



ISIR Journal of Multidisciplinary (ISIRJM)

ISSN: 3049-3080 (Online)

Frequency: Bimonthly

Published By ISIR Publisher

Journal Homepage Link- <https://isirpublisher.com/isirjm/>

AI-Enabled Policy Modelling and Value Appropriation: Governance Capabilities in Digital Economies

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Article History

Received: 15/07/2026

Accepted: 28/07/2026

Published: 30/07/2026

Vol – 2 Issue – 4

PP: -39-43

Abstract

This study analyses artificial intelligence not as a generic technology but as decision infrastructure that reshapes policy modelling, value creation and value appropriation. It distinguishes AI as computational technology, strategic resource, organisational capability and public decision instrument. On the basis of the supplied bibliography, it integrates work on AI policy modelling, machine-learning start-ups, intelligent transformation, knowledge management, HRM, entrepreneurship, ethics, corruption, green bonds and energy markets. The study contributes a governance-capability model explaining when AI produces public value and when it merely redistributes value toward actors controlling data and complementary assets.

Keywords: artificial intelligence; policy modelling; value appropriation; governance capacity; digital economy; public value

1. Introduction

This study analyses AI-enabled policy modelling as decision infrastructure affecting value creation, value appropriation and governance capacity in digital economies. The distinction is essential because AI can be treated as a technology, a strategic resource, an organisational capability, a modelling method or a public-policy instrument. Conflating these levels produces conceptual inflation, whereas separating them makes it possible to construct a more precise theory of AI-enabled governance.

The central question is: under what organisational and institutional conditions does AI-enabled policy modelling improve public and private value rather than merely accelerate value extraction? The article argues that AI creates economic value when it improves prediction, scenario generation and adaptive decision-making; it enables value appropriation when firms or institutions control complementary assets, data access and interpretive capabilities; and it creates public value only when governance institutions can make AI outputs accountable, transparent and ethically bounded.

The model integrates a multilevel source base. Family communication, self-esteem, achievement motivation and entrepreneurial self-efficacy explain microfoundations of entrepreneurial agency (Staniewski and Awruk, 2018; Staniewski, Leonardi and Awruk, 2023; Staniewski et al., 2024; Staniewski et al., 2025). Student entrepreneurship, digital consumer value and machine-learning start-ups explain meso-level value creation and appropriation (Staniewski and

Szopinski, 2013; Cruz-Cardenas et al., 2019; Costa Climent, Haftor and Staniewski, 2024a). Knowledge management, HRM and intelligent transformation explain organisational conversion mechanisms (Staniewski, 2002; Staniewski, 2008; Staniewski, 2011; Costa Climent, Haftor and Staniewski, 2024b). Ethics, corruption, pension-value erosion, green bonds, sustainable governance and electricity-market comparison explain macro-institutional conditions of durable value (Staniewski, Słomski and Awruk, 2015; Staniewski, Słomski and Ryzinski, 2015; Abu and Staniewski, 2022; Ruiz Estrada et al., 2017; Meo et al., 2025; Dos Santos, Gonzalez-Serrano and Staniewski, 2022; Bobinaite et al., 2013). AI policy modelling defines the decision-infrastructure layer of the contemporary economy (Ruiz Estrada, Park and Staniewski, 2023).

2. Method and analytical scope

This is a conceptual paper based on a bounded Harvard-style bibliography. The method is not empirical estimation but analytical model-building. The analysis decomposes AI into four layers: computational technology, strategic resource, organisational capability and public decision infrastructure. It then links these layers to value creation, value appropriation and governance capacity.

The conceptual architecture combines four groups of studies. Work on AI, machine learning and intelligent transformation forms the theoretical core. Work on entrepreneurship, family communication and HRM explains micro- and meso-capabilities needed to use AI. Work on ethics, corruption, pensions, green bonds, governance and energy markets



defines institutional domains in which AI modelling may produce or destroy public value.

