

CAPACIDADES DINÁMICAS QUE IMPACTAN LA PRODUCTIVIDAD A TRAVÉS DE LA TRANSFORMACIÓN DIGITAL DE LAS INSTITUCIONES DE EDUCACIÓN SUPERIOR

Autor

EMILIO ARMANDO ZAPATA

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Tutores

Dra. PAOLA ANDREA AMAR SEPULVEDA
Dr. JOSÉ MARÍA MENDOZA GUERRA

RESUMEN

El presente proyecto de investigación que lleva por título “Capacidades dinámicas que impactan la productividad a través de la transformación digital de las instituciones de educación superior”, se realizó con la finalidad de comprender cómo las capacidades dinámicas de innovación y aprendizaje impactan la productividad a través de la transformación digital de las instituciones de educación superior.

En la actualidad, la globalización de la información, la tecnología y sus nuevas tendencias están potencializando un cambio en las organizaciones, y las instituciones de educación superior no son ajenas a esta transformación, debido a su papel fundamental en la sociedad. La disyuntiva que afrontan muchas instituciones de educación superior, es que deben encontrar una manera de ajustarse a estos cambios manteniendo ventajas competitivas sostenibles; por ello, las instituciones deben identificar y valorar las capacidades dinámicas que impactan la productividad a través de la transformación digital en las mismas, de manera lógica y estratégica, para dar respuesta oportuna a estos nuevos procesos.

El objetivo que se busca conseguir, a través del presente estudio, es explicar como las capacidades dinámicas a través de la transformación digital impactan la productividad de las instituciones de educación superior.

Para ello se utilizó un enfoque cuantitativo dentro del paradigma positivista, con un alcance explicativo-correlacional y un diseño no experimental - transeccional. Los datos fueron recopilados a través de una encuesta estructurada donde participaron personas, que están en el nivel estratégico de las instituciones y algunos tácticos (rectores, vicerrectores académicos, vicerrectores administrativos y/o financieros, vicerrectores de investigación, vicerrectores de extensión, jefes de planeación y

jefes de sistemas), de dieciocho (18) instituciones universitarias públicas colombianas.

Los resultados fueron recabados y procesados, con el fin de comprobar el cumplimiento de las hipótesis planteadas, a través de la herramienta informática SPSS Statistics versión 28 y SPSS AMOS versión 28. El análisis de los resultados se realizó a través de un análisis estadístico descriptivo y un análisis estadístico multivariante con el fin de contrastar las relaciones causales entre las variables del modelo propuesto. El método elegido para analizar y modelar los datos fue el modelo de ecuaciones estructurales.

Como resultados se encontraron que: i) la mayor parte de las instituciones universitarias públicas que desarrollan capacidades dinámicas de innovación han obtenido buenos resultados por su implementación; ii) la mayor parte de las instituciones universitarias públicas que desarrollan capacidades dinámicas de aprendizaje han obtenido buenos resultados por su implementación; iii) la mayor parte de las instituciones universitarias públicas han realizado procesos de transformación digital; iv) la capacidad dinámica de innovación y la capacidad dinámica de aprendizaje impactan positivamente en la transformación digital de las instituciones de educación superior; v) la transformación digital impacta positivamente la productividad en las instituciones de educación superior.

Dentro de las principales conclusiones se tiene que al modelo teórico propuesto, representa cabalmente las diferentes dimensiones de la capacidad dinámica de innovación, la capacidad dinámica de aprendizaje, la transformación digital y la productividad en las instituciones de educación superior. Así mismo, se resalta la baja influencia que se muestra en el modelo teórico de las tecnologías digitales y los clientes en la transformación digital, lo que indica que todavía existe una baja incorporación de las tecnologías digitales en las instituciones de educación superior, y un grado de satisfacción bajo de los clientes por la incorporación de las mismas en los servicios que ellos utilizan de la institución.

Palabras clave: transformación digital, capacidades dinámicas, innovación, aprendizaje, universidades.

ABSTRACT

This research project entitled "Dynamic capacities that impact productivity through the digital transformation of higher education institutions" was carried out with the purpose of understanding how the dynamic capabilities of innovation and learning impact productivity through the digital transformation of higher education institutions.

Nowadays, the globalization of information, technology and its new trends are potentiating a change in organizations, and higher education institutions are not

strangers to this transformation, due to their fundamental role in society. The dilemma facing many higher education institutions is that they must find a way to adjust to these changes by maintaining sustainable competitive advantages; therefore, institutions must identify and assess the dynamic capabilities that impact productivity through digital transformation, logically and strategically, in order to respond in a timely manner to these new processes.

