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Evaluation of two companies' sales teams with the BCG matrix using profit and contribution margin

Avaliação das equipes de vendas de duas empresas com a matriz BCG utilizando lucro e margem de contribuição

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Abstract: In this study, the BCG matrix method was adapted to evaluate the sales teams' performance of two companies of different sizes and from different segments: a furniture manufacturer and a manufacturer of special yarns for knitting and decoration. Results show that both companies' sales teams were classified into a matrix that relates their revenues to their respective contribution margins and profits. The sales teams' classification was made in relation to company results. Its quadrant allocation illustrates the quantitative and qualitative performance of each sales team in relation to the company average. The results show the similarity of sales teams' positioning, even when dealing with companies from different segments, as well as the distortions generated through the use of fixed cost apportionment in performance analysis.

Keywords: Performance evaluation; BCG matrix; Sales team; Contribution margin.

Resumo: *No presente trabalho o método da matriz BCG foi adaptado para ser utilizado na avaliação do desempenho das equipes de vendas de duas empresas de segmentos e tamanhos diferentes, sendo uma empresa fabricante de móveis e a outra uma fabricante de fios especiais para tricô e decoração. Depois de apurados os resultados, as equipes de vendas de ambas as empresas foram classificadas em uma matriz que relaciona o seu faturamento com a margem de contribuição e o lucro de cada uma. A classificação das equipes foi feita em relação aos resultados das empresas. A sua alocação em quadrantes ilustra o desempenho quantitativo e qualitativo de cada equipe de vendas em relação à média da empresa. Os resultados mostram a similaridade de posicionamento das equipes de venda, mesmo tratando-se de empresas em segmentos diferentes, bem como as distorções geradas com o uso de rateio de custos fixos na análise de desempenho.*

Palavras-chave: *Avaliação de desempenho; Matriz BCG; Equipe de vendas; Margem de contribuição.*

1 Introduction

The objective of this work is to interconnect strategic management tools with financial data to evaluate the sales force performance of an organization. According to Damodaran (2007), there is a moment in all organizations in which projects, planning and other forms of management become numbers. Controls seek not only to evaluate past performance but also may interfere with decisions and future behavior. For Wilkes et al. (2005), organizations should use controls to influence the behavior of people as members of the organization, making them necessary to motivate people towards organizational goals.

In accordance with Merchant (1998), to set a managerial control is to look for answers to the following question: are our employees behaving properly? The answer involves a series of actions that allow employees to know what is expected of them and protect the organization's interests by involving its culture. For Owoyemi & Ekwoaba (2014), a strong organizational culture is a tool for management to control, motivate and improve employee performance, as investigated by them in a governmental organization in Lagos, Nigeria. On the other hand, Ladley et al. (2015) examined the effect

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of individual assessment and reward systems versus group systems on behavior and performance at work, finding that group-based systems outperform those based on the individual, producing more cooperative behavior.

One of the characteristics of good control is to direct the goals that the organization expects to achieve. In this way, it becomes a valuable tool for reliable information. One of the ways to avoid control problems, in Merchant's view (1998), is to share risks, which may limit losses that could arise from inappropriate behavior, as well as make monetary compensations fairer which involve personal effort, as the selling activity.

In the present work, the BCG matrix method created by Boston Consulting Group to evaluate product portfolio was applied to evaluate sales teams' performance of two different companies. The objective is to evaluate the sales teams' performance in relation to company global results, for which reason the comparison with the market potential was not made. Can the sales teams of the companies be classified as a portfolio of teams and placed in a BCG matrix according to their relative performance? Two companies from different market segments of different sizes were studied to answer this question.

The work began with the calculation of the total costs of each produced unit. After calculating the variable costs, the fixed expenses were apportioned and allocated to each product in order to calculate the contribution margin and the profit of each sold unit.

After calculating results by product, the sales of each team were surveyed and the corresponding costs deducted. Therewith, it was possible to evaluate the participation of each team in companies' results. Results show that sales teams' positioning in relation to the performance of the company are similar in both firms, indicating the teams' strategic positioning in relation to companies' results. These results can be used for the qualitative evaluation of each team and for the strategies elaboration regarding the commercial performance of the companies.

The article is structured as follows. After the introduction, theoretical considerations about the need and usefulness of controls are made, in which the use of the matrix BCG as a tool is discussed. Next, the different uses of the matrix are addressed in addition to the product portfolio. Then, the data collection is described as well as the results are analyzed according to the contribution margin and profit margin. At the end, some recommendations about the use of the matrix BCG and suggestions for future studies are made.

