

## **CLÚSTER VIRTUAL: NUEVA ALTERNATIVA A LA COMPETITIVIDAD EFICAZ EN LAS EMPRESAS**

**VIRTUAL CLUSTER: NEW ALTERNATIVE TO EFFECTIVE COMPETITIVENESS IN ENTERPRISES**

**CLUSTER VIRTUAL: NOVA ALTERNATIVA À COMPETITIVIDADE EFICAZ NAS EMPRESAS**

**FERNÁNDEZ HURTADO\_Saúl Rick, CASTILLO TRIANA\_Diego,  
MARTÍNEZ MARTÍNEZ\_Luz Ángela**

---

Postdoctor en Globalización y Desarrollo Regional, Center for Global Studies, Shanghai University. Profesor Universidad Santiago de Cali. Email: saulrick@163.com, Colombia.

Master en Educación Superior, Universidad Santiago de Cali; Profesor de la Universidad San Martín, Cali - Colombia; Profesor Universidad del Valle. Email: diego.castillo01@gmail.com, Colombia.

Profesional en Ingeniería Industrial, Universidad Autónoma de Occidente, Departamento de Operaciones y Sistemas, Email: luz\_angela.martinez@uao.edu.co, Colombia.

---

**Recibido: 8 de febrero de 2017 Aprobación definitiva: 23 de mayo de 2018**

**DOI:** <http://dx.doi.org/10.22267/rtend.181901.92>

### **RESUMEN**

El artículo estudia y analiza la gestión del *networking* empresarial y la creación de clústeres virtuales de empresas. El propósito principal de la investigación, es indagar acerca de la posibilidad de crear una plataforma de clúster virtual innovador; que pueda ser visto como una innovación práctica que fomente el crecimiento económico, a partir de lo local, mejorando la competitividad empresarial.

Durante la investigación, se profundizó en los conceptos de la generación de *networking*, el cual es una plataforma para mejorar el trabajo colaborativo entre organizaciones y permite consolidar la conformación de clústeres empresariales. Igualmente, se identificaron los beneficios e inconvenientes de crear un clúster virtual. El escenario de clúster virtual permite alcanzar una mayor eficiencia en el logro de objetivos individuales y colectivos; su mayor impacto se observa en la reducción de los costos de transacción internacional y en la ampliación de las cuotas de mercados, motivando una colaboración efectiva de los recursos por parte de cada miembro del clúster. La sinergia del *networking* y el clúster virtual, favorece la creación de nuevos modelos de negocio innovadores, fortalece las posibilidades de adquirir nuevas tecnologías y genera nuevos conocimientos técnicos, con lo cual se abren nuevas oportunidades de crecimiento a través de clústeres virtuales y empresas innovadoras.

**Palabras claves:** Clúster virtual, networking, cooperación, China, tecnología.

**JEL:** P13

## **ABSTRACT**

The articles studies and analyzes the management of business networking and the creation of company's virtual clusters. The main purpose of the research is to study the possibility to build an innovative virtual cluster platform; that can be seeing as a practical innovation that fosters economic grow, from the local, improving competitive businesses.

During the research, delved into the networking generation concepts, which is a platform used to improve collaborative work among organizations and allow to consolidate business cluster. In addition, the benefits and disadvantages of building virtual cluster were identified. A virtual cluster scenario enables to achieve greater efficiency in the achievement of individual and collective goals; its major impact its observed in the reduction of international transaction costs and the expansion of markets quotas, encouraging effective collaboration of resources by each member of the cluster. The synergy of networking

and the virtual cluster, it make a benefit to build an innovative business model, strengthens the possibilities of acquiring new technologies and know-how, which open new growth opportunities through virtual cluster and innovative companies.

**Keywords:** Virtual cluster, networking, cooperation, China, technology.

**JEL:** P13

## **RESUMO**

Os artigos estudam e analisam o gerenciamento de redes de negócios e a criação de clusters virtuais da empresa. O principal objetivo da pesquisa é estudar a possibilidade de construir um plataforma de cluster virtual inovador; isso pode ser visto como uma inovação prática que promove o crescimento econômico, do local, melhorando negócios competitivos.