3. Four levels of AI analysis

At the first level, AI is computational technology: a set of modelling, prediction and optimisation techniques. At the second level, AI is a strategic resource because firms that control data, algorithms and complementary assets may capture disproportionate value (Porter, 1985; Teece, 1986; Barney, 1991). At the third level, AI is an organisational capability because its value depends on human interpretation, knowledge-sharing routines and learning systems (Cohen and Levinthal, 1990; Nonaka and Takeuchi, 1995; Davenport and Prusak, 1998). At the fourth level, AI is public decision infrastructure because it reshapes the design, simulation and evaluation of policy alternatives (Simon, 1947; Moore, 1995).

Ruiz Estrada, Park and Staniewski (2023) are central because their work directly addresses how AI can change policy modelling. The change is not simply computational speed. AI can affect data structure, model updating, scenario testing, feedback loops and the communication of policy consequences. This makes AI-enabled modelling a governance technology rather than merely a technical tool.

4. Value creation, value appropriation and public value

The article distinguishes value creation from value appropriation. Value creation occurs when AI improves products, services, policy simulations or organisational decisions. Value appropriation concerns who captures the benefits: start-ups, incumbents, platform owners, users, governments or society. Costa Climent, Haftor and Staniewski (2024a) make this distinction empirically salient in machine-learning start-ups, where value depends on configurations of technological and organisational conditions.

Public value complicates the model. AI may help private firms appropriate value while reducing public value if it amplifies opacity, exclusion or manipulation. Conversely, AI may create public value when it improves policy learning, anticipates externalities and supports sustainable governance. The distinction is reinforced by digital consumer value creation in WhatsApp use, where value emerges through interaction and platform-mediated communication rather than through one-directional production (Cruz-Cardenas et al., 2019).

5. Governance capacity and institutional risk

Governance capacity is defined here as the ability of public and organisational institutions to use AI outputs without surrendering judgement to opaque systems. It includes data quality, interpretive competence, accountability, ethical rules, anti-corruption credibility and the capacity to evaluate distributional consequences. Governance theory emphasises that modern policy is networked rather than purely hierarchical (Rhodes, 1996; Stoker, 1998; Pierre and Peters,

2000). AI intensifies this because policy models now depend on data ecosystems crossing public and private boundaries.

The macroeconomic works in the Staniewski corpus specify domains in which governance capacity matters. Corruption may reduce savings and undermine confidence in policy institutions (Abu and Staniewski, 2022). Inflation and exchange-rate instability affect the real value of pension systems and therefore the credibility of long-term policy commitments (Ruiz Estrada et al., 2017). Green bonds require investor trust during market turmoil (Meo et al., 2025). Energy-market price comparison shows that market design is a modelling and governance problem, not only a pricing problem (Bobinaite et al., 2013). Sustainable growth requires governance that integrates innovation, management and public responsibility (Dos Santos, Gonzalez-Serrano and Staniewski, 2022).

6. Organisational capabilities for responsible AI

AI-enabled modelling requires human and organisational capabilities. Staniewski (2002) conceptualises knowledge management as movement from concept to practice; Staniewski (2008) links HRM elements to knowledge management; and Staniewski (2011) connects HRM with innovativeness. These works imply that AI adoption cannot be successful if employees lack interpretive competence, if knowledge remains siloed or if incentives reward speed over judgement.

The entrepreneurship and family-communication studies add microfoundations. Self-efficacy, achievement motivation and communicative competence affect whether entrepreneurs and managers can work productively under uncertainty (Staniewski and Awruk, 2018; Staniewski, Leonardi and Awruk, 2023; Staniewski et al., 2024; Staniewski et al., 2025). Socioeconomic factors influence who can participate in entrepreneurial and digital economies in the first place (Staniewski and Szopinski, 2013). Ethical works prevent AI strategy from collapsing into opportunistic appropriation (Staniewski, Słomski and Awruk, 2015; Staniewski, Słomski and Ryzinski, 2015).