2 Controls

The measurement of business performance aimed at its control has been the subject of study by both managers and researchers in managerial accounting (Otley, 1999). For the management of sales teams, the importance of control is highlighted in a study carried out in Mexico by Rajagopal & Rajagopal (2008).

Control, in Flamholtz's (1996) view, is a way of integrating people's effort and having them in the same direction, since individuals have different interests as well as diverse tasks and perspectives. For him, control has four functions: the first is to motivate people so their decisions and actions are consistent with organizational goals. Without a control system people may decide according to their needs rather then organizational goals.

Another function is to integrate the efforts of different parts of the organization; even when people have their actions directed to organizational interests. Without effective control they may be working in a diverse way and wasting resources. The third function of a control system is to provide information about operational results and the performance of people. At the same time as this information is disseminated throughout the organization and the results are evaluated, they allow for short-term fit without the need of reviewing all decisions. The fourth function is the implementation of strategic plans.

In his proposal, Flamholtz (1996) presents five steps for a control system to be effective, which are: (1) planning; (2) operational activities; (3) establishment of measures; (4) feedback generation; (5) evaluation and reward system. It is convenient to highlight that the reward must result from a process in which the used evaluation criterion clearly establishes fairness among the evaluated ones, as it was shown in a study by Lopes et al. (2011), the influence of perceived justice in the psychological link of the sales team with the company.

In most companies where the sales force is outsourced, the remuneration is established through a commission percentage on the sales price, regardless of the volume or profitability made from the sale. This characteristic reveals a cultural aspect of the companies where the sale is preponderant, that is, little attention is paid to budgetary aspects and results. This is underscored by the way commercial objectives are set, in general expressed in volumes of sold units or revenue to be attained.

Simplicity and easiness are one of the reasons for this to occur. This is in line with what Ouchi (1979) poses in his claim that, within the design of organizational control, there are two relevant aspects that will determine the form of control to

be more efficient. The first one is the clarity with which performance can be evaluated and the second one is the incongruity degree of the goals.

3 BCG matrix and control

According to Kotler & Keller (2016), one of the ways to evaluate the product portfolio is the BCG growth-participation matrix that has become popular under the acronym of the company which created it, known as BCG matrix. Considered as of great utility for the analysis of product portfolio and the company positioning in the external environment, it evaluates the portfolio through the generated cash flow. For that, the growth rate of the market is placed on the vertical axis, and on the horizontal axis is the relative market share of the company. With these both indicators four quadrants are generated which demonstrate the company's products position with the following characteristics:

Question Mark: refer to products or businesses that operate in high-growth markets but with low relative participation. It is a phase that requires investments to keep up with the market share growth.

Star: they occur when products or businesses considered question marks become successful. These have large relative participation in high-growth market, without presenting a positive cash flow necessarily.

Cash Cow: according to Kotler & Keller (2016), they occur when the market growth rate begins to fall significantly; however, the product or business show a high relative market share. In this way, *Stars* become *Cash Cows*. Positive cash flows and large profit margins are generated in this matrix quadrant.

Dog: are those products or businesses with low relative share in low-growth markets. In general, generate losses but, for some reason, remain part of the company's portfolio.

4 Matrix uses

The BCG matrix was already used for other purposes besides product portfolio analysis. Connel (2010) used it to help develop public policies of economic development, where the vertical axis represented the competitiveness of economic sectors and the horizontal axis its attractiveness. After analysis, they were classified in the matrix quadrants according to their priority.

In accordance with Calandro & Lane (2007), the BCG matrix is much used in the insurance industry where helps senior executives to identify the most potential market segments and, so, define resource allocation to bring the greatest possible return. The BCG matrix has already been used for other purposes besides analyzing the product portfolio.

Critics of the growth-participation matrix state that one of its weaknesses is that the size of the market and the participation of each company can be defined in various ways.

However, for Walter Kiechell III, editor of *Harward Business Publishing* and author of the book "*The Lords of Strategy: The Secret Intellectual History of the New Corporate World*", the matrix is very useful as it does not leave managers at the mercy of unit or product managers, since "[...] the underlying message of the matrix is that you have data to understand your business, your competitive situation, and the probable potential, as true as possible" (Allio & Randall, 2010, p. 30).

The question developed in this work is about the possibility of using BCG matrix to qualitatively evaluate a sales team, considering the relative performance of its components in relation to company results. In general the evaluation involves the sold quantity and the attainment of goals, but this work intends to evaluate the teams' performance in relation to the contribution margin and the generated profit margin.