Durante a pesquisa, mergulhou nos conceitos de geração de rede, que é um plataforma usado para melhorar o trabalho colaborativo entre organizações e permitir a consolidação do cluster de negócios. Além disso, os benefícios e desvantagens da construção de cluster virtual foram identificados. Um cenário de cluster virtual permite alcançar maior eficiência no alcance de objetivos individuais e coletivos; seu maior impacto é observado na redução dos custos de transação internacional e na expansão das cotas de mercado, incentivando a colaboração efetiva de recursos por cada membro do cluster. A sinergia da rede e do cluster virtual, faz um benefício para construir um modelo de negócio inovador, fortalece as possibilidades de adquirir novas tecnologias e know-how, que abrem novas oportunidades de crescimento através de cluster virtual e empresas inovadoras.

**Palavras-chave:** Cluster virtual, redes, cooperação, China, tecnologia.

**JEL:** P13

## REFERENCIAS:

- (1) Acs, Z. J., Boardman, M. C., & McNeely, C. L. (2013). The social value of productive entrepreneurship. *Small Business Economics*, 40(3), 785–796. <http://doi.org/10.1007/s11187-011-9396-6>
- (2) Adele, R., Fouda, N., Romeo, N. D., Azizi, M., & Fernandez, S. R. (2014). Port Logistics in West and Central Africa : A Strategic Development under Globalization. *Open Journal of Applied Sciences*, 4(4), 76–84. <http://doi.org/10.4236/ojapps.2014.42009>
- (3) Al-Anazi, S., AlMahmoud, H., & Al-Turaiki, I. (2016). Finding Similar Documents Using Different Clustering Techniques. *Procedia Computer Science*, 82, 28–34. <http://doi.org/10.1016/j.procs.2016.04.005>
- (4) Alexander, B., Tatiana, K., & Svetlana, U. (2013). Formation of Industrial Clusters Using Method of Virtual Enterprises. *Procedia Economics and Finance*, 5, 68–72. [http://doi.org/10.1016/S2212-5671\(13\)00011-7](http://doi.org/10.1016/S2212-5671(13)00011-7)
- (5) Bajzikova, L., Sajgalikova, H., Wojcak, E., & Polakova, M. (2016). How Far is Contract and Employee Telework Implemented in SMEs and Large Enterprises? (Case of Slovakia). *Procedia - Social and Behavioral Sciences*, 235, 420–426. <http://doi.org/10.1016/j.sbspro.2016.11.052>
- (6) Becker, U., & Vasileva, A. (2017). Russia's political economy re-conceptualized: A changing hybrid of liberalism, statism and patrimonialism. *Journal of Eurasian Studies*, 8(1), 83–96. <http://doi.org/10.1016/j.euras.2016.11.003>
- (7) Beckwith, E. J., & Ceriani, M. F. (2015). Communication between circadian clusters: The key to a plastic network. *FEBS Letters*, 589(22), 3336–3342. <http://doi.org/10.1016/j.febslet.2015.08.017>
- (8) Belkadi, F., & Bernard, A. (2015). Trust-based patterns for the management of inter-enterprises collaborations in context of extended enterprise. *IFAC-PapersOnLine*, 48(3), 1186–1191. <http://doi.org/10.1016/j.ifacol.2015.06.245>
- (9) Cassiman, B., & Golovko, E. (2011). Innovation and internationalization through exports. *J Int Bus Stud*, 42(1), 56–75.