The objective sought to be achieved, through the present study, is to explain how dynamic capabilities through digital transformation impact the productivity of higher education institutions.

For this purpose, a quantitative approach within the positivist paradigm was used, with an explanatory-correlational scope and a non-experimental - cross-sectional design. The data were collected through a structured survey with the participation of people at the strategic and some tactical levels of the institutions (rectors, academic vice-rectors, administrative and/or financial vice-rectors, vice-rectors of research, vice-rectors of extension, heads of planning and heads of systems), from eighteen (18) Colombian public university institutions.

The results were collected and processed, in order to verify the fulfillment of the hypotheses proposed, through the SPSS Statistics version 28 and SPSS AMOS version 28 software tools. The analysis of the results was carried out through a descriptive statistical analysis and a multivariate statistical analysis in order to contrast the causal relationships between the variables of the proposed model. The method chosen to analyze and model the data was structural equation modeling.

The results found that: i) most of the public university institutions that develop dynamic innovation capacities have obtained good results for their implementation; ii) most of the public university institutions that develop dynamic learning capacities have achieved good results through their implementation; iii) most of the public university institutions have carried out digital transformation processes; iv) the dynamic capacity for innovation and the dynamic capacity for learning have a positive impact on the digital transformation of higher education institutions; v) digital transformation positively impacts productivity in higher education institutions.

Among the main conclusions, the proposed theoretical model fully represents the different dimensions of the dynamic capacity for innovation, dynamic learning capacity, digital transformation and productivity in higher education institutions. Likewise, the low influence shown in the theoretical model of digital technologies and customers in digital transformation is highlighted, which indicates that there is still a low incorporation of digital technologies in higher education institutions, and a low degree of customer satisfaction with the incorporation of these technologies in the services they utilize from the institution.

KeyWords: digital transformation, dynamic capabilities, innovation, knowledge, universities.

REFERENCIAS (colocar a cada artículo el DOI o la URL en caso de no tener DOI)

1. Aghimien, D., Aigbavboa, C.O., Oke, A., Edwards, D., Thwala, W. & Roberts, C. (2021). Dynamic capabilities for digitalisation in the AECO sector – a scientometric review. *Engineering, Construction and Architectural Management*. 29(4), 1585-1608. <https://bit.ly/3IHTdVG>.
2. Almaraz, F. (2016). Implicaciones del proceso de transformación digital en las instituciones de educación superior. El caso de la Universidad de Salamanca. [Tesis Doctoral, Universidad de Córdoba España]. <https://bit.ly/3HwaDU6>
3. Ambrosini, V. & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? *International Journal of Management Review*, 11(1), 29-49. <https://bit.ly/3MayoEQ>
4. Asociación Nacional de Empresarios de Colombia - ANDI (2021). El 2020 fue el año de la aceleración de la transformación digital en Colombia. ANDI. <https://bit.ly/3hsvfSp>
5. Anim-Yeboah, S., Boateng, R., Odoom, R. & Kolog, E. (2020). Digital transformation process and the capability and capacity implications for small and medium enterprises. *International Journal of E-Entrepreneurship and Innovation*, 10(2), 26–44. <https://bit.ly/3tkwuZq>
6. Antonucci, Y., Fortune, A. & Kirchmer, M. (2020). An examination of associations between business process management capabilities and the benefits of digitalization: all capabilities are not equal. *Business Process Management Journal*, 27(1), 124–144. <https://bit.ly/35b6eJb>
7. Arango, M., Branch, J., Castro L. & Burgos D. (2018). Un modelo conceptual de transformación digital. *Openenergy y el caso de la Universidad Nacional de Colombia. Education in the Knowledge Society (EKS)*, 19 (4), 95-107. <https://bit.ly/3M7CIVb>
8. Aydiner, A. (2020). A model for digital business governance for strategic growth and innovation with dynamic capabilities. *Strategic Outlook for Innovative Work Behaviours*. Springer, 149-163. <https://bit.ly/3hppkxt>
9. Barney J. (1997). *Gaining and sustaining competitive advantage*. 4 ed. Pearson.
10. Barreto, I. (2009). Dynamic capabilities: a review of past research and an agenda for the future. *Journal of Management*, 36(1), 256–280. Doi: 10.1177/0149206309350776.
11. Berghaus, S. & Back, A. (2016). Stages in digital business transformation: results of an empirical maturity study. *Mediterranean Conference on Information Systems (MCIS)*, <https://bit.ly/3K0itXG>
12. Bierley, P. & Hämmäläinen, T. (1995). Organizational learning and strategy. *Scandinavian Journal of Management*, 11(3), 209-224. <https://bit.ly/3HuesJr>