The analysis was made in relation to internal performance. For this purpose, the following premises were established:

A– Company Profit: Based on the profit presented by the company the average profit of each sales team was calculated. Above this average the team is considered as "high profit", below average the team will be framed as "low profit";

B– Contribution Margin: Based on the total contribution margin the arithmetic mean was calculated. This average was considered the cut-off point of the performance evaluations. The sales team that makes a profit above this average will be considered as "high contribution". Below this average it will be considered as "low contribution";

C– The company's sales volume in currency will be divided by the number of components of the sales team. Those who perform above this average will be considered as "high volume" sales and who remains below average will be considered as "low volume" sales. According to information from the companies analyzed, the areas of activity of the sales teams were defined in accordance with the conveniences of the teams hired as service renders. The teams' performance in relation to the market potential was not considered, since the companies do not have this information. The work proposed to position the sales teams within the company's

scope to strategically evaluate the positioning and propose actions to be implemented.

After the indicators' definition, the evaluation matrix of the sales teams will have the following classification criteria equivalent to the BCG matrix as summarized in Chart 1.

5 Data collection

Data were collected from two companies. One is a furniture manufacturer with billings of four million and four hundred thousand dollars a year, which classifies it as a medium-sized company. This revenue in dollars was obtained by converting the value in Reals (the Brazilian currency) to the average dollar of the analyzed year, Code 3693 – Exchange rate – US dollar – Average annual period, according to Central Bank information. This rate complies with the technical pronouncement CPC 02 of the Accounting Pronouncements Committee (CPC, 2010) which guides the conversion of income statements by the average exchange rate for the period. Its marketing line is composed of 156 products. The sales area is composed by 17 sales companies that serve retails throughout the country and an internal team that serves one sole customer, totaling 18 sales teams. Sales are made to retailers which, in their turn, serve final customers. There are no sales made by virtual means or packages negotiated directly by the company. A single retail network is served by an internal team that gives the same treatment as the external teams, which allows comparative analysis.

The second company is a textile manufacturer that produces special yarns for the craft line of knitting, tapestry and decoration. Its marketing line is made up of 11 different products and the annual revenue is equivalent to four hundred and sixty thousand dollars, which characterizes it as a small size company. The conversion of billing to the dollar was done with the annual average provided by the Central Bank code 3693 – Exchange rate – US dollar – annual period average, as per CPC 02 recommendation. The sales area is composed of ten sales companies that serve the retail of various regions of the country.

For each product the variable costs were calculated according their composition. The fixed expenses were apportioned proportionally to the variable costs, respected the criteria adopted by the company.

The contribution margins for each marketed product were calculated after the costs were collected. To calculate the profits of each sold unit, the fixed costs apportionment was made in three different ways: by direct labor, by raw material consumption, and by total variable costs. Results were similar across all the used criteria.

5.1 Analysis unit

According to Connel (2010), a strategic analysis unit can be a product or a product line for which strategies can be developed. In this case, the object of analysis will be the sales team performance in its segment (the geographic area of work). The furniture company has 18 sales segments, 17 of which are served by outsourced teams and one segment is directly served by the company. The textile company has 10 segments served by outsourced companies that provide commercial representation services.

6 Profitability

To calculate each sold unit profit, the variable costs were calculated of which raw material and direct labor are the main ones. The taxes levied on sales, royalties, and commissions paid to sales teams were considered as variable expenses. Considering the average sale period of each team, sales figures were brought to present value so that there was no distortion in relation to the payment terms used.

Once this information was cleared, the contribution margin of each sold unit was calculated as follows: the variable costs and variable expenses were deducted from the charged selling price. The total variable costs and the total variable expenses were deducted from the total sales of each sales team, thus obtaining the contribution margin of each sales team.

After calculating the contribution margin of each product, the profit was calculated. For this, the other expenses were considered fixed, being made an apportionment to calculate the value to be absorbed by the sold units. The profit of each sold unit was multiplied by the number of sold units of each sales

Chart 1. Comparison of BCG matrix for product portfolio and sales analysis matrix.

	Star	**Question Mark**
BCG Matrix	High growth × high participation	High growth × low participation
Sales Matrix	High volume × high profit	High volume × low profit
	Cash Cow	**Dog**
BCG Matrix	Low growth × high participation	Low growth × low participation
Sales Matrix	Low volume × high profit	Low volume × low profit

team and, so, the profit of each one of the teams was obtained.

6.1 Furniture industry positioning

As the purpose of the application is to compare the relative position of each of the sales teams, the average performance of the company was considered as the cut off line to define the positioning. As the total billing of the company in the analyzed year was five million dollars approximately (USD 4,937,957.60), reached with 18 sales teams of which 17 external and one internal, the sales average was USD 274,330.97 per team. Data are available in Annex A.

The company's profitability in the same period was USD 315,085.39 what represents 6.38% on sales. Dividing the company's profit by the number of sales teams, the average profitability was USD 17,504.74 per team.

