesis. Arrows represent proposed links, not estimated effects.

Figure 1. Interpretive framework and its measurement boundary

The longitudinal sales record

The revenue context demonstrates that the cases followed different commercial trajectories. Kimia Farma's reported revenue in the selected series declined from 12,857.63 billion rupiah in 2021 to 9,223.33 billion in 2025. Its 2022 figure is taken from the later reissued comparative rather than the original 2022 annual report. Phapros' corresponding reported revenue moved from 1,051.44 to 940.88 billion. These endpoints describe the reporting series and do not isolate pandemic demand, restructuring or a technology effect (PT Kimia Farma Tbk, 2022; PT Kimia Farma Tbk, 2023; PT Kimia Farma Tbk, 2024b; PT Phapros Tbk, 2022; PT Phapros Tbk, 2023; PT Phapros Tbk, 2026).

Within the main comparison, Phapros' revenue fell in 2023 and 2024, then recovered in 2025. Kimia Farma's revenue rose modestly in 2024 before falling in 2025. Neither series supports a monotonic expansion narrative. A technology initiative can coexist with such volatility because demand, product mix and financial constraints act alongside the initiative. Dynamic capability theory permits reconfiguration under changing conditions; it does not imply that every reconfiguration is immediately followed by sales growth (Teece, 2007; Hanelt et al., 2021; Verhoef et al., 2021).

For 2025, Phapros reports gains in over the counter, generic and ethical products, alongside a reduction in toll manufacturing revenue. These categories describe the mix of reported sales. They do not distinguish orders attributable to a new information system from those attributable to a product, sales representative, procurement decision or established customer relationship. Channel level attribution would require a separate dataset.

Table 2. Longitudinal revenue context

Case	Year	Revenue billion rupiah	Annual growth %
Kimia Farma	2021	12,857.63	Baseline
Kimia Farma	2022	9,247.41	-28.08
Kimia Farma	2023	9,871.84	6.75
Kimia Farma	2024	9,938.96	0.68
Kimia Farma	2025	9,223.33	-7.20
Phapros	2021	1,051.44	Baseline
Phapros	2022	1,168.47	11.13
Phapros	2023	1,003.57	-14.11
Phapros	2024	744.69	-25.80
Phapros	2025	940.88	26.34

Source: Authors' calculations from the selected statement vintages. Earlier comparatives are not a claim of uniform accounting treatment (PT Kimia Farma Tbk, 2022; PT Kimia Farma Tbk, 2023; PT Kimia Farma Tbk, 2024b; PT Kimia Farma (Persero) Tbk, 2026; PT Phapros Tbk, 2022; PT Phapros Tbk, 2023; PT Phapros Tbk, 2025; PT Phapros Tbk, 2026).

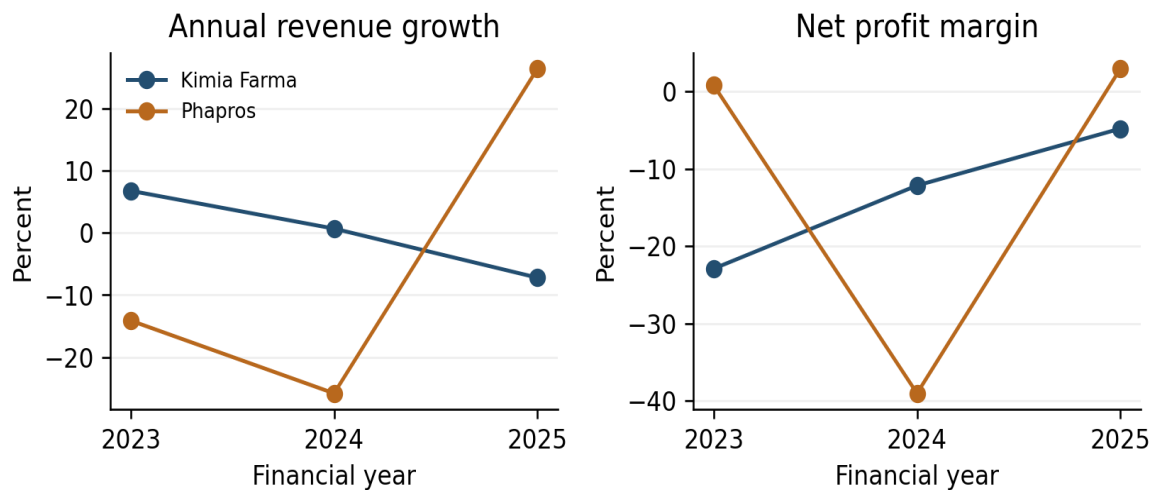
Growth and profitability do not trace one route