13. Birnbaum, R. (2000). The life cycle of academic management fads. *The Journal of Higher Education*, 71(1), 1-16. Doi: 10.1080/00221546.2000.11780813.
14. Branch, J. (2019). Transformación digital en instituciones de educación superior: entre el mito y la realidad. *Lámpsakos*, (22), 13-15. <https://bit.ly/3tgOfZR>
15. Bresciani, S., Ferraris, A. & Del Giudice, M. (2018). The management of organizational ambidexterity through alliances in a new context of analysis: internet of things (IoT) smart city projects. *Technological Forecasting and Social Change*, 136, 331-338. <https://bit.ly/3K8abgx>
16. Brown, B. y Sikes, J. (2012). *Minding your digital business*. McKinsey & Company. <https://mck.co/341bHS5>
17. Brunetti, F., Matt, D., Bonfanti, A., De Longhi, A., Pedrini, G. & Orzes, G. (2020). Digital transformation challenges: strategies emerging from a multi-stakeholder approach. *The TQM Journal*, 32(4). Doi: 10.1108/TQM-12-2019-0309.
18. Calderón, H., Cuartas, C. & Álvarez, G. (2009). Transformación organizacional y prácticas innovadoras de gestión humana. *Innovar*, 19(35), 151-166. <https://bit.ly/36DmPWb>
19. Campos, C. & Valente, A. (2019). Use of IoT, Big Data and Artificial Intelligence in dynamic capabilities: a comparative study between the cities of Brazil and Portugal. *Informacao e Sociedade-Estudos*, 29(4), 37-60. <https://bit.ly/3vsz966>
20. Cannas, R. (2021). Exploring digital transformation and dynamic capabilities in agrifood SMEs. *Journal of Small Business Management*, 1-27. <https://bit.ly/35iyhX1>
21. Carro, R. & González, D. A. (2012). Productividad y competitividad. Facultad de Ciencias Económicas y Sociales. Portal de Promoción y Difusión Pública del Conocimiento Académico y Científico: Nülan. <https://bit.ly/3hslAeM>
22. Castro, L., Tamayo, J., Arango, M., Branch, J. & Burgos, D. (2020). Digital transformation in higher education institutions: a systematic literature review. *Sensors*, 20(11), 3291. Doi: 10.3390 / s20113291.
23. Chirumalla, K. (2021). Building digitally-enabled process innovation in the process industries: a dynamic capabilities approach. *Technovation*, 105, 102256. <https://bit.ly/3M7E1n3>
24. Coelli, T. , Rao, D., O'Donnell, C.. & Battese, G. (2005). *An introduction to*
25. Consejo de Empresarios Iberoamericanos (2021). *La transformación digital*. <https://bit.ly/3sw9gAB>
26. Demeter, K., Losonci, D. & Nagy, J. (2021). Road to digital manufacturing – a longitudinal case-based analysis. *Journal of Manufacturing Technology Managemen*, 32(3), 820-839. <https://bit.ly/3suZGxV>