Once established the cut lines for the performance analysis, it is possible to position each team according to its share of the sales volume and profit made. According to this performance, the sales teams are positioned in each quadrant of the matrix, as shown in Figure 1.

6.2 Textile industry positioning

The company invoiced USD 469,325.50 with ten sales teams in the analyzed period and made a profit of USD 106,351.47 what represents 22.66% on the sales price. Data can be seen in Annex B. Dividing the revenue and the profit by the number of sales teams, the cut-off is an average revenue of USD 46,932.00 and an average profit of USD 10,635.00.

Once the cut-off lines have been established for the performance analysis, it is possible to position each team according to its share in the sales volume and in the profit made. According to this performance, the sales teams are positioned in each quadrant of the matrix. Results are presented in Figure 2.

7 Results analysis

Based on the sales teams' positioning in the respective quadrants, the performance of each one in relation to the results obtained by the company can be analyzed. It should be emphasized that the made profit analysis may be distorted by accounting choices, such as the adopted apportionment criterion. For this reason, the analysis in relation to profit will be more succinct, being deepened in relation to the contribution margin.

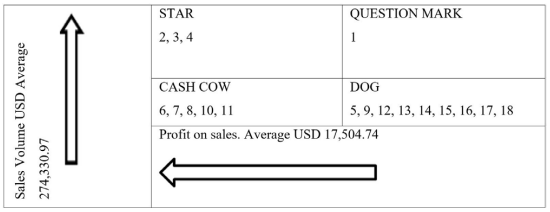

Figure 1. Sales teams positioning – furniture industry. Source: Authors.

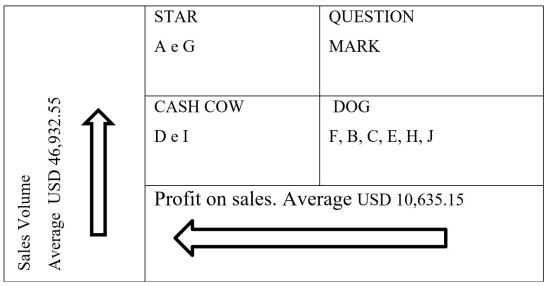

Figure 2. Sales team positioning – textile industry. Source: Authors.

7.1 Teams' positioning

Based on company's results, the average performance of each sales team was set both in sales volume and profitability. From this average, each team was positioned in the quadrant that expresses its performance in the analyzed period.

7.1.1 Furniture industry

Based on each team's positioning inside the matrix according to Figure 1, some considerations can be made about their performance. In a comprehensive analysis it can be seen that there is a big concentration in the quadrant named "Dog", where 9 sales teams (identified by the numbers 5, 9, 12, 13, 14, 15, 16, 17, 18) are positioned, that is, 50% of the total of 18 teams.

Despite the product portfolio theory to claim that in this quadrant products are cash traps, it should be considered that, in this case, sales teams are profitable. Even if their performance is below the company average, they do not consume resources, they only make little contribution. The causes should be investigated in the future.

Five sales teams (identified by the numbers 6, 7, 8, 10, 11) are positioned in the quadrant corresponding to "Cash Cow", that is, these teams do not bring great sales volumes to the company, and however

they are the ones that generate the greatest margins in percentage on sales.

Three sales teams (those with numbers 2, 3, 4) are positioned as "Star", that is, they have a great participation in company billing and with a higher profit than the company average. One sales team is positioned as a "Question Mark", however as the sales volume is measured in relation to sales margins, this team generates a large volume but the results are negative. Despite the large volume, this sales team does not contribute to increasing the company's profits; on the contrary, it consumes resources reducing the company's total profit.

7.1.2 Textile industry

Based on the collected data and according to the classification criteria, it can be seen in Figure 2 that 60% of the ten sales teams were positioned in the "Dog" quadrant. Two sales teams, identified by letters D and I were classified as "Cash Cow" and two teams were classified as "Star", named by letters A and G.

The analysis based on generated profits shows that the company has four sales teams that produce higher profits than the others, and two sales teams that, besides profit, have a higher billing than others.

Based on collected data, the company has a problem apparently: the sales team that generates the greatest billing volume and does not positively contribute to results.

From this confirmation, one can raise the questioning of the apportionment criterion that can change the results and with this lead to a wrong decision.

According to Horngren et al. (2014) the use of a random criterion to cause products absorb company fixed costs may generate distorted results and lead to wrong decisions. One way to avoid them is to do the contribution margin analysis.

