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ANALYSIS OF THE ORGANIZATION'S ACTIVITY ON THE EXAMPLE OF THE BOSTON CONSULTING GROUP MATRIX. THEORETICAL-EXPERIMENTAL APPROACH

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Abstract: More than four decades after Bruce Henderson introduced Boston Consulting Group (BCG) growth-share matrix, the concept retains its significance. Companies continue to need a disciplined approach to oversee their product portfolio, R&D investments, and business units. This article examines the relevance and application of the BCG growth-share matrix in contemporary strategic decision-making, aiming to provide a systematic approach to portfolio management. The BCG Matrix continues to be instrumental for organizations in categorizing business units based on market share and growth rate, thereby aiding strategic resource allocation. This study explores both theoretical and practical dimensions, focusing on the matrix's four quadrants—Stars, Cash Cows, Question Marks, and Dogs—and their implications for business strategy. An example analysis is conducted based on a hypothetical company producing five product lines. Sales data from 2022 and 2023 are used to calculate relative market share and market growth rate, positioning each product within the BCG Matrix. Results indicate that the company's TV and Laptop products are Stars, requiring continued investment due to high growth and strong market presence. Conversely, its Mobile product, a Cash Cow, generates significant revenue with low market growth, while PCs and Headphones are categorized as Dogs, where strategic divestment may be considered. This study underscores the BCG Matrix's value in guiding strategic decisions, enabling organizations to prioritize investments and optimize resource allocation across varying product life stages.

Keywords: *BCG matrix, market growth rate, relative market share, dogs, question marks, stars, cash cows*

Introduction. Over 40 years since Bruce Henderson introduced Boston Consulting Group (BCG) growth-share matrix, the concept remains vibrant. Companies still require a disciplined and systematic approach to managing their product portfolio, R&D investments, and business units. Harvard Business Review recently recognized it as one of the transformative frameworks. The matrix holds a central position in business school

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strategy teachings. However, the global landscape has undergone significant changes, impacting the original purpose of the matrix. Since its introduction in 1970, conglomerates have diminished, the pace of change has accelerated, and competitive advantages have become less enduring. Despite these shifts, the BCG growth-share matrix remains relevant, albeit with crucial enhancements.

Results and findings. Presently, the matrix can be customized to assist companies in navigating strategic experimentation essential for success in unpredictable markets. This adaptation encompasses four pivotal steps: hastening the innovation pace, maintaining a balance in investments between new, untested ventures and established, revenue-generating businesses, executing disciplined choices for investments and divestments, and meticulously measuring and monitoring the outcomes of experimentation (Martin Reeves, Sandy Moose, and Thijs Venema, 2014, 6-7).