Phapros presents the pattern that a growth mediated explanation would predict descriptively: revenue increases and the net margin improves. However, the same year also contains a decline in selling expenditure and changes in other operating and financial components. Observing the predicted combination cannot distinguish the proposed mechanism from these alternatives. The theoretical bridge remains plausible, while its causal contribution is unmeasured.

Kimia Farma provides a contrasting case. Revenue contracts by 7.20 percent while the net margin improves by 7.35 percentage points. This is direct evidence that the group's recorded margin recovery was not accompanied by revenue expansion. It does not disprove every possible longer term mediation model, since earlier systems and lagged effects are not separately observed. It does rule out describing contemporaneous sales growth as the necessary route to the reported 2025 improvement.

Margins introduce an additional measurement issue because both growth and margin use revenue. Sales growth is a change in the revenue series, while net margin divides profit by current revenue. Their shared denominator creates an arithmetic connection that should not be mistaken for a behavioural pathway. Profit in currency units and operating cash flow provide complementary outcomes. A later study should distinguish the amount of economic gain from a change in the ratio used to describe it.

Phapros' operating cash flow decreased from 141.28 to 123.76 billion rupiah despite its revenue rebound, while Kimia Farma's operating cash flow increased from 153.55 to 234.36 billion despite declining revenue. These differences strengthen the need to include collection and payment timing. More sales can change working capital requirements before it changes cash available to the business. The consumer level trust results in the cited Indonesian studies cannot identify this firm level conversion step (Ismail et al., 2022; Ismail et al., 2026).



Source: Authors' calculations from the identified public reports (PT Kimia Farma (Persero) Tbk, 2026; PT Phapros Tbk, 2026; PT Phapros Tbk, 2025).

Figure 2. Contrasting trajectories of sales growth and net margin

Table 3. Identification audit of the proposed mediation

Required observation	Available in this corpus	Consequence
Deployment timing and use	Narratives and selected activities	No consistently measured exposure
Market expansion and conversion	Channels and product categories	No annual acquisition or conversion series
Temporally ordered mediator and outcome	Annual revenue and financial snapshots	Indirect effect not identified
Independent comparison units	Two nested cases	No independent firm panel

Source: Authors' audit informed by mediation requirements (VanderWeele, 2016).

What would identify the proposed mediation

A defensible mediation design would first observe an information systems change rather than infer it from narrative length. It would then measure market access and sales conversion on a time scale consistent with deployment. Profitability would follow in a subsequent interval, while relevant demand, prices, product launches, credit terms and restructuring factors would be addressed. Without these observations, the indirect effect is not identified. Statistical software cannot recover the missing temporal and causal information (VanderWeele, 2016).

The nested ownership structure is a second barrier to treating the available rows as a conventional panel. Phapros is part of the consolidated group, so pooling the two would duplicate a portion of the business. A larger dataset should use independent firms or remove overlapping operations using a documented perimeter. Merely increasing the number of annual observations would not correct this dependence (Colin Cameron & Miller, 2015).

The practical measurement priority is a bridge between operational and financial records: system deployment dates, processed order share, active purchasing customers, net revenue by channel, returns, receivable collection and contribution margin. Reporting these measures would allow the researcher to distinguish improved customer access from profitable conversion. It would also allow management to see whether a revenue gain creates a sustainable commercial result.

The novelty of this comparison is an explicit audit of the mediation claim before estimation. The contrasting trajectories separate a possible growth route from a cost and cash conversion route. The analysis gives the proposed model a defined evidential status and identifies the observations required to turn an attractive conceptual diagram into a testable longitudinal mechanism.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Sales growth is a plausible operational bridge between information systems and profitability, but it is not a tested mediator in these cases. Phapros' 2025 improvement includes a revenue rebound, whereas Kimia Farma's margin recovery accompanies falling revenue. Public reports support competing adjustment paths and do not identify an indirect causal effect.