7.2 Contribution margin

According to Horngren et al. (2014) the contribution margin is the difference between the selling price and the variable cost per unit. If total revenue is used, the contribution margin will be the difference between total revenue and total variable costs. This result is the value at which the product contributes to the payment of the company fixed costs. The authors consider that it is a more effective way of measuring the contribution of each product to company results.

In the analysis of cost related to volume and profit it is important the understanding of the contribution margin concept. According to the authors the unit contribution margin is the difference between the unit selling price and the unit variable cost (Blocher et al. 2007, p. 180). Its effect is to increase profit according to the increase of sold units proportionally that is, an increase of ten sold units will increase profit by ten times the contribution margin. In the present work, it will be the value with which each sales team contributes annually to pay the company fixed costs.

7.2.1 Furniture industry

According to data in Annex A, the average contribution margin of each sales team in the furniture industry was USD 37,990.10. This result was obtained by dividing the total contribution margin in the period, which was USD 683,822.07, per 18 which is the number of the company sales teams. In this way, those teams that obtain a higher value than this will be considered as of high performance. The used average billing will be the same as the previous analysis, that is, USD 274,330.97. After setting the criteria, the sales teams' classification according to the contribution margin is presented in Figure 3.

When the sales teams are analyzed by the contribution margin, it is observed that there are none of them in the "Cash Cow" quadrant. Most teams (5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18) are positioned in the "Dog" quadrant, that is, have low sales volume and contribution margin below the company average. If the analysis is made according to the product portfolio criteria, the strategy would be the discontinuity of these teams, however the contribution margin concept has to be considered and, in this case, the most rational decision is to keep these teams, since even the margin being slow, the fact that it is positive means that it is helping the company to recover its fixed costs. The strategies to operate in these markets are what should be analyzed in this case, and could contemplate the traded volume increase or the contribution margin increase.

The "Star" teams (2, 3, 4) and the "Question Mark" (1) did not change when analyzed by profit or contribution margin. This evinces that, regardless of the criteria, there are three sales teams that give the greatest contributions to the company's results and one sales team that takes value out of the company when analyzed by the net profit as well as makes

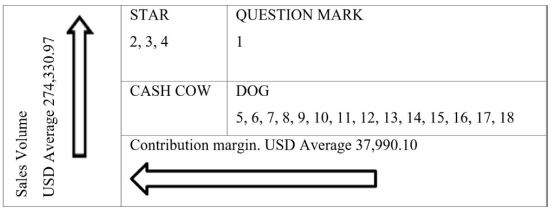

Figure 3. Sales teams' positioning based on contribution margin – furniture industry. Source: Authors.

a very small contribution when analyzed by the contribution margin.

The result comparison of both matrices (profit and contribution margin) shows the results distortion that can occur when the apportionment criterion is used. Some analysis units that initially figure as "Cash Cow", that is, with low sales volumes but profit above average, when analyzed by the contribution margin, change from quadrant moving to "Dog", that is, with low sales volume and low contribution margin. This fact may be aggravated by the large volumes disparity that exists among the various units of analysis.

The result analysis against volume can help the company execute its strategy. According to Blocher et al. (2007), the contribution margin helps to understand how changes in sales volume affect costs and profits.

7.2.2 Textile industry

According to data in Annex B, in the textile industry the average value of the contribution margin of each sales team was USD 16,334.26 and the average invoiced was USD 46,932.55. Based on performance, the teams are positioned in accordance with Figure 4.

The sales teams' classification according to the contribution margin shows that most of them remain in the "Dog" quadrant. Teams A and G continue to be classified as "Star". While "Cash Cow" quadrant is changed: company D moves to "Dog" and company F is classified as "Cash Cow". Out of the ten teams, six performed below average in both billing and contribution margin.

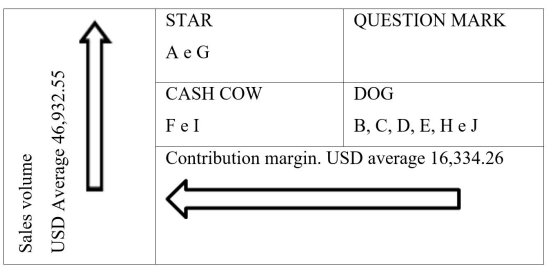

Figure 4. Sales teams'positioning based on contribution margin – textile industry. Source: Authors.

7.3 Results analysis of the two companies

The matrices in Figures 1, 2, 3 and 4, and show that, although the two companies are of different sectors and with different sales volumes, the sales teams' classification presents many similarities. The first of them is that most of the teams end up being positioned as "Dog". In the matrix that considers profit margin, both companies have half of the teams in this quadrant.

When the matrix based on contribution margin is elaborated, the teams' volume in "Dog" quadrant goes to 60% in the textile industry and 77% in the furniture industry, showing that the contribution margin is a more accurate measure to evaluate results.