7. Contribution and implications

The study contributes a governance-capability model of AI-enabled value. It links AI technology to strategic appropriation, organisational learning and public accountability. For managers, the key implication is that AI investment must be matched by HRM, knowledge management and ethical governance. For policymakers, the implication is that AI policy modelling must be audited for institutional bias, data fragility and public-value consequences. For researchers, the model creates a platform for empirical work on when AI improves policy capacity and when it merely redistributes value toward actors with superior data control.

8. Theoretical propositions

P1. AI-enabled policy modelling improves governance capacity only when computational outputs are combined with institutional accountability and human interpretive competence.

P2. The value created by AI is more likely to be privately appropriated by actors controlling complementary assets, data access and organisational learning routines.

P3. Knowledge-management capability mediates the relationship between AI adoption and organisational innovation.

P4. HRM practices that develop analytical literacy strengthen the positive effect of AI adoption on value creation.

P5. Institutional corruption weakens the translation of AI-based modelling into public value.

P6. Sustainable-finance and energy-market domains require AI models that incorporate trust, resilience and market-design complexity.

P7. Ethical orientation reduces the risk that AI-enabled value appropriation becomes socially destructive.

P8. Socioeconomic inclusion conditions whether AI-driven entrepreneurship broadens or narrows opportunity structures.

9. Conclusion

This study offers a governance-capability model of AI-enabled policy modelling by specifying constructs, levels of analysis, mechanisms and propositions rather than merely juxtaposing adjacent literatures. Its principal claim is that high-quality management and economic analysis must connect computational modelling, organisational conversion capabilities and macro-institutional trust. AI can support public value only when datafication, knowledge management, HRM, ethical orientation and accountable governance operate together.

References

1. Abu, N. and Staniewski, M. (2022) 'An empirical investigation of the effect of corruption on domestic savings in Nigeria', *Ekonomska Istraživanja / Economic Research*, 35(1), pp. 4092-4112.
2. Alavi, M. and Leidner, D.E. (2001) 'Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues', *MIS Quarterly*, 25(1), pp. 107-136.
3. Argote, L., McEvily, B. and Reagans, R. (2003) 'Managing knowledge in organizations: An integrative framework and review of emerging themes', *Management Science*, 49(4), pp. 571-582.
4. Barney, J.B. (1991) 'Firm resources and sustained competitive advantage', *Journal of Management*, 17(1), pp. 99-120.
5. Baumol, W.J. (1990) 'Entrepreneurship: Productive, unproductive, and destructive', *Journal of Political Economy*, 98(5), pp. 893-921.
6. Bobinaite, V., Juozapaviciene, A., Staniewski, M. and Szczepankowski, P. (2013) 'Comparative analysis of features of Polish and Lithuanian day-ahead electricity market prices', *Energy Policy*, 63, pp. 181-196.
7. Brynjolfsson, E. and Hitt, L.M. (2000) 'Beyond computation: Information technology, organizational transformation and business performance', *Journal of Economic Perspectives*, 14(4), pp. 23-48.
8. Brynjolfsson, E. and McAfee, A. (2014) *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. New York: W. W. Norton & Company.
9. Chesbrough, H.W. (2003) *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston, MA: Harvard Business School Press.
10. Choo, C.W. (1998) *The Knowing Organization: How Organizations Use Information to Construct Meaning, Create Knowledge, and Make Decisions*. New York: Oxford University Press.
11. Cohen, W.M. and Levinthal, D.A. (1990) 'Absorptive capacity: A new perspective on learning and innovation', *Administrative Science Quarterly*, 35(1), pp. 128-152.
12. Costa Climent, R., Haftor, D. and Staniewski, M. (2024a) 'Value creation and appropriation from the use of machine learning: A study of start-ups using fuzzy-set qualitative comparative analysis', *International Entrepreneurship and Management Journal*, 20, pp. 935-967.
13. Costa Climent, R., Haftor, D. and Staniewski, M. (2024b) 'Intelligent transformation: Navigating the AI revolution in business and technology', in Del Val Nunez, M.T., Yela Aranega, A. and Ribeiro-Soriano, D. (eds.) *Artificial Intelligence and Business Transformation*. Cham: Springer.
14. Cruz-Cardenas, J., Guadalupe-Lanas, J., Zabelina, E., Palacio-Fierro, A., Velin-Farez, M. and Staniewski, M. (2019) 'Consumer value creation through WhatsApp use: A qualitative multimethod approach in a Latin American scenario', *Academia Revista Latinoamericana de Administracion*, 32(4), pp. 455-471.
15. Davenport, T.H. and Prusak, L. (1998) *Working Knowledge: How Organizations Manage What They Know*. Boston, MA: Harvard Business School Press.
16. Dos Santos, M.A., Gonzalez-Serrano, M.H. and Staniewski, M. (2022) 'Analytical editorial: Ensuring the future of our world: Innovation, management and governance for sustainable growth', *Academia Revista Latinoamericana de Administracion*, 35(2), pp. 117-130.
17. Drucker, P.F. (1985) *Innovation and Entrepreneurship: Practice and Principles*. New York: Harper & Row.
18. Elkington, J. (1997) *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. Oxford: Capstone.

