

## THE PRODUCT LIFE CYCLE AND THE BOSTON CONSULTING GROUP'S GROWTH-SHARE MATRIX IN MARKETING SIMULATIONS

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### **Abstract**

The product life cycle and the Boston Consulting Group's growth-share matrix are important tools for marketing specialists, as it offers guidance for developing marketing strategies. In marketing simulations, the use of the product life cycle and its extension into Boston Consulting Group's matrix is relevant to creating a bridge between theory and practice and determining the best strategies and tactics for products. The aims of this paper are to reveal the theoretical concepts regarding the product life cycle and the Boston Consulting Group's growth-share matrix and to emphasize their relevance in marketing simulations. The research methodology was based on a qualitative research method, doing a comprehensive literature review. The paper provides the deepening of the theoretical framework to expand the knowledge in the product life cycle approach, the Boston Consulting Group's matrix, and the marketing simulations field. It also displays that the use of these tools in marketing simulations leads to the development of strategic thinking. The paper eases a better understanding of the concept of the product life cycle and its particularities.

**Keywords:** the product life cycle, the Boston Consulting Group's growth-share matrix, marketing, simulations

**Clasificare JEL :** M31, M39

### **1. Introduction**

Over the years, since the product life cycle (PLC) theory was conceptualized, it has gained recognition as an important tool for the conception and implementation of marketing strategies (Birou and others, 1998). Moreover, the Boston Consulting Group's (BCG) growth-share matrix comes to adds the fact that organizations should have a healthy balance of products within their range (Cesim - Business Simulations, 2022).

In the post-COVID-19 pandemic period, when there are encouraging hybrid learning formats in higher education (Catană and others, 2021; Predoiu and others, 2021; Barbu and others, 2022), the marketing simulations topic is even more relevant (Catană and others, 2022). Consequently, considering the fierce worldwide hyper-competition (Săseanu and others, 2014), being able to introduce new products in a short lead time, could be a competitive advantage for companies (Costa Affonso and others, 2013). In this context, marketing simulators are tools to test and validate a product earlier in its life cycle and position within the BCG's growth-share matrix (Hoppmann, 2009).

The aims of this paper are to reveal the theoretical concepts regarding the product life cycle and the Boston Consulting Group's growth-share matrix and to emphasize their relevance in marketing simulations. The paper is established into four main sections. Firstly, it is presented an

introduction, followed by a brief literature review. Then, the third section is dedicated to the research methodology while the fourth highlights the key findings and discussion. The conclusions along with an invitation for future research in this field are presented in the fifth part of the paper.

## 2. Theoretical background

Several authors pointed out that marketing simulations constitute not only a comprehensive but also an immersive and interactive business environment (Bolton and others, 2019). Also, they may be used as ingenious and efficacious tools for better understanding the business concepts, acquiring and developing the needed skills for making decisions in a responsible manner (Imbrișcă and Toma, 2020) for many people from both academic and business domains, such as students or managers. These tools have led to achieving superior quality of education in higher education institutions (Toma and Naruo, 2009).

The ever-changing global business environment (Grădinaru and others, 2017) have imposed business organizations worldwide to think and act not only creatively (Toma and others, 2018) but also strategically (Toma and others, 2016). This is why marketing simulations have proved to represent valuable business tools for any company worldwide.

## 3. Research methodology

The authors utilized a qualitative research method and expanded a comprehensive literature review. The data was obtained through desk research. Firstly, the authors examine the scientific literature on the product life cycle, BCG's growth-share matrix, and marketing simulations. Secondly, the information was synthesized, focusing on the aspects regarding the product life cycle and its relevance in marketing simulations. Thirdly, the authors completed the paper, and highlighted the conclusions, along with suggestions for future research.

## 4. Findings and discussion

The concept of PLC has received extensive analysis in the scientific literature (Polli and Cook, 1969; Kotler, 2003; Ostlin and others, 2009), with two conflicting definitions being highlighted:

- Transformation of a product from natural/raw material through production and use (Sundin and Bras, 2005);
- The evolvement of a product is measured by its sales over time (Tibben-Lembke, 2002; Ostlin and others, 2009).

In our paper, we will use the marketing vision of the PLC and we will consider it as a necessary tool to analyze the portfolio of products, optimize the marketing activities, improve performance, and achieve the proposed goals (Smart Insights, 2022).

The PLC is generally recognized as having four phases, displayed on a two-axis graphic (sales and time) as follows (Anderson and Zeithaml, 1984):

- Introduction phase;
- Growth phase;
- Maturity phase;
- Decline phase.

In the following table (Table no. 1) it is presented the correlation between the PLC and the elements of the marketing mix.