The "Star" quadrant contains the smallest number of sales teams in both companies, what demonstrates that sales volume is concentrated in some sales teams and so the profit. Considering that sales and results concentration increases companies' risk, the matrix illustrates where the main commercial risks of each company are.

Table 1 shows that the teams position themselves in a similar way when evaluated by the contribution margin, even if the companies have different sales volumes, operate in different segments and with different teams.

8 Applications

With the use of the BCG matrix, companies can qualitatively evaluate their sales teams, merging the revenue-related remuneration with the remuneration proportional to the results generated by teams, be it the profit or the contribution margin.

Companies need to balance the produced volume with the resulting margins from sales. Hardly one gets a high sales volume with high margins. With the use of the Matrix, the company has an example of how the sales volume and results are distributed and the risk they represent to achieve the organization's objectives.

Table 1. Sales teams'classification – contribution margin × volume.

QUADRANT	Furniture industry		Textile industry	
	Teams	%	Teams	%
Star	2, 3, 4	16.67	A, G	20
Cash Cow	-	0	F, I	20
Question Mark	1	5.56	-	0
Dog	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	77.78	B, C, D, E, H, J	60
		100		100

The matrix of sales teams' classification clearly shows the characteristics of each team. So, the performance evaluation and the formulation of motivation strategies through remuneration to correct distortions are easier.

In times of high sales volume, the company may try to increase margins by establishing an award program to contemplate the contribution margin of each sales team. In times of low sales volume, the company may opt for remunerating by volume even for that it is necessary to reduce margins a little bit.

An alternative to the BCG matrix use is to propitiate the establishment of specific actions contemplating market characteristics, its potential and the company position regarding the competition, subsidizing the sales teams with strategic information indispensable to results attainment.

8.1 Care in using the matrix for products and teams

Considering that sales teams are qualitatively analyzed in relation to the whole company performance, decision-making based on the BCG matrix cannot be done in the same way as the analysis of products or business units. In this topic the main differences in decision-making for products and sales teams in each quadrant of the BCG matrix are addressed.

Question Mark: according to Kotler & Keller (2016), for products it is necessary to evaluate the continuity of investments in these businesses. For sales teams, mainly outsourced and remunerated only with percentage on sales, the evaluation should focus on the ability to increase contribution margins, because in both studied companies, even though the contribution margins are low, they are positive and help absorb the fixed costs of the company. Training programs can be thought of for these companies or focus on more sophisticated products that generate higher value-added sales.

Star: products in this quadrant do not always produce positive cash flows due to the need for investments to keep pace with growth and competitors. For sales teams, they are characterized as high participation in sales volume and high profit sharing or contribution margin. In this case, the main investment was already made, often reflected in attendance numbers or hiring of people who visit customers. Therefore, the greatest investment in sales teams refers to information and strategies to maintain the sold volume.

Cash Cow: in product analysis are those of low growth market and the generated cash is due to economies of scale. For the sales teams, in this quadrant are those with low participation in sales volumes, but high participation in contribution margin. Therefore, they should receive investments to increase sales volume with the maintenance of margins.

Dog: they are products or businesses with small shares in low growth markets. Usually, they are products that can improve their performance in markets that may develop in the future. When it comes to sales teams, they are those who have a small share of sales volume and a small share of the contribution margin. These teams should be analyzed according to the global strategy of the company; in some cases it may be possible to improve their performance through specific actions such as training, improving follow up, among others.

In the product portfolio evaluation, according to Kotler & Keller (2016), the ideal evolution is that "Question Mark" products become "Star". These, in turn, become "Cash Cow" with time, and later become "Dog", when they will be discontinued. When sales teams are analyzed, this evolution cannot be considered literally. Firstly, because the teams' individual performance, in relation to the overall performance of the company, is being considered. Hardly the sales volume or its profitability will be the same in all areas. Second, sales volumes and profits are unlikely to be uniform and constant for all operation areas and/or sales teams. In this case, it is advisable to analyze performance given the *sui generis* conditions of each team and its contribution to the company objectives, in order to propose a new way of operation and remuneration.

9 Recommendations and future applications

In the present work, the mean was used as a reference measure, and maybe this is not the most adequate way of comparing performance. By establishing the mean as a parameter, the company has an internal benchmark, a performance indicator of the whole team in relation to the overall performance of the company, and with this, the external interferences will be diluted in the overall index.

However, it should be considered that the mean may be hiding disparities due to other variables not included in the scope. When the sample is small, as in this case, this distortion may be more pronounced. Probably, the use of standard deviation, along with the mean result in a more appropriate analysis measure.