27. Denford J. (2013). Building knowledge: developing a knowledge-based dynamic capabilities typology. *Journal of Knowledge Management*, 17 (2): 175-194. <https://bit.ly/3pqbK1k>
28. Di Stefano, G., Peteraf, M. & Verona, G. (2014). The organizational drivetrain: a road to integration of dynamic capabilities research. *Academy of Management Perspectives*, 28 (4). <https://bit.ly/3K7LXTF>
29. Duque, L. (2019). Aproximación al proceso de transformación digital en el contexto de la educación superior: caso aplicado a las instituciones universitarias y universidades del área metropolitana del Valle de Aburrá. [Tesis de Maestría, Universidad Nacional de Colombia]. Repositorio Institucional UN. <https://bit.ly/3ONnGFC>
30. Eisenhardt, K. & Martin, J. (2000). Dynamic capabilities: what are they? *Strategic Management Journal*, 21(10-11), 1105-1121. <https://bit.ly/3swa9sV>
31. Ellström, D., Holtström, J., Berg, E. & Josefsson, C. (2021). Dynamic capabilities for digital transformation. *Journal of Strategy and Management*, 5(2), 272-286. <https://bit.ly/3vrtiOg>
32. Estelles, S. (2015). La productividad en la década del 2010: caracterización y propuestas de mejora en las técnicas de estudio de métodos y tiempos en empresas de la comunidad valenciana. [Tesis doctoral, Universidad Politécnica de Valencia]. Repositorio de la Universidad Politécnica de Valencia. <https://bit.ly/3voUL3l>
33. Felsberger, A., Qaiser, F., Choudhary, A. & Reiner, G. (2020). The management of operations the impact of industry 4.0 on the reconciliation of dynamic capabilities : evidence from the european manufacturing industries. *Production Planning & Control*, 1–24. <https://bit.ly/3BZnywB>
34. Fenwick, N. & Gill, M. (2014). The future of business is digital: the powerful advantages of embracing dynamic ecosystems of value. Forrester Research, Inc. <https://bit.ly/3tcaQqi>
35. Fitzgerald, M., Kruschwitz, N., Bonnet, D. & Welch, M. (2013). Embracing Digital Technology: A New Strategic Imperative. (Research Report). Findings the 2013 Digital Transformation Global Executive and Research Project, MIT Sloan Management Review. <https://bit.ly/3C2ceQv>
36. Forsman, H. (2011). Innovation capacity and innovation development in small enterprises. A comparison between the manufacturing and service sectors. *Research Policy*, 40(5), 739–750. <https://bit.ly/3stEsjO>
37. Garbellano, S. & Da Veiga, R. (2019). Dynamic capabilities in Italian leading SMEs adopting industry 4.0. *Measuring Business Excellence*, 23(4), 472–483. <https://bit.ly/3vwlCJP>
38. Garzón, M. (2015). Modelo de capacidades dinámicas. *Revista Dimensión Empresarial*, 13(1), 111–131. <https://bit.ly/3BYz7nQ>

39. Garzón, M. (2018). La capacidad dinámica de aprendizaje. *Desarrollo Gerencial*, 10 (1), 29-47. <https://bit.ly/3K7fht9>
40. Ghosh, S., Hughes, M., Hodgkinson, I. & Hughes, P. (2021). Digital transformation of industrial businesses: a dynamic capability approach. *Technovation*, 102414. <https://bit.ly/3HHHQmX>
41. Gobble, M. (2018). Digital strategy and digital transformation. *Research-Technology Management*, 61 (5), 66–71. Doi: 10.1080 / 08956308.2018.1495969.
42. Greenwood, R. & Hinings, C.R. (1987). Editorial Introduction: organizational transformations. *Journal of Management Studies*, 24(6), 561–564. Doi: 10.1111/j.1467-6486.1987.tb00463.x.
43. Greenwood, R. & Hinings, C.R. (1987). Organizational Design Types, Tracks and the Dynamics of Strategic Change. *Organization Studies*, 9(3), 293–316. Doi: 10.1177/017084068800900301.
44. Gupta, J., Termeer, C., Klostermann, J., Meijerink, S., Van den Brink, M., Jong, P., Nooteboom, S. & Bergsma, E. (2010). The adaptive capacity wheel: a method to assess the inherent characteristics of institutions to enable the adaptive capacity of society. *Environmental Science & Policy*, 13(6), 459-471. <https://bit.ly/3BYAliW>
45. Hagberg, J., Sundström, M. & Egels-Zandén, N. (2016). The digitalization of retailing: an exploratory framework. *International Journal of Retail & Distribution Management*, 44(7), 694-712. <https://bit.ly/3C3o3G8>
46. Haenlein, M. & Kaplan, A. (2019). A brief history of artificial intelligence: on the past, present, and future of artificial intelligence. *California Management Review*, 61(4), 5-14. Doi: <https://bit.ly/3C4FNrS>
47. Helfat, C. (1997). know-how and asset complementarity and dynamic capability accumulation: the case of R&D. *Strategic Management Journal*, 18(5), 339-360. <https://bit.ly/3HqUuiB>
48. Helfat C. (2000). Guest editor's introduction to the special issue: the evolution of firm capabilities. *Strategic Management Journal* 21(10–11), 955–960. <https://bit.ly/35EAs6U>
49. Helfat, C. & Peteraf, M. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, 24(10), 997-1010. <https://bit.ly/3K8e3hz>
50. Helfat, C., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D. & Winter, S. (2007). *Dynamic capabilities: Understanding strategic change in organizations*. John Wiley & Sons. <https://bit.ly/3pp3LBy>
51. Helfat, C. & Winter, S. (2011). Untangling dynamic and operational capabilities: strategy for the (n)ever-changing world. *Strategic Management Journal*, 32(11), 1243-1250. Doi: 10.1002/smj.955.