This study examined the proposed relationship between information systems capability, market expansion, sales growth, and profitability using evidence from Indonesian state-owned pharmaceutical companies. The findings suggest that information systems and digital arrangements may support operational coordination, customer access, and market-related activities. However, publicly available reports do not provide sufficient evidence to confirm the actual mechanism through which these capabilities influence profitability through sales growth.

The analysis shows that revenue growth and profitability changes may occur under different conditions. A company may experience sales improvement without a proportional increase in profitability, while profitability may improve through operational adjustments without significant revenue expansion. These patterns indicate that sales growth cannot automatically be considered the only pathway connecting information systems capability and financial outcomes.

The contribution of this research is the identification of an evidence boundary between a theoretically plausible mechanism and an empirically tested mediation relationship. The study demonstrates the importance of distinguishing between disclosed technology resources, actual organizational capability, market expansion outcomes, and financial performance.

Therefore, future research should develop stronger measurement models by combining organizational capability indicators, customer-level data, operational performance measures, and longitudinal financial analysis to examine the proposed relationship more rigorously.

Limitations

This study has several limitations. First, the proposed relationship between information systems capability, market expansion, sales growth, and profitability is examined through publicly available corporate reports. The available evidence supports the interpretation of possible relationships but does not provide sufficient data to statistically test mediation effects. Second, information systems capability is identified through disclosed technology activities, organizational arrangements, and digital initiatives. However, the actual level of system utilization, integration quality, and operational effectiveness cannot be fully observed from public documents. Third, sales growth and profitability may be influenced by multiple business factors, including product strategy, market conditions, operational efficiency, and regulatory changes. Therefore, the findings should not be interpreted as evidence of a direct causal mechanism.

Recommendations

Subsequent research should use independent firms and a temporal design that observes system deployment, market access, conversion and later profitability. Companies can support this work by linking operational order and customer measures to accounting records. The proposed mediation should remain a proposition until these identification requirements are satisfied.

Author Contributions

All authors participated in the research conceptualization, theoretical development, data analysis, interpretation, manuscript writing, revision, and final approval of the article.

AI Disclosure Statement

AI-assisted tools were used for language editing, organization support, and manuscript preparation. The authors independently verified the analysis and take responsibility for the final content of the article.

Data Availability

The source documents are public and their direct locations are listed in the references. The accompanying evidence package records the extracted data, calculation script and source inventory. No interviews, proprietary data or invented field observations are used. Narrative interpretations are limited to the identified reports.

REFERENCES

- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Bharadwaj, A. S. (2000). A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. *MIS Quarterly*, 24(1), 169–196. <https://doi.org/10.2307/3250983>
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital Business Strategy: Toward a Next Generation of Insights. *MIS Quarterly*, 37(2), 471–482. <https://doi.org/10.25300/misq/2013/37:2.3>
- Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9(2), 27–40. <https://doi.org/10.3316/qrij0902027>
- Colin Cameron, A., & Miller, D. L. (2015). A Practitioner's Guide to Cluster-Robust Inference. *Journal of Human Resources*, 50(2), 317–372. <https://doi.org/10.3368/jhr.50.2.317>
- Collins, C., Dennehy, D., Conboy, K., & Mikalef, P. (2021). Artificial intelligence in information systems research: A systematic literature review and research agenda. *International Journal of Information Management*, 60, 102383. <https://doi.org/10.1016/j.ijinfomgt.2021.102383>
- Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, 50(2-3), 344–401. <https://doi.org/10.1016/j.jacceco.2010.09.001>
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems*, 19(4), 9–30. <https://doi.org/10.1080/07421222.2003.11045748>
- DiMasi, J. A., Grabowski, H. G., & Hansen, R. W. (2016). Innovation in the pharmaceutical industry: New estimates of R&D costs. *Journal of Health Economics*, 47, 20–33. <https://doi.org/10.1016/j.jhealeco.2016.01.012>
- Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., Jain, V., Karjaluoto, H., Kefi, H., Krishen, A. S., Kumar, V., Rahman, M. M., Raman, R., Rauschnabel, P. A., Rowley, J., Salo, J., Tran, G. A., & Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. *International Journal of Information Management*, 59, 102168. <https://doi.org/10.1016/j.ijinfomgt.2020.102168>
- Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *The Academy of Management Review*, 14(4), 532. <https://doi.org/10.2307/258557>
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory Building From Cases: Opportunities And Challenges. *Academy of Management Journal*, 50(1), 25–32. <https://doi.org/10.5465/amj.2007.24160888>
- Gong, C., & Ribiere, V. (2021). Developing a unified definition of digital transformation. *Technovation*, 102, 102217. <https://doi.org/10.1016/j.technovation.2020.102217>

- Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change. *Journal of Management Studies*, 58(5), 1159–1197. <https://doi.org/10.1111/joms.12639>
- Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31(1-3), 405–440. [https://doi.org/10.1016/s0165-4101\(01\)00018-0](https://doi.org/10.1016/s0165-4101(01)00018-0)
- Hollebeek, L. D., & Macky, K. (2019). Digital Content Marketing's Role in Fostering Consumer Engagement, Trust, and Value: Framework, Fundamental Propositions, and Implications. *Journal of Interactive Marketing*, 45(1), 27–41. <https://doi.org/10.1016/j.intmar.2018.07.003>
- Ismail, M. I., Sova, M., & Limakrisna, N. (2022). EFFECT OF HALAL LABELS, BRANDS, AND PRICES ON OVER THE COUNTER DRUGS PURCHASE DECISION IN WEST JAVA PROVINCE DURING COVID-19. *Dinasti International Journal of Management Science*, 3(3), 508–524. <https://doi.org/10.31933/dijms.v3i3.1038>
- Ismail, M. I., Sova, M., & Ahamed, F. (2026). Trust as mediator of online reviews, price perception, website quality, and purchase decisions. *Journal of Business and Economics Research (JBE)*, 7(2), 347–354. <https://doi.org/10.47065/jbe.v7i2.9990>
- Joshi, A., & Hanssens, D. M. (2010). The Direct and Indirect Effects of Advertising Spending on Firm Value. *Journal of Marketing*, 74(1), 20–33. <https://doi.org/10.1509/jmkg.74.1.20>
- Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital Transformation: An Overview of the Current State of the Art of Research. *Sage Open*, 11(3), 21582440211047576. <https://doi.org/10.1177/21582440211047576>
- Kraus, S., Durst, S., Ferreira, J. J., Veiga, P., Kailer, N., & Weinmann, A. (2022). Digital transformation in business and management research: An overview of the current status quo. *International Journal of Information Management*, 63, 102466. <https://doi.org/10.1016/j.ijinfomgt.2021.102466>
- Li, F., Larimo, J., & Leonidou, L. C. (2021). Social media marketing strategy: definition, conceptualization, taxonomy, validation, and future agenda. *Journal of the Academy of Marketing Science*, 49(1), 51–70. <https://doi.org/10.1007/s11747-020-00733-3>
- Matarazzo, M., Penco, L., Profumo, G., & Quaglia, R. (2021). Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective. *Journal of Business Research*, 123, 642–656. <https://doi.org/10.1016/j.jbusres.2020.10.033>
- Melville, N., Kraemer, K., & Gurbaxani, V. (2004). Review: Information Technology and Organizational Performance: An Integrative Model of IT Business Value. *MIS Quarterly*, 28(2), 283–322. <https://doi.org/10.2307/25148636>
- Mikalef, P., Krogstie, J., Pappas, I. O., & Pavlou, P. (2020). Exploring the relationship between big data analytics capability and competitive performance: The mediating roles of dynamic and operational capabilities. *Information & Management*, 57(2), 103169. <https://doi.org/10.1016/j.im.2019.05.004>
- Mikalef, P., & Gupta, M. (2021). Artificial intelligence capability: Conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance. *Information & Management*, 58(3), 103434. <https://doi.org/10.1016/j.im.2021.103434>
- Morgan, N. A., Vorhies, D. W., & Mason, C. H. (2009). Market orientation, marketing capabilities, and firm performance. *Strategic Management Journal*, 30(8), 909–920. <https://doi.org/10.1002/smj.764>