The obtained data for this work refer to a single year. Applying this approach in a longer time, together or separately, it will be possible to evaluate the sales teams' performance more effectively, visualizing the occurrence of performance change according to the analyzed period of time, eliminating eventual seasonality.

Based on the classification presented in this work, managers will be able to elaborate strategies that consider the most important aspects for the organization in the areas of specific actuation such as increasing market share or increasing the profitability of a certain region. The data obtained in this work may serve as a basis for the company to decide on resource allocation, trying to get better results in certain regions or to enlarge the regions of actuation looking for volume, or to reduce areas of actuation looking for greater profits.

In the performance evaluation of the sales teams two indicators were used: sales profits and the contribution margin. Profits on sales were calculated on an accounting basis: all costs and expenses were deducted from sales prices, with variable costs and expenses being determined, while fixed costs and expenses were apportioned and deducted from the sale price. As the apportionment may distort results showing profits that are not real, the analysis was done according to the contribution margin.

The evaluation through the contribution margin is considered the most advisable for the managerial analysis, once it is determined by deducting all variable costs and expenses from the selling price. In this way, only the expenses identified with the product are considered and, thereby, the apportionment distortions are avoided. The two matrices show these differences and that is why it is suggested to use the contribution margin in managerial evaluations.

The analyses elaborated in this work can be used to evaluate the company performance regarding the competition, provided there are available data. A practical application is to check what the competitors' profitability is, as well as which of the company's teams have contributed to maintain that profitability at the same relative levels and which affected the performance. With the job data it is possible simulate some decisions as, for instance, to check the company's performance if the areas with poor performance were discontinued.

Another application of this work may be in sales campaigns to improve the teams' performance which can be done in relation to others or based on market potential. In campaigns, evaluation criteria may be proposed which allow improving the product mix, including those with a higher contribution margin.

One of the managers' difficulties is to make people's interests align with the interests of the organization. One of the ways to make this happen is to have an evaluation and control system that allows its link with a compensation system to promote the desired behavior change. Through the BCG matrix that presents the sales volume and the financial results the evaluation of the commercial area may be more efficient, once, in addition to the volume, there is the possibility to also visualize the contribution margin and profit. In other words, to evaluate the quality of the sale. Then, company objectives can be established more effectively than single quantitative sales goals.

Research by Johnson et al. (2001) reveals that in organizations where people are rewarded for control and evaluation systems, their behavior is modified by this understanding as well as the collaboration spirit increases. The use of a tool to evaluate objectives, both quantitatively and qualitatively, can help companies to establish more easily visualized objectives and allow an experiences exchange between sales teams, in order to try to expand successful practices.

10 Final comments

By establishing managerial controls the company looks for using tools that evaluate and drive actions towards the goals it expects to reach, as well as having information that helps it to evaluate people's performance and avoid inappropriate behaviors.

This work evaluated the sales teams' performance both qualitatively and quantitatively. The quantitative aspect is present in the sales volume of each team while the qualitatively aspect is the result of each team. In this work, the teams are evaluated according to the contribution margin and the profit as well as the participation of each team for the company results. For this purpose, the BCG matrix methodology was used. In its original version, this matrix places on the horizontal axis the company relative market share, and on the vertical axis the market growth rate.

Two matrix adaptations were made to evaluate the sales teams' performance. In the first, the horizontal axis represents the generated profit by the sales teams individually, and the vertical axis the sales volume expressed in monetary units. In the second adaptation, the horizontal axis represents the contribution margin of each sales team and the vertical axis the sales volume in monetary units.

This methodology application was done in a medium-sized furniture company of a textile company. After calculating the costs of each product, the profit of each sold unit was calculated, and then the annual profit of each sales team. For this, the unit profit was multiplied by the sold volume of each product. The classification, according to performance, was placed in one of the matrix four quadrants, in accordance with the sales volume and the profits on sales.

When analyzed in accordance with profit, the generated matrix positioned half of the sales teams in the "Dog" quadrant, only one as "Question Mark", three as "Star" and five as "Cash Cow".

To avoid distortions generated by fixed costs apportionment, the contribution margin of each product

and the total contribution margin of each sales team were calculated. When analyzed according to the contribution margin, most teams were positioned in the "Dog" quadrant, one was in the "Question Mark" quadrant and three teams were positioned as "Star".

When comparing the different results generated in both matrices, it is clear that the fixed costs apportionment can alter the results and generate distortions in the managerial analyses.

The results of the sales teams' evaluation show a similar behavior of both companies' sales teams, where a small number of teams represent most of companies' sales and results.

The work evaluated the relative performance of each team of the commercial area. For this, the average of the company's billing, profit and contribution margin was considered as landmark. Then, each sales team was positioned in the matrix according to its performance in relation to the company average.