Table no. 1 – The correlation between the PLC and the elements of the marketing mix

<i>Element of the marketing mix / PLC phase</i>	<b>Introduction phase</b>	<b>Growth phase</b>	<b>Maturity phase</b>	<b>Decline phase</b>
<b>Product</b>	the product is new in the market (The Economic Times, 2022)	develop efficiencies and improve product and/or service availability (Komninos, 2002)	the period of the highest returns from the product; new brands are introduced (Komninos, 2002)	decline of market sales; start withdrawing variations of the product from the market that are weak in their market position (Komninos, 2002)
<b>Price</b>	a popular pricing strategy followed by most companies is the skimming price strategy (The Economic Times, 2022)	the strategy some companies employ to at this point is to either lower their prices or increase their product's value (The Consultants, 2022)	pricing and discount policies are changed in relation to the competition policies (Komninos, 2002)	the prices must be kept competitive and promotion should be pulled back at a level that will make the product presence visible (Komninos, 2002)
<b>Promotion</b>	large expenditure on promotion and advertising (Komninos, 2002)	promotion and advertising continue (Komninos, 2002)	sales promotion, advertising and personal selling play an important role (Marcu and Gherman, 2010)	the sales promotion continues to be intense, the commercial and noncommercial advertising are reduced and the sales representatives give only minimal attention to the product (Marcu and Gherman, 2010)
<b>Distribution</b>	the debut of the distribution arrangements (Komninos, 2002)	distribution becomes a major key to success (Gitman, et al., 2018)	intensive distribution - build more intensive distribution (Ilesanmi, 2018)	selective distribution - phase out unprofitable outlets (Ilesanmi, 2018)

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The BCG's growth-share matrix is a strategic tool that displays the positions of products or businesses along two dimensions: on the vertical axis, the attractiveness of the market by market growth rate and, on the horizontal axis, the competitive advantage of a product by its relative market share (Khairat and Alromeedy, 2016). Each axis is represented in "high" and "low" categories (Lu and Zhao, 2006). Thus, there are identified four types of products called question marks, stars, cash cows, and dogs (Henderson, 1970).

Marketing simulators allow users (students and practitioners) to learn, from theory to practice, some of the most important marketing tools: the PLC stages (Costa Affonso and others, 2013), the main components of the sales process (Kotler and Schultz, 1970), and the marketing mix (Grădinaru and others, 2016; Catană and Toma, 2021).

## 5. Conclusions

The paper provides the deepening of the theoretical framework to expand the knowledge in the product life cycle approach, the BCG's growth-share matrix, and in the marketing simulations field. It also displays that the use of the product life cycle and the BCG's growth-share matrix in marketing simulations leads to the development of strategic thinking. Moreover, this study eases a better understanding of the concept of the product life cycle and its particularities.

## 6. Bibliography

- [1] **Anderson, C. and Zeithaml, C.**, *Stage of the product life cycle, business strategy, and business performance*, Academy of Management Journal, 1984, 27, pp. 5-24.
- [2] **Barbu, A., Popescu, M. and Moiceanu, G.**, *Perspective of Teachers and Students towards the Education Process during COVID-19 in Romanian Universities*, International Journal of Environmental Research and Public Health, 2022, 19, p. 3409.
- [3] **Birou, L., Fawcett, S. and Magnan, G.**, *The product life cycle: A tool for functional strategic alignment*, International Journal of Purchasing and Materials Management, 1998, 34(2), pp. 37-51.
- [4] **Bolton, R.N., Chapman, R.G. and Mills, A.J.**, Harnessing digital disruption with marketing simulations, *Journal of Marketing Education*, 2019, 41(1), pp. 15-31.
- [5] **Catană, Ș.-A. and Toma, S.-G.**, *Marketing mix and corporate social responsibility in automotive industry - case study: Mazda Motor Corporation*, Annals of the "Constantin Brancusi" University of Targu Jiu, Economy Series, 2021, 1, pp. 205-209.
- [6] **Catană, Ș.-A., Toma, S.-G. and Barbu, A.**, *The Effects of the COVID-19 Pandemic on Teleworking and Education in a Romanian Higher Education Institution: An Internal Stakeholders Perspective*, International Journal of Environmental Research and Public Health, 2021, 18(15), p. 8180.
- [7] **Catană, Ș.-A., Toma, S.-G. and Grădinaru, C.**, *Marketing simulations in business education*, Annals of the "Constantin Brâncuși" University of Târgu-Jiu Economy Series, 2022, 1, pp. 201-205.
- [8] **Cesim - Business Simulations**, *15 Marketing Concepts To Practice With Cesim Marketing*, 2022, [online] Available at: <https://www.cesim.com/blog/15-marketing-concepts-to-practice-with-cesim-marketing> [accessed on 13 June 2022].
- [9] **Costa Affonso, R., Cheutet, V., Ayadi, M. and Haddar, M.**, *Simulation in product lifecycle: towards a better information management for design projects*, The Journal of Modern Project Management, 2013, 1(1).
- [10] **Gitman, L.J., McDaniel, C., Shah, A., Reece, M., Koffel, L., Talsma, B. and Hyatt, J.C.**, *Introduction to Business*, 2018. Houston: OpenStax.
- [11] **Grădinaru, C., Toma, S.-G. and Marinescu, P.**, *Marketing mix in services*, "Ovidius"

University Annals, Economic Sciences Series, 2016, 16(1), pp. 311-314.