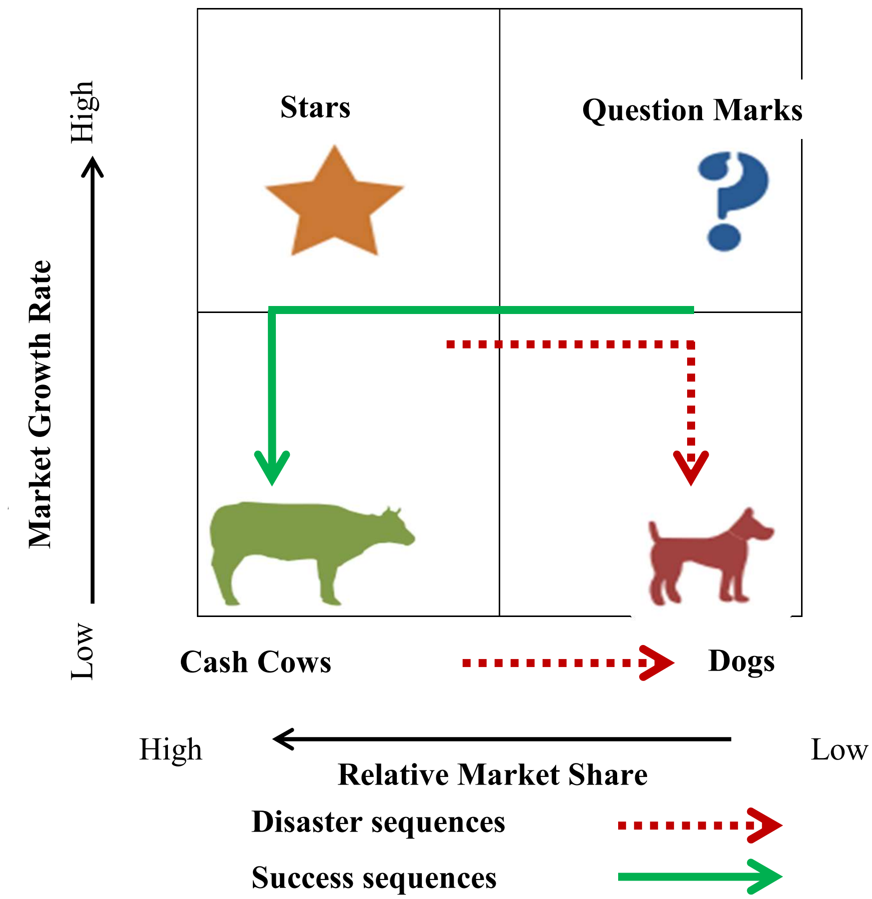
This methodology proves particularly beneficial for companies with multiple categories or goods, forming the organization's “business portfolio”. The structure of this selection holds essential importance for the company's growth and development. The BCG matrix incorporates two key indicators: “Market Growth Rate” and “Relative Market Share”. The market growth rate is depicted on the vertical (y) axis as a percentage. The range, somewhat arbitrarily set, spans from 0 to 20%, with a distribution between low and high growth at 10% (Boston Consulting Group (BCG). 1973. 5-7). Inflation or Gross National Product can influence this range, allowing the vertical axis to show an index where the boundary between low and high growth is set at 1.0. Industries growing faster than inflation or GNP would be above the line, while those growing less would be categorized as low growth below the line. The horizontal (x) axis illustrates the relative market share, calculated concerning the largest competitor in the market. The scale for high and low shares, again randomly, originally used a scale of 0.1, designating market dominance when the relative market share exceeded 1.0. The BCG matrix splits into four sections, each representing a specific category of business. Categories or products are denoted by circles, with the circle size indicating the relative significance of the division or product to group sales. An advancement of the matrix incorporates reflecting the comparative revenue input of each product category, depicted as a pie segment within the circle.

Once a firm’s business units are positioned on the BCG matrix, strategies are formulated based on their relative positions. The matrix's four quadrants, established by categorizing the two variables into “high” and “low” areas, facilitate the grouping of units into four distinct categories: “stars”, “question marks”, “cash cows”, and “dogs” (refer to Image 1). The rationale behind this categorization lies in the relationship between market growth rate and the firm's market share.

The concept is rooted in the understanding that as the market growth rate increases, the firm requires more cash to remain competitive and foster growth. Simultaneously, a higher market share allows the firm to generate more cash. The income accumulated by divisions exhibiting high "cash generation" potential can then be strategically deployed to invest in divisions with high "cash consumption" requirements. This strategic allocation of resources helps balance the financial needs of different business units within the organization (Temmerman, R., 2011, 48-61.).

Image 1

BCG matrix.



***Source**:* Developed by author.

The subsequent sections delve into a more detailed examination of each category, namely dogs, question marks, stars, and cash cows (Boston Consulting Group matrix, AccaGlobal webpage).

"**Dogs**" represent divisions that are struggling. They typically possess low market share in markets with minimal growth. Usually, dogs neither demand substantial investment from the holding company nor produce significant income themselves-still there are instances where they may require corporate funding to sustain their operations. At best, dogs contribute little value; at the lowest point, they consume cash and demand considerable management time and attention. Typical strategies for addressing dogs involve efforts to reverse them, transition them towards the "question mark" category, divestiture, or shutting them down. However, there might be strategic reasons for retaining a dog within the business portfolio. For example, in the eyewear industry, there may be a niche market for sports protection. Even if immediate positive progress is not evident, the firm might find it prudent to continue offering products in this category, albeit without focusing extensively on it. Strategic considerations, such as maintaining a foothold in a niche market or complementing the overall product portfolio, could justify keeping a dog within the business.

"**Question marks**" denote divisions with low market share in markets that are experiencing growth. Due to the expanding market, question marks typically require cash to sustain their competitiveness. Instead of being net cash generators, these divisions tend to consume the corporation's cash. The term "question mark" reflects the strategic ambiguity surrounding these divisions. In such cases, the strategic approach is unclear, prompting the designation as a question mark.

If a planner envisions potential for growing the division's market share and transitioning it into the "star" category, strategies can involve product improvment, market penetration, expansion, and other growth-oriented approaches. However, if the strateger does not perceive the potential for improvement within the division or if the company lacks the necessary funds to invest in the unit, divestiture becomes a viable alternative. The decision-making process for question marks often involves weighing the potential for growth against the available resources and strategic goals of the overall business portfolio.