- (10) Ceric, A., D'Alessandro, S., Soutar, G., & Johnson, L. (2016). Using blueprinting and benchmarking to identify marketing resources that help co-create customer value. *Journal of Business Research*, 69(12), 5653–5661. <http://doi.org/10.1016/j.jbusres.2016.03.073>
- (11) Chang, S. E., Liu, A. Y., & Shen, W. C. (2017). User trust in social networking services: A comparison of Facebook and LinkedIn. *Computers in Human Behavior*, 69, 207–217. <http://doi.org/10.1016/j.chb.2016.12.013>
- (12) Dai, R., & Zhang, J. (2017). Green process innovation and differentiated pricing strategies with environmental concerns of South-North markets. *Transportation Research Part E: Logistics and Transportation Review*, 98, 132–150. <http://doi.org/10.1016/j.tre.2016.12.009>
- (13) Danis, W. M., De Clercq, D., & Petricevic, O. (2011). Are social networks more important for new business activity in emerging than developed economies? An empirical extension. *International Business Review*, 20(4), 394–408. <http://doi.org/10.1016/j.ibusrev.2010.08.005>
- (14) Fang, T. (2012). All Business is Local: Why Place Matters More than Ever in a Global, Virtual World. John A. Quelch, Katherine E. Jocz, © 2012 Portfolio/Penguin. 248 pp., ISBN 978-1-59184-465-5. *International Business Review*, 21(2), 307–309. <http://doi.org/10.1016/j.ibusrev.2012.02.005>
- (15) Fernandez, S. R. (2013). Analytical, Descriptive and Exploratory Study: Challenges in the Implementation of Commercial Cluster Integration CELAC's Firms'. *International Journal of Developing Societies*, 2(3), 105–116. <http://doi.org/10.11634/216817831504424>
- (16) Fernandez, S. R. (2014). Commercial Cluster Integration Initiative: To Develop International Diplomatic Commercial Relation Between Latin America "CELAC" and China. *International J. Soc. Sci. & Education*, 4(2), 2223–4934.
- (17) Fernandez Hurtado, S. R. (2013). *Establishing An FTA Between China And Colombia Lowering Tariffs And Non-Tariff Barriers To Achieve Free Trade*. LAP LAMBERT Academic Publishing.
- (18) González-Rodríguez, M. R., Díaz-Fernández, M. C., & Simonetti, B. (2015). The social, economic and environmental dimensions of corporate social responsibility: The role played by consumers and potential entrepreneurs. *International Business Review*, 24(5), 836–848. <http://doi.org/10.1016/j.ibusrev.2015.03.002>

- (19) Gurkan Inan, G., & Bititci, U. S. (2015). Understanding organizational capabilities and dynamic capabilities in the context of micro enterprises: a research agenda. *Procedia - Social and Behavioral Sciences*, 210, 310–319. <http://doi.org/10.1016/j.sbspro.2015.11.371>
- (20) Henriques, J., & Catarino, J. (2016). Motivating towards energy efficiency in small and medium enterprises. *Journal of Cleaner Production*, 139, 42–50. <http://doi.org/10.1016/j.jclepro.2016.08.026>
- (21) Kamoche, K., Pang, M., & Wong, A. L. Y. (2011). Career Development and Knowledge Appropriation: A Genealogical Critique. *Organization Studies*, 32(12), 1665–1679. <http://doi.org/10.1177/0170840611421249>
- (22) Kasper, H., Lehrer, M., Mühlbacher, J., & Müller, B. (2013). On the different “worlds” of intra-organizational knowledge management: Understanding idiosyncratic variation in MNC cross-site knowledge-sharing practices. *International Business Review*, 22(1), 326–338. <http://doi.org/10.1016/j.ibusrev.2012.05.001>
- (23) Kjær, A. M. (2015). Political Settlements and Productive Sector Policies: Understanding Sector Differences in Uganda. *World Development*, 68, 230–241. <http://doi.org/10.1016/j.worlddev.2014.12.004>
- (24) Krishnan, T., & Scullion, H. (2016). Talent management and dynamic view of talent in small and medium enterprises. *Human Resource Management Review*. <http://doi.org/10.1016/j.hrmr.2016.10.003>
- (25) Lee, B., Rosenthal, L., Veld, C., & Veld-Merkoulova, Y. (2015). Stock market expectations and risk aversion of individual investors. *International Review of Financial Analysis*, 40, 122–131. <http://doi.org/10.1016/j.irfa.2015.05.011>
- (26) Li, C., & Parboteeah, K. P. (2015). The effect of culture on the responsiveness of firms to mimetic forces: Imitative foreign joint venture entries into China, 1985–2003. *Journal of World Business*, 50(3), 465–476. <http://doi.org/10.1016/j.jwb.2014.08.002>
- (27) Mäntymäki, M., & Riemer, K. (2016). Enterprise social networking: A knowledge management perspective. *International Journal of Information Management*, 36(6), 1042–1052. <http://doi.org/10.1016/j.ijinfomgt.2016.06.009>
- (28) Negrușă, A. L., Rus, R. V., & Sofică, A. (2014). Innovative Tools Used by Business Networks and Clusters in Communication. *Procedia - Social and Behavioral Sciences*, 148, 588–595. <http://doi.org/10.1016/j.sbspro.2014.07.084>