52. Hoe, S.L. (2019). Digitalization in practice: the fifth discipline advantage. *The Learning Organization*, 27(1), 54-64. <https://bit.ly/3lxLWYv>
53. Hsu, C., Tsaih, R. & Yen, D. C. (2018). The evolving role of IT departments in digital transformation. *Sustainability*, 10(10), 3706. <https://bit.ly/3McRuKs>
54. Hu, L.. & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling: a Multidisciplinary Journal*, 6(1), 1-55. <https://bit.ly/3hnVFEY>
55. Katz, R. & Koutroumpis, P. (2013). Measuring digitization: A growth and welfare multiplier. *Technovation*, 33(10-11), 314-319. <https://bit.ly/3poPGUX>
56. Kikuchi, H. & Iwao, S. (2016). Pure dynamic capabilities to accomplish economies of growth. *Annals of Business Administrative Science*, 15 (3), 139–148. Doi: <https://bit.ly/3C1wnpx>
57. King, W. (1997). Organizational transformation. *Information Systems Management*, 14(2), 63–65. Doi: 10.1080 / 10580539708907047.
58. Koutsopoulos, G., Henkel, M. & Stirna, J. (2021). An analysis of capability meta - models for expressing dynamic business transformation. *Software and Systems Modeling*, 20(1), 147–174. <https://bit.ly/3JUKrEe>
59. Kozanoglu, D. & Abedin, B. (2020). Understanding the role of employees in digital transformation: conceptualization of digital literacy of employees as a multi-dimensional organizational affordance Dilek. *Journal of Enterprise Information Management* 34(6), 1649-1672. <https://bit.ly/3K3G7m9>
60. Krugman, P. (1994). *Fundamentos de economía*. Reverté. <https://bit.ly/3lyh9uH>
61. Kuuluvainen, A. 2012. How to concretize dynamic capabilities? theory and examples. *Journal of Strategy and Management*, 5(4), 381-392. <https://bit.ly/3vyKTns>
62. Li, L., Su, F., Zhang, W. & Mao, J. Y. (2018). Digital transformation by SME entrepreneurs: a capability perspective. *Information Systems Journal*, 28(6), 1129–1157. <https://bit.ly/3vsGTFm>
63. Lichtenstein, B. (1997). Grace, magic and miracles: a “chaotic logic” of organizational transformation". *Journal of Organizational Change Management*, 10(5), 393-411. <https://bit.ly/3C1n6Oq>
64. Lin, T-C., Sheng, M. & Jeng Wang, K. (2020). Dynamic capabilities for smart manufacturing transformation by manufacturing enterprises. *Asian Journal of Technology Innovation*, 28(3), 403–326. <https://bit.ly/3K1YDLv>
65. Liu, D. Y., Chen, S.W & Chou T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10), 1728-1742. <https://bit.ly/35BpfV1>
66. Liu, J., Yang, W. & Liu, W. (2021). Adaptive capacity configurations for the digital transformation: a fuzzy-set analysis of Chinese manufacturing firms.

Journal of Organizational Change Management, 34(6), 1222-1241.
<https://bit.ly/3tjVccm>