[12] Grădinaru, C., Toma, S.-G. and Papuc, R., *Entrepreneurship in the world: The analysis of the Global Entrepreneurship Index in the period 2015-2017*, Ovidius University Annals-Economic Sciences Series, 2017, XVII(2), pp. 14-18.

[13] Henderson, B., *The Product Portfolio. BCG Perspectives*, Boston: The Boston Consulting Group, 1970.

[14] Hoppmann, J., *The Lean Innovation Roadmap - A Systematic Approach to Introducing Lean in Product Development Processes and Establishing a Learning Organization*, s.l.:Thesis of Institute of Automotive Management and Industrial Production and Technical University of Braunschweig, 2009.

[15] Ilesanmi, O., *The Significance of Distribution Channel and Product Life Cycle in the Management of an Organization the Nigerian Experience*, Global Journal of Management and Business Research, 2011, 11(10), pp. 5-16.

[16] Imbrișcă, C. and Toma, S.-G., *Social responsibility, a key dimension in developing a sustainable higher education institution: The case of students' motivation*, Amfiteatru Economic, 2020, 22(54), pp.447-461.

[17] Khairat, G. and Alromeedy, B., *Applying the BCG Matrix to Analyze Egypt's Tourism Competitiveness Position*, Minia Journal of Tourism and Hospitality Research, 2016, 1(2), pp. 1-21.

[18] Komninos, I., *Product life cycle management*, Thessaloniki: Urban and Regional Innovation Research Unit, Faculty of Engineering, Aristotle University of Thessaloniki, 2002.

[19] Kotler, P., *Marketing Management*, 11th ed. New Jersey: Prentice Hall, 2003.

[20] Kotler, P. and Schultz, R., *Marketing simulations: review and prospects*, The Journal of Business, 1970, 43(3), pp. 237-294.

[21] Lu, H. and Zhao, L., *Integrating GIS And BCG Model For Marketing Strategic Planning*, Hong Kong, Proceedings of the 11th Annual Conference of Asia Pacific Decision Sciences Institute, 2006.

[22] Marcu, M. and Gherman, C., *The efficiency of promotional instruments related to the product life cycle stages*, Annals of University of Petrosani, 2010, 1, pp. 169-176.

[23] Ostlin, J., Sundin, E. and Bjorkman, M., *Product life-cycle implications for remanufacturing strategies*, Journal of Cleaner Production, 2009, 17, pp. 999-1009.

[24] Polli, R. and Cook, V., *Validity of the Product Life Cycle*, The Journal of Business, 1969, 42(4), pp. 385-400.

[25] Predoiu, R., Mihăilă, C-V., Predoiu, A. and Mitache, G., *Computerized motivation assessment: a cross-sectional study on sports students in risk of school dropout*, The 17th International Scientific Conference eLearning and Software for Education, 2021, pp. 254-261

[26] Săseanu, A.-S., Toma, S.-G. and Marinescu, P., *Feminine leadership and organisational culture*, Manager, 2014, 19(1), pp. 144-150.

[27] Smart Insights, *How to use the Product Life Cycle (PLC) marketing model*, 2022, [online] Available at: <https://www.smartinsights.com/marketing-planning/marketing-models/product-life-cycle-model/> [accessed on 13 June 2022].

[28] Sundin, E. and Bras, B., *Making functional sales environmentally and economically beneficial through product remanufacturing*, Journal of Cleaner Production, 2005, 13(9), pp. 913-925.

[29] The Consultants, *Pricing Strategy Across A Product Life Cycle*, 2022, [online] Available at: <https://www.theconsultants.eu/pricing-strategy-across-a-product-life-cycle/> [accessed on 12 June 2022].

[30] The Economic Times, *What is 'Introduction Stage'*, 2022, [online] Available at: <https://economictimes.indiatimes.com/definition/introduction-stage> [accessed on 12 June 2022].

[31] Tibben-Lembke, R., *Life after death: reverse logistics and the product life cycle*,

International Journal of Physical Distribution & Logistics Management, 2002, 32(3), pp. 223-244.

[32] **Toma, S.-G. and Naruo, S.**, *Quality assurance in the Japanese universities*, Amfiteatru Economic, 2009, 11(26), pp. 574-584.

[33] **Toma, S.-G., Marinescu, P. and Grădinaru, C.**, *Strategic planning and strategic thinking*, Revista Economică, 2016, 68(5), pp. 168-175.

[34] **Toma, S-G., Peptenatu, D., Andronache, I., Ahammer, H., Pintilii, R-D., Draghici, C-C. and Simion, A. G.**, *The creative economy in Romania, a key factor of economic integration in the European Union*. In: Dima, A. (ed.), *Doing Business in Europe*, Cham: Springer, pp. 329–350, 2018.