"**Stars**" represent divisions with high market share in rapidly growing markets. These divisions are sources of excitement and generate substantial cash owing to their dominant market positions. However, they also necessitate substantial funds to sustain their ongoing growth in the swiftly growing market and resist competitors seeking to challenge their market share. While the income generated by stars often evens out, similar to dogs, they continue to hold substantial growth potential.

Strategic approaches for stars involve perpetuating their growth and expanding market share through initiatives such as market entrance, market expansion, product enhancement, synergy strategies, and even joint ventures. Defensive maneuvers to safeguard their high market share are also counted.

If a star preserves its dominant market share as the market life cycle progresses, it transitions into the "cash cow" category. At this stage, market players often exit the market, and the star demands less investment to sustain robust financial results. Though, if a star crashes to uphold its market share, it may degrade into a "dog" necessitating a reassessment of strategies and resource allocation. The fate of a star is intricately tied to its ability to adapt and sustain its market dominance in a rapidly evolving business environment.

"**Cash cows**" are divisions with a commanding market share in markets that are not experiencing significant growth. Market dominance in such situations often correlates with pricing power, leading to substantial profit margins. Additionally, cash cows demand just limited financial investment because of the lower growth in their market, resulting in the generation of substantially greater cash than their expenditures. Strategies for cash cows typically revolve around maintaining support for the division without the need for substantial cash injections.

The surplus cash generated by cash cows can be strategically utilized to invest again in revitalizing struggling divisions ("dogs") or transitioning potential divisions ("question marks") into lucrative growth categories such as "stars". The inherent financial strength of cash cows allows for a balanced allocation of resources within the business portfolio, contributing to overall stability and sustained profitability. The key focus for cash cows is on leveraging their established market position and profitability to facilitate strategic investments in other parts of the business.

In the BCG matrix, divisions are represented by circles, and the size of each circle typically signifies the comparative importance of each business unit to the organization regarding the cash produced. An alternative approach is to have circles of the same size, with pie slices within each circle. These pie slices would be shaded to depict the relationship between the cash generated by that division (the slice) and the overall cash contribution.

The BCG matrix provides a rapid visual representation of a company's portfolio concerning market share, market growth, the size of cash contribution, and relative strength or weakness of each business unit. It serves as a valuable tool for quickly assessing the strategic positioning of different divisions within the organization.

Moreover, the BCG matrix can be employed to illustrate the position of a target company relative to its competitors. This is achieved by placing the target company on the matrix and appropriately situating its competitors. By doing so, the matrix aids in comparative analysis and strategic planning. As the first analysis tool to go beyond simple examination, the BCG matrix introduces strategic implications, making it a pivotal instrument for businesses to evaluate and plan their portfolio strategies.

The practical use of BCG matrix can be shown in the example represented below. In the market there are 4 companies (we are going to get BCG matrix of the "A" company) producing 5 products.

Table 1

Sales by products 2022-2023

Products		**Sales in 2023 (mln USD)**				**Total Sales in 2022 (mln USD)**
		A	**B**	**C**	**D**	
1	Mobiles	500	250	750	650	2000
2	TV	750	500	400	300	1500
3	Lap-Top	800	400	500	450	1800
4	PC	150	600	500	400	1650
5	Headphones	400	800	600	500	2500

Source: Developed by author.

Based on the data it is possible to estimate "Market Share" and "Market Growth Rate".

Considering the sales of each company, we can calculate the total sales in 2023, and based on it get market share of company "A" (Table 2).

Table 2

Calculation of Market share of "A" company.

Products		**Sales in 2023 (mln USD)**				**Total Sales in 2023 (mln USD)**	**Market share % (A)**	
		A	**B**	**C**	**D**			
1	Mobiles	500	250	750	650	2150	(500/2150)*100%	23
2	TV	750	500	400	300	1950	(750/1950)*100%	38
3	Lap-Top	800	400	500	450	2150	(800/2150)*100%	37
4	PC	150	600	500	400	1650	(150/1650)*100%	9
5	Headphones	400	800	600	500	2300	(400/2300)*100%	17

Source: Developed by author.

Accordingly, considering the statistics of years 2022 and 2023 it is possible to have Market growth rates (Table 3).

Table 3

Market growth rates.