- (29) Ogreen, C. (2013). Coordinates and Dynamics of the Relationships between Multinational Enterprises and Economic Development – A Theoretical Approach. *Procedia Economics and Finance*, 6, 319–327. [http://doi.org/10.1016/S2212-5671\(13\)00146-9](http://doi.org/10.1016/S2212-5671(13)00146-9)
- (30) Oh, C. H., & Rugman, A. M. (2012). Regional integration and the international strategies of large European firms. *International Business Review*, 21(3), 493–507. <http://doi.org/http://dx.doi.org/10.1016/j.ibusrev.2011.05.009>
- (31) Rick, S., Hurtado, F., Ángela, L., & Martínez, M. (2018). Cultura clúster empresarial: Reto del mundo en el siglo XXI hacia un crecimiento empresarial Entrepreneur cluster culture: 21st century challenge of the world towards business growth. *Espacios*, 39. Retrieved from <http://www.revistaespacios.com/a18v39n16/a18v39n16p12.pdf>
- (32) Romero, D., & Noran, O. (2015). Green virtual enterprises and their breeding environments: Engineering their sustainability as systems of systems for the circular economy. In *IFAC-PapersOnLine* (Vol. 28, pp. 2258–2265). <http://doi.org/10.1016/j.ifacol.2015.06.424>
- (33) S., R. F. H. (2013). Initiative Analysis to Enter into Potential and Restricted Market: Small, Medium and Largest Enterprises Having Chance into a Virgin Market: Latin American (CELAC) and China (Practical, China Case). *International Journal of Business and Management*, 8(3), 103. <http://doi.org/10.5539/ijbm.v8n3p103>
- (34) S. Rick, F. (2014). Empirical Result on Firms' Cluster Integration: Should Firms Evolve beyond Their Region? *International Journal of Trade, Economics and Finance*, 5(3), 204–211. <http://doi.org/10.7763/IJTEF.2014.V5.372>
- (35) Shin, H., Lee, J. N., Kim, D., & Rhim, H. (2015). Strategic agility of Korean small and medium enterprises and its influence on operational and firm performance. *International Journal of Production Economics*, 168, 181–196. <http://doi.org/10.1016/j.ijpe.2015.06.015>
- (36) Terho, H., & Jalkala, A. (2017). Customer reference marketing: Conceptualization, measurement and link to selling performance. *Industrial Marketing Management*. <http://doi.org/10.1016/j.indmarman.2017.01.005>

- (37) Tian, X., Wu, Y., Hou, P., Liang, S., Qu, S., Xu, M., & Zuo, T. (2017). Environmental impact and economic assessment of secondary lead production: Comparison of main spent lead-acid battery recycling processes in China. *Journal of Cleaner Production*, 144, 142–148. <http://doi.org/10.1016/j.jclepro.2016.12.171>
- (38) Uribe-Pérez, N., & Pous, C. (2017). A novel communication system approach for a Smart City based on the human nervous system. *Future Generation Computer Systems*. <http://doi.org/http://dx.doi.org/10.1016/j.future.2016.12.035>
- (39) Whiffen, T. R., Naylor, S., Hill, J., Smith, L., Callan, P. A., Gillott, M., ... Riffat, S. B. (2016). A concept review of power line communication in building energy management systems for the small to medium sized non-domestic built environment. *Renewable and Sustainable Energy Reviews*, 64, 618–633. <http://doi.org/10.1016/j.rser.2016.06.069>
- (40) Zhang, W., Zheng, C., Song, Z., Deng, A., & He, Z. (2015). Chapter 3 – Farming systems in China: Innovations for sustainable crop production. In *Crop Physiology* (pp. 43–64). <http://doi.org/10.1016/B978-0-12-417104-6.00003-0>