- Morgan, N. A. (2012). Marketing and business performance. *Journal of the Academy of Marketing Science*, 40(1), 102–119. <https://doi.org/10.1007/s11747-011-0279-9>
- Nadkarni, S., & Prügl, R. (2021). Digital transformation: a review, synthesis and opportunities for future research. *Management Review Quarterly*, 71(2), 233–341. <https://doi.org/10.1007/s11301-020-00185-7>
- PT Kimia Farma (Persero) Tbk (2026). Annual report 2025. https://www.kimiafarma.co.id/files/Lap_Tahunan/Laporan_Tahunan_Tahun_Buku%202025.pdf
- PT Kimia Farma Tbk (2022). Annual report 2021. https://www.kimiafarma.co.id/files/Lap_Tahunan/Laporan_Tahunan-2021.pdf
- PT Kimia Farma Tbk (2023). Annual report 2022. https://www.kimiafarma.co.id/files/Lap_Tahunan/Lap_Tahunan_TB_22.pdf
- PT Kimia Farma Tbk (2024a). Annual report 2023. https://www.kimiafarma.co.id/files/Lap_Tahunan/LT_TB23.pdf
- PT Kimia Farma Tbk (2024b). Reissued consolidated financial statements 2023. https://www.kimiafarma.co.id/files/Lap_Audited/R1_LK%20FINAL%20Kimia%20Farma%20Tbk.pdf
- PT Phapros Tbk (2022). Integrated annual report 2021. <https://www.phapros.co.id/cfind/source/files/report/annual-report/phapros%20ir%202021%20-%20190522.pdf>
- PT Phapros Tbk (2023). Integrated annual report 2022. <https://www.phapros.co.id/cfind/source/files/report/annual-report/ar%202022%20phapros%20-%20280423.pdf>
- PT Phapros Tbk (2025). Integrated annual report 2024. https://www.phapros.co.id/cfind/source/files/report/annual-report/ar%20phapros%202024_040625_compressed.pdf
- PT Phapros Tbk (2026). Integrated annual report and sustainability report 2025. <https://www.phapros.co.id/cfind/source/files/report/annual-report/AR%20TB%202025%20FINAL.pdf>
- Ritter, T., & Pedersen, C. L. (2020). Digitization capability and the digitalization of business models in business-to-business firms: Past, present, and future. *Industrial Marketing Management*, 86, 180–190. <https://doi.org/10.1016/j.indmarman.2019.11.019>
- Saura, J. R. (2021). Using Data Sciences in Digital Marketing: Framework, methods, and performance metrics. *Journal of Innovation & Knowledge*, 6(2), 92–102. <https://doi.org/10.1016/j.jik.2020.08.001>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Sova, M., Lumbanraja, T., & Iqbal Ismail, M. (2023). Analysis of The Implementation of PSAK No. 71 on Impairment Loss Reserves: A Case Study of State-Owned Pharmaceutical Companies Listed on The Indonesia Stock Exchange (BEI). *Greenation International Journal of Economics and Accounting*, 1(2), 87–95. <https://doi.org/10.38035/gijea.v1i2.42>
- Srivastava, R. K., Shervani, T. A., & Fahey, L. (1998). Market-Based Assets and Shareholder Value: A Framework for Analysis. *Journal of Marketing*, 62(1), 2–18. <https://doi.org/10.1177/002224299806200102>
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533. [https://doi.org/10.1002/\(sici\)1097-0266\(199708\)18:7<509::aid-smj882>3.0.co;2-z](https://doi.org/10.1002/(sici)1097-0266(199708)18:7<509::aid-smj882>3.0.co;2-z)

- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. <https://doi.org/10.1002/smj.640>
- Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance: is organizational learning a missing link?. *Strategic Management Journal*, 24(8), 745–761. <https://doi.org/10.1002/smj.337>
- VanderWeele, T. J. (2016). Mediation Analysis: A Practitioner's Guide. *Annual Review of Public Health*, 37(1), 17–32. <https://doi.org/10.1146/annurev-publhealth-032315-021402>
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889–901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118–144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Wade, M., & Hulland, J. (2004). Review: The Resource-Based View and Information Systems Research: Review, Extension, and Suggestions For Future Research. *MIS Quarterly*, 28(1), 107–142. <https://doi.org/10.2307/25148626>
- Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J. f., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research*, 70, 356–365. <https://doi.org/10.1016/j.jbusres.2016.08.009>