Products		Total Sales in 2023 (mln USD)	Total Sales in 2022 (mln USD)	Market growth rates %	
1	Mobiles	2150	2000	((2150-2000)/2000)100%	8
2	TV	1950	1500	((1950-1500)/1500)100%	30
3	Lap-Top	2150	1800	((2150-1800)/1800)100%	19
4	PC	1650	1650	((1650-1650)/1650)100%	0
5	Headphones	2300	2500	((2300-2500)/2500)100%	-8

Source: Developed by author.

Accordingly, coming from the data of Tables 2 and 3, BCG matrix of "A" company can be shown below (Image 2).

Image 2

BCG matrix of "A" company.

Source: Developed by author.

The BCG Matrix and the Product Lifecycle are inherently connected because both frameworks provide insights into how a product or business unit evolves over time and requires different strategic approaches at each stage. The matrix provides a snapshot of where a product or business unit stands in terms of market growth and relative market share, while the product lifecycle describes the stages a product goes through from its introduction to its decline. By integrating these two models, companies can gain a dynamic understanding of how to make strategic decisions at each phase of a product's life (Parcell, J., 2019, 3-5.).

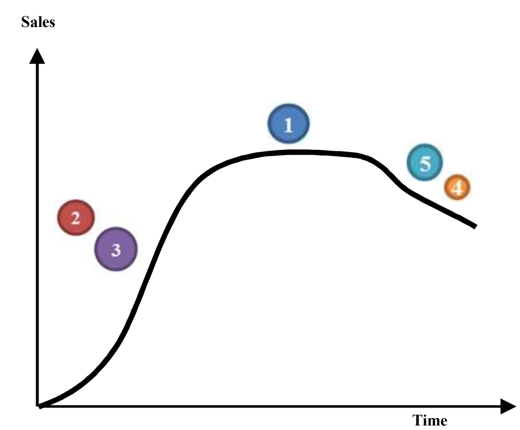
Growth Stage (PLC) → Stars (BCG Matrix). As the product moves into the growth stage of its lifecycle, it gains market share in a growing market, which places it in the **Stars** quadrant of the BCG Matrix. Referring to the case, we have 2 stars (product 2:TV and product 3: Lap-top). The company must actively invest in these 2 projects to keep the positions as they insure the highest sales of the company too (accordingly 750 and 800 mln USD). **Strategic Insight**: Products in the Stars category require significant investment to maintain growth and market leadership. Companies should focus on expanding market penetration, product development, and increasing distribution channels (Image 3).

Maturity Stage (PLC) → Cash Cows (BCG Matrix). In the maturity stage, the product has achieved a high market share, but the market growth has slowed, positioning it in the **Cash Cows** quadrant. As for the cash cow, we have just one product (product 1:Mobiles). This product requires only limited investment in order not to lose the position (it is the 3rd portfolio with the highest sales of 500 mln USD). **Strategic Insight**: Cash Cows generate substantial cash flow with minimal investment. Companies should use this cash to fund new investments in Question Marks or Stars. The key strategy here is to maintain market leadership while optimizing operational efficiency (Image 3).

Decline Stage (PLC) → Dogs (BCG Matrix). As the market declines, the product loses its market share and becomes a **Dog** in the BCG Matrix. Product 4:PC and Product 5:Headphones are dogs for the company, possess low market share in markets with minimal or negative growth. At worst, they consume cash and demand considerable management time and attention. Typical strategies for addressing dogs involve quitting the market. **Strategic Insight**: Companies need to decide whether to divest, discontinue, or attempt a niche strategy to sustain the product for a smaller market. At this stage, the product offers limited growth potential and may consume more resources than it generates (Image 3).

Image 3

Products lifecycle of "A" company.



***Source*:** Developed by author.

Conclusion. The BCG matrix helps categorize units, with the higher market growth rate requiring more cash for competitiveness, and higher market share generating more cash. The matrix aids in grouping units strategically into four categories, each with specific characteristics. The BCG matrix provides a rapid overview of the company's portfolio, considering market share, expansion, financial contribution, and competitive strength. It can also be applied to analyze a target company and its competitors. Ultimately, the BCG matrix is a valuable tool suggesting strategies beyond simple analysis. The BCG Matrix helps a company visualize which products are in different stages of their lifecycle and decide how to allocate resources. Understanding both frameworks allows for more strategic planning:

- **Invest in Stars** to maintain growth.
- **Harvest Cash Cows** to support other areas.
- **Nurture or divest Question Marks** based on potential.
- **Divest or reposition Dogs** to avoid wasted resources.

By integrating the BCG Matrix with the Product Lifecycle concept, businesses can better manage their portfolio of products and services, ensuring they invest wisely at each stage of a product's life while maintaining overall strategic balance.

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