

E-Commerce: Compared Efficiency of Major Retailers in Brazil and Canada

Isotilia Costa Melo

Department of Production Engineering
São Carlos Engineering School (EESC)/University of São Paulo (USP)
Avenida Trabalhador Sancarlense, 400 – 13566-590 – São Carlos (SP) - Brazil
isotilia@usp.br, isotilia@gmail.com

Paulo Nocera Alves Junior

Luiz de Queiroz College of Agriculture (ESALQ)/ University of São Paulo (USP)
Av. Pádua Dias, 11 – 13418 -900
Piracicaba (SP) - Brazil
pnavalvesjr@usp.br

Daisy Aparecida do Nascimento Rebelatto

Department of Production Engineering
São Carlos Engineering School (EESC)/University of São Paulo (USP)
Avenida Trabalhador Sancarlense, 400 – 13566-590 – São Carlos (SP) - Brazil
daisy@sc.usp.br

Abstract

Retail e-commerce (B2C - business-to-customer) grows more in developing markets than in developed ones, however, most studies in the area were aimed at developed markets. This thesis aimed to compare the relative efficiency of publicly traded companies that operate in the retail of physical products online in a developed market (Canada) and another in development (Brazil), separately, and to discuss the practices of each market. To this end, a new instrumental approach was proposed, based on an integrated model of Data Envelopment Analysis (DEA) and Optimal Control Theory (OCT) to measure the efficiency of total inventory costs, based on the theory lean management, integrating the concept of capacity efficiency (i.e., management of physical assets). Also, the model directly incorporated inflation and, indirectly, the gross margin. The model was applied to public data from two sets of companies classified as Retail (Var) or Non-Durable Clothing and Consumer Goods (VBCnD) - one composed of 12 Canadian companies (CA) and another by 17 Brazilian companies (BR) -, during the period from 2016 to 2019. Then, a qualitative analysis of the B2C of the companies was made. The results showed that, in both countries, Var companies were more efficient than VBCnD. There are indications that BR companies were at a more advanced stage of the digital transition. In Brazil, Var companies prioritized sales by app and marketplace (own or third parties) and VBCnD companies, by app and virtual store. In Canada, Var companies have prioritized virtual stores and apps, while VBCnD, marketplaces (third parties), and apps. Although it is a common practice for BR Var companies, no observed CA company controls a marketplace. In Brazil, there was a strategy in which two companies operated in parallel, one specialized in B2C and the other in physical retail, though they were not more efficient than the market. The results pointed to BR companies Magazine Luiza, Arezzo, Estrela, and Via Varejo as market benchmarks, so their best practices should be studied.

Keywords

E-commerce; Business-to-customer (B2C); Data Envelopment Analysis (DEA); Optimal Control Theory (OCT); Developing markets.

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Biography / Biographies

Isotilia Costa Melo is a Ph.D. Candidate at São Carlos Engineering School (University of São Paulo) at the Department of Production Engineering. She has a Mastering at the same university and department. She has 5 years of experience as product engineer and test engineer at the automotive industry. She has a Specialization in Welding Engineering at Mauá Technological Center, internationally recognized by International Welding Society. She has a Bachelor of Mechanical Engineering at São Carlos Engineering School (University of São Paulo).

Paulo Nocera Alves Junior is a Postdoc from Luiz de Queiroz College of Agriculture (University of São Paulo) at the Department of Economics, Administration and Sociology. Bachelor's at Production Engineering from University of Franca (2011). Master's at Production Engineering from School of Engineering of Bauru campus (São Paulo State University) at the Department of Production Engineering (2014). And PhD at Production Engineering from São Carlos School of Engineering (University of São Paulo) at the Department of Production Engineering (2018), with 6 months of splitsite PhD at Universidad Adolfo Ibáñez, Chile (2017). He has experience in Production Engineering, acting on the following subjects: efficiency analysis, inventory control, logistics, operations research, optimal control, data envelopment analysis, multivariate analysis, and quantitative methods.

Daisy Aparecida do Nascimento Rebelatto is an Associated Professor at São Carlos Engineering School (University of São Paulo) at the Department of Production Engineering. Graduated in Civil Engineering from the Federal University of São Carlos (1984), Master in Production Engineering from the University of São Paulo (1992), PhD in Mechanical Engineering from the University of São Paulo (1999), post-doctorate from the Universidad Complutense de Madrid (2004) and the Universidad de Salamanca (2008), lecturer at the University of São Paulo (2005). She is a member of the editorial board of many journals. She has experience in the field of Production Engineering, with an emphasis on Economic Engineering, working mainly on the following themes: investment analysis, competitiveness, technological innovation, sustainability, private capital and public capital.