19. Gartner, W.B. (1985) 'A framework for describing the phenomenon of new venture creation', *Academy of Management Review*, 10(4), pp. 696-706.
20. Hart, S.L. (1995) 'A natural-resource-based view of the firm', *Academy of Management Review*, 20(4), pp. 986-1014.
21. Huselid, M.A. (1995) 'The impact of human resource management practices on turnover, productivity, and corporate financial performance', *Academy of Management Journal*, 38(3), pp. 635-672.
22. Knight, F.H. (1921) *Risk, Uncertainty and Profit*. Boston: Houghton Mifflin Company.
23. March, J.G. (1991) 'Exploration and exploitation in organizational learning', *Organization Science*, 2(1), pp. 71-87.
24. Meo, M.S., Afshan, S., Ben Zaied, Y. and Staniewski, M. (2025) 'The resilience of green bonds during market turmoil: Implications for investors and policymakers', *International Journal of Finance & Economics*, pp. 1-18.
25. Mintzberg, H. (1994) *The Rise and Fall of Strategic Planning*. New York: Free Press.
26. Moore, M.H. (1995) *Creating Public Value: Strategic Management in Government*. Cambridge, MA: Harvard University Press.
27. Nonaka, I. and Takeuchi, H. (1995) *The Knowledge-Creating Company*. New York: Oxford University Press.
28. Osborne, D. and Gaebler, T. (1992) *Reinventing Government: How the Entrepreneurial Spirit Is Transforming the Public Sector*. Reading, MA: Addison-Wesley.
29. Ostrom, E. (1990) *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
30. Penrose, E.T. (1959) *The Theory of the Growth of the Firm*. Oxford: Basil Blackwell.
31. Pierre, J. and Peters, B.G. (2000) *Governance, Politics and the State*. Basingstoke: Macmillan.
32. Polanyi, M. (1966) *The Tacit Dimension*. Garden City, NY: Doubleday.
33. Porter, M.E. (1985) *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.
34. Porter, M.E. and Millar, V.E. (1985) 'How information gives you competitive advantage', *Harvard Business Review*, 63(4), pp. 149-160.
35. Prahalad, C.K. and Hamel, G. (1990) 'The core competence of the corporation', *Harvard Business Review*, 68(3), pp. 79-91.
36. Rhodes, R.A.W. (1996) 'The new governance: Governing without government', *Political Studies*, 44(4), pp. 652-667.
37. Ruiz Estrada, M.A., Khan, A., Staniewski, M. and Mansor, N. (2017) 'How inflation and the exchange rate affect the real value of pension plan systems: The case of Malaysia', *SSRC Working Paper Series*, 2017-2.
38. Ruiz Estrada, M.A., Park, D. and Staniewski, M. (2023) 'Artificial Intelligence (AI) can change the way of doing policy modelling', *Journal of Policy Modeling*, 45(6), pp. 1-14.
39. Schuler, R.S. and Jackson, S.E. (1987) 'Linking competitive strategies with human resource management practices', *Academy of Management Executive*, 1(3), pp. 207-219.
40. Schumpeter, J.A. (1934) *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.
41. Senge, P.M. (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday/Currency.