67. Luna, L., Juiz, C., Gutierrez, I. & Duhamel, F. (2020). Exploring the relationships between dynamic capabilities and IT governance, implications for local governments. *Transforming Government: People, Process and Policy*, 14(2), 149–169. <https://bit.ly/3pqfos2>
68. Magistretti, S., Pham, C. & Dell'Era, C. (2021). Enlightening the dynamic capabilities of design thinking in fostering digital transformation. *Industrial Marketing Management*, 97, 59-70. <https://bit.ly/3hvpzkt>
69. 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://n9.cl/p7n71c>
70. Matt, C., Hess, T. & Benlian A. (2015). Digital transformation strategies. *Business and Information Systems Engineering*, 57(5), 339-343. <https://n9.cl/91nt0>
71. McKee, D., Varadarajan, P. & Pride, W. (1989). Strategic adaptability and firm performance: a market-contingent perspective. *Journal of Marketing*, 353(1), 21-35. Doi: <https://doi.org/10.2307/1251340>.
72. Mergel, I., Edelman, N. & Haug, N. (2019). Defining digital transformation: results from expert interviews. *Government Information Quarterly*, 36(4), 101385 Doi: <https://doi.org/10.1016/j.giq.2019.06.002>.
73. Mihardjo, L., Sasmoko, S., Alamsjah, F. & Elidjen, E. (2019). Digital leadership impacts on developing dynamic capability and strategic alliance based on market orientation. *Polish Journal of Management Studies*, 19(2), 285-297. Doi: 10.17512/pjms.2019.19.2.24.
74. Miklosik, A. & Evans, N. (2020) Impact of big data and machine learning on digital transformation in marketing: a literature review. In *IEEE Access*, 8, 101284-101292. Doi: 10.1109 / ACCESS.2020.2998754.
75. Miró, A. (2017). Productividad, eficiencia técnica e internacionalización del sector químico español 2007-2011. [Tesis Doctoral, Universidad de Vic-Universitat Central de Catalunya]. Repositorio TDX <http://hdl.handle.net/10803/402216>.
76. Eslami, M. H., Jafari, H., Achtenhagen, L., Carlbäck, J., & Wong (2021). Financial performance and supply chain dynamic capabilities: the moderating role of industry 4.0 technologies. *International Journal of Production Research* Doi: 10.1080/00207543.2021.1966850.
77. Newman, K. (2000). Organizational transformation during institutional upheaval. *The Academy of Management Review*, 25(3), 602-619. Doi:10.2307/259313.

78. North, K., Aramburu, N. & Lorenzo, O. (2019). Promoting digitally enabled growth in SMEs: a framework proposal. *Journal of Enterprise Information Management*, 33(1), 238–262. Doi: <https://doi.org/10.1108/JEIM-04-2019-0103>.
79. Nutt, P. & Backoff, R. (1997). Organizational transformation. *Journal of Management Inquiry*, 6(3), 235–254. Doi:10.1177/105649269763009.
80. Okano, M., De Castro, H., Ursini, E., Honorato, W. & Ribeiro R. (2021, 27-30 January). Digital transformation as an agent of change in a pharmaceutical industry from the perspective of dynamic capabilities. [Conference]. IEEE 11th Annual Computing and Communication Workshop and Conference (CCWC), Nevada, USA. Doi: 10.1109 / CCWC51732.2021.9375838.
81. Orlikowski, W. (1996). Improvising organizational transformation over time: a situated change perspective. *Information Systems Research*, 7(1), 63-92. Doi: <https://n9.cl/2g84p>
82. Paul, M., Upadhyay, P. & Dwivedi, Y.K. (2020). Roadmap to digitalisation of an emerging economy: a viewpoint. *Transforming Government: People, Process and Policy*, 14(3). <https://n9.cl/qkbrm>
83. Penrose, E. (1959). *The theory of the growth of the firm*. Oxford University Press.. Doi: 10.1093/0198289774.001.0001.
84. Peretto, C. B. (2016). Evaluación de eficiencia y productividad del sistema bancario. El caso de las entidades bancarias de la República Argentina en la década del 2001-2010. [Tesis doctoral, Universidad Nacional de Córdoba]. Repositorio Institucional. <http://hdl.handle.net/11086/4429>.
85. Peteraf, M., Di Stefano, G. & Verona, G. (2013). The elephant in the room of dynamic capabilities: bringing two diverging conversations together. *Strategic Management Journal*, 34(12), 1389-1410. Doi: 10.1002/smj.2078.
86. Prado, A. (2015). TIC360. Conclusiones de las jornadas CRUE-TIC celebradas en la UCLM. <https://n9.cl/wvf3q>
87. Priyono, A., Moin, A. & Putri, V. N. A. O. (2020). Identifying digital transformation paths in the business model of SMEs during the COVID-19 pandemic. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4), 1-22. Doi:10.3390/joitmc6040104.
88. Recuero, N. (2014). La orientación al mercado en los yacimientos arqueológicos. [Tesis Doctoral, Universidad Complutense de Madrid]. Repositorio Institucional. <https://bit.ly/375vxxa>.
89. Saarikko, T., Westergren, U. & Blomquist, T. (2020). Digital transformation: five recommendations for the digitally conscious firm. *Business Horizons*, 63(6), 825–839. <https://n9.cl/tmuro>
90. Salazar, A. & Peláez, E. (2011). The organic growth of dynamic capabilities for innovation within resource constrained environments. *International Journal of*