The adapted BCG matrix to evaluate a sales team's performance proved useful due to the qualitative evaluation of sales volume; but it is suggested that the analysis should not be done in the same way as originally established. Firstly, positioned products as "Dog" according to the portfolio analysis should be discontinued. However, when dealing with sales regions or teams, as it is the case of this study, this can not be decided without a more detailed analysis that considers other aspects such as the reflection in the other areas when an area with positive contribution margin is eliminated, even if relatively small. The same holds true for profit.

The work showed as that the use of the BCG matrix can be adapted for the qualitative evaluation of sales teams and work regions. It can also be used to establish market strategies. Another utility of this study is to provide new subsidies for the establishment of internal sales promotions, rewarding not only higher sales volumes but also the more profitable sales.

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Annex A. Sales teams' performance in USD – furniture industry.

Sales Teams	Amount (USD)	Participation	Contribution Margin (USD)	%	Fixed Costs (USD)	Profit (USD)	Profit %	Participation
1	1,567,036.68	31.73%	37,660.69	2.40%	141,458.92	-103,798.23	-6.62%	-32.94%
2	1,014,606.30	20.55%	199,929.98	19.71%	65,880.64	134,049.34	13.21%	42.54%
3	533,243.14	10.80%	94,780.40	17.77%	35,229.83	59,550.57	11.17%	18.90%
4	506,507.93	10.26%	71,512.66	14.12%	36,679.80	34,832.87	6.88%	11.06%
5	211,095.61	4.27%	31,508.71	14.93%	7,161.44	24,347.27	11.53%	7.73%
6	175,324.48	3.55%	35,941.57	20.50%	11,708.53	24,233.05	13.82%	7.69%
7	132,745.49	2.69%	27,601.11	20.79%	7,747.04	19,854.07	14.96%	6.30%
8	125,957.19	2.55%	30,941.77	24.57%	6,811.09	24,130.67	19.16%	7.66%
9	125,019.00	2.53%	16,815.04	13.45%	8,814.62	8,000.42	6.40%	2.54%
10	113,892.56	2.31%	32,467.42	28.51%	8,976.49	23,490.93	20.63%	7.46%
11	106,879.35	2.16%	29,769.90	27.85%	4,899.47	24,870.43	23.27%	7.89%
12	76,618.36	1.55%	21,211.55	27.68%	16,160.49	5,051.06	6.59%	1.60%
13	51,590.44	1.04%	10,473.30	20.30%	8,681.70	1,791.60	3.47%	0.57%
14	28,544.76	0.58%	6,575.34	23.04%	3,793.48	2,781.87	9.75%	0.88%
15	126,452.41	2.56%	26,359.98	20.85%	1,997.60	24,362.37	19.27%	7.73%
16	26,258.33	0.53%	6,163.45	23.47%	1,652.28	4,511.17	17.18%	1.43%
17	11,934.37	0.24%	2,982.85	24.99%	804.84	2,178.01	18.25%	0.69%
18	4,251.20	0.09%	1,126.35	26.49%	278.41	847.94	19.95%	0.27%
	4,937,957.60		683,822.07		368,736.67	315,085.40	6.38%	100.00%

Annex B. Sales teams' performance in USD – textile industry.

Sales teams	Amount (USD)	Participation	Contribution Margin (USD)	%	Fixed Costs (USD)	Profit (USD)	Profit %	Participation
A	181,316.15	38.63%	65,038.10	35.87%	21,790.41	43,247.69	23.85%	40.66%
B	21,697.75	4.62%	8,316.75	38.33%	2,580.22	5,736.52	26.44%	5.39%
C	929.10	0.20%	328.53	35.36%	118.07	210.46	22.65%	0.20%
D	41,113.54	8.76%	15,635.48	38.03%	4,942.83	10,692.65	26.01%	10.05%
E	35,871.99	7.64%	5,958.34	16.61%	6,786.52	(828.18)	-2.31%	-0.78%
F	46,352.33	9.88%	14,670.51	31.65%	6,377.14	8,293.37	17.89%	7.80%
G	86,992.70	18.54%	32,831.05	37.74%	10,286.90	22,544.15	25.91%	21.20%
H	7,025.70	1.50%	2,911.45	41.44%	896.91	2,014.54	28.67%	1.89%
I	42,674.06	9.09%	18,430.93	43.19%	5,519.11	12,911.81	30.26%	12.14%
J	5,352.18	1.14%	2,213.13	41.35%	684.67	1,528.5	28.56%	1.44%
	469,325.50		166,334.26	35.44%	59,982.78	106,351.47	22.66%	100.00%