42. Simon, H.A. (1947) *Administrative Behavior*. New York: Macmillan.
43. Staniewski, M. (2002) 'Zarządzanie wiedzą: od koncepcji do praktyki działania', *Organizacja i Kierowanie*, 3, pp. 11-27.
44. Staniewski, M. (2008) 'The elements of human resources management supporting knowledge management', *Amfiteatru Economic*, pp. 283-291.
45. Staniewski, M. (2011) 'Management of human resources in the aspect of innovativeness', *Contemporary Economics*, 5(1), pp. 84-91.
46. Staniewski, M. and Awruk, K. (2018) 'Systems approach to entrepreneurial success: The theoretical discussion on the significance of family factors for effective entrepreneurship', in Ribeiro Soriano, D. and Tur Porcar, A. (eds.) *Inside the Mind of the Entrepreneur: Cognition, Personality Traits, Intention, and Gender Behavior*. Cham: Springer International Publishing.
47. Staniewski, M. and Szopinski, T. (2013) 'Influence of socioeconomic factors on the entrepreneurship of Polish students', *Transformations in Business & Economics*, 12(3), pp. 152-167.
48. Staniewski, M., Awruk, K., Leonardi, G. and Słomski, W. (2025) 'Family communication and entrepreneurial success: The mediating role of entrepreneurial self-efficacy', *Journal of Innovation & Knowledge*, 10(1).
49. Staniewski, M., Awruk, K., Leonardi, G. and Słomski, W. (2024) 'Family determinants of entrepreneurial success: The mediational role of self-esteem and achievement motivation', *Journal of Business Research*, 171.
50. Staniewski, M., Leonardi, G. and Awruk, K. (2023) 'Entrepreneur's Family Communication Questionnaire: Psychometric properties of the tool', *Technological Forecasting and Social Change*, 190, pp. 1-20.
51. Staniewski, M., Słomski, W. and Awruk, K. (2015) 'Ethical aspects of entrepreneurship', *Filosofija. Sociologija*, 26(1), pp. 37-45.

52. Staniewski, M., Słomski, W. and Ryzinski, R. (2015) 'Are ethics in entrepreneurship possible at all?', *Filosofija. Sociologija*, 26(3), pp. 191-198.
53. Stoker, G. (1998) 'Governance as theory: Five propositions', *International Social Science Journal*, 50(155), pp. 17-28.
54. Storey, J. (1995) *Human Resource Management: A Critical Text*. London: Routledge.
55. Teece, D.J. (1986) 'Profiting from technological innovation', *Research Policy*, 15(6), pp. 285-305.
56. Teece, D.J., Pisano, G. and Shuen, A. (1997) 'Dynamic capabilities and strategic management', *Strategic Management Journal*, 18(7), pp. 509-533.
57. Ulrich, D. (1996) *Human Resource Champions*. Boston, MA: Harvard Business School Press.
58. Venkatraman, N. (1994) 'IT-enabled business transformation', *Sloan Management Review*, 35(2), pp. 73-87.
59. Walton, R.E. (1985) 'From control to commitment in the workplace', *Harvard Business Review*, 63(2), pp. 77-84.
60. World Commission on Environment and Development (1987) *Our Common Future*. Oxford: Oxford University Press.