Technology Management & Sustainable Development, 10(3), 231-250.
<https://n9.cl/k1s7m>

91. Salazar, C. & Castillo, S. (2017). Fundamentos básicos de estadística. <http://www.dspace.uce.edu.ec/handle/25000/13720>
92. Sánchez, M. (2019), La transformación digital de la universidad. ComputerWorld Colombia. <https://n9.cl/kba90>
93. Sasmoko, S., Mihardjo, L., Alamsjah, F. & Elidjen, E. (2019). Dynamic capability: the effect of digital leadership on fostering innovation capability based on market orientation. *Management Science Letters*, 9, 1633–1644. <https://n9.cl/ft23n>
94. Schallmo, D., Williams, C. & Boardman, L. (2017). Digital transformation of business models — best practice, enablers, and roadmap. *International Journal of Innovation Management*, 21(8), p. 1740014 (17 pages). Doi: 10.1142/S136391961740014X.
95. Scuotto, V., Arrigo, E., Canelo, E. & Nicotra, M. (2019). Ambidextrous innovation orientation effected by the digital transformation: a quantitative research on fashion SMEs. *Business Process Management Journal*, 26(5), 1121-1140. <https://n9.cl/otyge>
96. Singh, A. & Hess T. (2017). How chief digital officers promote the digital transformation of their companies. *MIS Quarterly Executive*, 16(1). Doi: 10.4324/9780429286797-9.
97. Solis, B., Li, C. & Szymanski, J. (2014). The 2014 state of digital transformation. *Altimeter Group* 1(1), 1-33, . <https://n9.cl/un82h>.
98. Soluk, J. & Kammerlander, N. (2021). Digital transformation in family-owned Mittelstand firms: a dynamic capabilities perspective. *European Journal of Information Systems*, 1–36. Doi: <https://doi.org/10.1080/0960085X.2020.1857666>.
99. Sousa, T., Neely, A. & Martinez, V. (2020). Digital transforming capability and performance: a microfoundational perspective. *International Journal of Operations & Production Management*, 40(7), 1095–1128. <https://n9.cl/470y8>
100. Srai, J. S. & Lorentz, H. (2019). Developing design principles for the digitalisation of purchasing and supply management. *Journal of Purchasing and Supply Management*, 25(1), 78-98. Doi: doi.org/10.1016/j.pursup.2018.07.001.
101. Steiber, A., Alänge, S., Ghosh, S. & Goncalves, D. (2020). Digital transformation of industrial firms: an innovation diffusion perspective. *European Journal of Innovation Management*, 24(3), 799-819. Doi: 10.1108/EJIM-01-2020-0018.
102. Stibitz, G. (1966). The first computers. *Science*, 153(3738), 814-816.. Doi: 10.1126/science.153.3738.814.

103. Sugarman, B (2007). A hybrid theory of organizational transformation. *Research in Organizational Change and Development*, 16, 43–80. Doi: 10.1016 / S0897-3016 (06) 16002-4.
104. Tajudeen, F., Nadarajah, D., Jaafar, N. & Sulaiman A. (2021). The impact of digitalisation vision and information technology on organisations' innovation. *European Journal of Innovation Management*, 25(2), 607-629. Doi: 10.1108/EJIM-10-2020-0423.
105. Tangen, S. (2005). Demystifying productivity and performance. *International Journal of Productivity and Performance Management*. 54, 1, 34-46. <https://n9.cl/jvuuq>
106. Tanriverdi, H. & Lim, S.-Y. (2017). How to survive and thrive in complex, hypercompetitive, and disruptive ecosystems? The roles of IS-enabled capabilities. *Proceedings*. 9. <https://n9.cl/rj825>
107. Teece, D. & Pisano, G. (1994). The dynamics capabilities of firms: an introduction. *Industrial and Corporate Change*, 3(3), 537-556. <https://n9.cl/gv6ho>
108. Teece, D. (2011). Dynamic capabilities: a guide for managers. *Ivey Business Journal*, 75(2), 29-32. <https://n9.cl/yojb5>
109. Teece, D. (2012). Dynamic capabilities: routines versus entrepreneurial action. *Journal of Management Studies*, 49(8), 1395-1401. Doi: <https://doi.org/10.1111/j.1467-6486.2012.01080.x>.
110. Teece, D. (2014). The foundations of enterprise performance: dynamic and ordinary capabilities in an (economic) theory of firms. *Academy of Management Perspectives*, 28(4), 328-352. Doi: 10.5465/amp.2013.0116.
111. Teece, D. (2016). Dynamic capabilities and entrepreneurial management in large organizations: toward a theory of the (entrepreneurial) firm. *European Economic Review*, 86, 202-216. <https://n9.cl/pufef>.
112. Teece, D. & Leih, S. (2016). Uncertainty, innovation, and dynamic capabilities: an introduction. *California Management Review*, 58(4), 5-12. <https://n9.cl/t4fso>
113. Teece, D., Peteraf, M. & Leih, S. (2016). Dynamic capabilities and organizational agility: risk, uncertainty, and strategy in the innovation economy. *California Management Review*, 58(4), 13-35. Doi: 10.1525/cm.2016.58.4.13.
114. Teece, D. (2018). Business models and dynamic capabilities. *Long Range Planning*, 51(1), 40–49. <https://n9.cl/i4oxi>
115. Todolí, A. (2014). Salarios y productividad: un análisis jurídico-económico de los complementos salariales vinculados a la productividad de la empresa. [Tesis doctoral, Universidad de Valencia]. Repositorio Institucional. <https://n9.cl/k05et>
116. Tushman, M. & Rosenkopf, L. (1996). Executive succession, strategic reorientation and performance growth: a longitudinal study in the U.S. cement

industry. Management Science, 42(7), 939–953. Doi: <http://dx.doi.org/10.1287/mnsc.42.7.939>.

117. Vargas, M. (2018). ¿La capacidad de absorción es dinámica? *Innovar*, 28(67), 75-87. Doi: <https://n9.cl/yozas>
118. Vial, G. (2019). Understanding digital transformation: a review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118-144. <https://n9.cl/f4huu>
119. Vom Brocke, J., Schmid, A., Simons, A. & Safrudin, N. (2020). IT-enabled organizational transformation: a structured literature review. *Business Process Management Journal*, 27(1), 204-229. DOI 10.1108/BPMJ-10-2019-0423.
120. Wang, C. & Ahmed, P. (2007). Dynamic capabilities: a review and research agenda. *International Journal of Management Reviews*, 9(1), 31-51. <https://n9.cl/pysb9>
121. Warner, K. & Wager, M. (2019). Building dynamic capabilities for digital transformation: an ongoing process of strategic renewal. *Long Range Planning*, 52, 326–349. <https://n9.cl/ugaz0c>
122. Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180. <https://n9.cl/98lfr>
123. Wildan, M., Idham bin, A., Ubaid bin, H. & Ahmad, A. (2018, 23-25 July). A business case for digital transformation of a malaysian-based university. [Conference]. *International Conference on Information and Communication Technology for the Muslim World (ICT4M)*, Kuala Lumpur, Malaysia. Doi: 10.1109/ICT4M.2018.00028.
124. Winter, S. (2003). Understanding dynamic capabilities. *Strategic Management Journal* 24, 991–995. <https://n9.cl/09fi3>
125. Yoo, Y., Boland, R., Lyytinen, K. & Majchrzak A. (2012). Organizing for innovation in the digitized world. *Organization Science*, 23(5), 1398–1408. <https://n9.cl/sp8e0>
126. Young, A. & Rogers, P. (2019). Review of digital transformation in mining. *Mining, Metallurgy & Exploration*, 36, 683–699. <https://n9.cl/u6a1z>
127. Zahra S. & George G. (2002). Absorptive capacity: a review, reconceptualization and extension. *The Academy of Management Review*, 27(2), 185-203. <https://n9.cl/7av24>
128. Zahra, S., Sapienza, H. & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: a review, model and research agenda. *Journal of Management Studies*, 43(4), 917-955. Doi: 10.1111/j.1467-6486.2006.00616.x.
129. Zapata, G. & Hernández A. (2014). Origen de los Recursos y Ventajas Competitivas de las Organizaciones: Reflexiones Teóricas. *Revista Venezolana de Gerencia*, 19(68), 735-759. Doi: 10.31876/revista.v19i68.19129.

130. Zelada S (2021). COVID-19, un acelerador de la transformación digital. *Yachay-Revista Científico Cultural*, 10(1), 532-535. <https://n9.cl/axfhq>
131. Zollo, M. & Winter, S. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), 339–351. Doi: 10.1002/smj.318.
132. Zott, C. (2003). Dynamic capabilities and the emergence of intraindustry differential firm performance: insights from a simulation study. *Strategic Management Journal*, 24(2), 97-125. <https://n9.cl/9hu50>