

## Business Intelligence (BI) Deployment in a Dealership Group in the Countryside of Minas Gerais

### Implantação do Business Intelligence (BI) em um Grupo de Concessionárias do Interior de Minas Gerais

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#### Abstract

Among the technological applications that deal with the large volume of information for decision making, the use of Business Intelligence (BI) stands out, which allows the identification of behavior patterns and events occurrences that add value and knowledge to companies. However, for BI to provide such benefits, the alignment between Information Technology (IT) and the business is essential for the successful implementation of this tool. In this context, this study aims to present the implantation of the BI system in a car dealership in the countryside of Minas Gerais considering the diagnosis of the level of alignment between IT and the business. As a methodology, a descriptive research was carried out, applied with a mixed approach. For the diagnosis of the level of alignment, the methodology of Lima (2008) was used through questionnaires. In the later stages of the BI implementation in the organization, the Bezerra and Siebra (2015) methodology was used. The results of the study demonstrate that the application of the diagnostic model of the level of alignment between IT and the business enabled the identification of improvement opportunities that promoted the implantation of BI, whose contribution is the evidence of a case of its implantation in companies of the branch of vehicle dealerships in the countryside of Minas Gerais.

**Keywords:** Business Intelligence. Controllership. Information Technology. Strategic Alignment.

#### Resumo

Dentre as aplicações tecnológicas que tratam o grande volume de informações para tomada de decisão, destaca-se o uso do Business Intelligence (BI), o qual permite a identificação de padrões de comportamento e ocorrências de eventos que agregam valor e conhecimento para as empresas. Entretanto, para que o BI possa proporcionar tais benefícios, o alinhamento entre a Tecnologia da Informação (TI) e o negócio é fundamental para o sucesso da implantação dessa ferramenta. Neste contexto, o presente estudo tem por objetivo apresentar a implantação do sistema BI em uma concessionária de veículos no interior de Minas Gerais a partir do diagnóstico do nível de alinhamento entre a TI e o negócio. Como metodologia foi realizada uma pesquisa descritiva, aplicada com abordagem mista. Para o diagnóstico do nível de alinhamento foi utilizada a metodologia de Lima (2008) por meio de questionários. Nas etapas

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posteriores da implantação do BI na organização foi utilizada a metodologia de Bezerra e Siebra (2015). Os resultados do estudo demonstram que a aplicação do modelo de diagnóstico do nível de alinhamento entre a TI e o negócio possibilitou a identificação de oportunidades de melhoria que promoveu a implantação do BI, cuja contribuição é a evidência de um caso de sua implantação em empresas do ramo de concessionárias de veículos do interior de Minas Gerais.

**Palavras-Chave:** *Business Intelligence*. Controladoria. Tecnologia da Informação. Alinhamento Estratégico.

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## 1 Introduction

The large volume of information that has been generated due to technological advances in recent years imposes the adoption of management strategies on companies in order to encourage the use of all available resources and information. The technological tools, according to Fátima and Linnes (2019), are known as business intelligence systems. According to the authors, they refer to tools, apps and better practices that help the information treatment that is produced by the information systems and they are fundamental so that the companies can analyse them and use them in an agile and assertive way in the decision-making process.

The business intelligence systems originated, according to Kenneth and Laudon (2011), from the Decision Support Systems (DSS), which characterized themselves as a type of information system that helped the organization managerial body in the decision-making process.

Since then, the DSS evolved into the Business Intelligence (BI) concept, which, according to some authors, provided an advance in the environment and in the process analysis and diagnosis, by allowing the organizations and their managers better conditions to anticipate the future and reduce risks and uncertainties in the decision-making process. (Silva, Silva & Gomes, 2016; Watson & Wixon, 2007). Hence, the BI term has been widely used as a concept of systems based on information technology to support such decision-making. Pinto (2012) studied some BI definitions found in the literature and redefined them as a set of management methodologies with a structure dedicated to the data collection and to their

conversion into information and knowledge via an organized and systematized process that enables the organizations to acquire, analyse and distribute information in order to leverage processes and to lead it to better decisions and actions in order to improve the company performance.

Therefore, Silva, Silva and Gomes (2016) verified that in order to implement BI, in addition to understanding the information origin, it is also necessary to know the organizational processes and how they can influence on the decision-making. The authors also affirm that such information is gathered with the organization management team and they complement by saying that “it is necessary for the managers to provide correct and aligned information to the strategic objectives in order to facilitate the necessary adjustments and allow the BI deployment and application to obtain success” (Silva, Silva & Gomes, 2016 p. 2795).

Guarda et al (2016) add that the companies should also consider the external environment information such as customers, competitors and the market in addition to the internal information. In this sense, Fátima and Linnes (2019) also verified that it is fundamental to identify the critical factors of the organization success in order to ensure a BI successful implementation. In their study, the authors analysed publications from 2010 to 2018 on such factors and found as main results: lack of support from the senior management, need for a clear definition of the business view for its correct deployment, need for guided methodology for the business and project manager, active user participation in the BI construction, qualified team with technical and business knowledge, quality information, integrity and scalable infrastructure, which will depend on, according to the authors, the planning efficacy, BI implementation and adoption (Fátima & Linnes, 2019).

For such purpose, the integration of the Controllershship and Information Technology areas and other areas of the company is fundamental. In this sense, there are studies that found that the alignment between IT and the business provides an improvement regarding the

technology use in the decision-making process. Affeldt, Silveira and Vanti (2006) observed that such alignment goes beyond the operational support to the the business processes, that it influences the business management via information and analysis that it provides. Joia and Souza (2009) observed that, via alignment, the IT professionals have the opportunity to learn about the organization businesses and contribute to the application of new technologies and the managers have the opportunity to know the information technology role and their usage possibilities. Amarilli, Van Vliet and Van Den Hooff (2017) also observed the existence of bonds between alignment and performance, which were demonstrated in various studies.

In the Controllershship, studies that identified that BI helps the department to make reliable information available for the decision-making process and that it represents one of the main tools in the business scenario to provide operational, managerial and strategic information were also found (Affeldt et al 2006; Reginato & Nascimento, 2007).

Bezerra and Siebra (2015) also observed that an adequate planning according to the organization objectives is important for a BI deployment. Furthermore, Fátima and Linnes (2019) observed the importance of case studies that demonstrate the BI well-succeeded use in small and medium-sized companies so that other persons learn from its success. In this context, by understanding the importance of the strategic information use for the decision-making and that the BI systems are technologies able to provide it, in addition to contributing to the alignment between IT and the business, the following research issue is presented: how does the BI system deployment in a car dealership in the countryside of Minas Gerais happen?

In order to answer the question, this study aims to demonstrate the BI system deployment from the alignment level diagnosis between IT and the business in a dealership group in the countryside of Minas Gerais. The study is justified because it demonstrates the BI deployment in a company and it contributes to the literature by pointing cases of technology use for information analysis in an organization. In addition, the study

demonstrates the alignment maturity level analysis between IT and the business as a way to identify an improvement in the alignment between IT and the organization strategy by using BI.

The study was carried out in a car dealership by considering the relevance of this sector in the Brazilian commercial scenario, as it accounts for the generation of 315 thousand direct jobs, corresponding to 5,12 % of the Gross Domestic Product (GDP) National Federation of Automotive Vehicles Distribution [FENABRAVE] (2021).

The article is structured in four sections besides this one. In the second section, the theoretical framework will be presented. In the third section, the methodology used. In the fourth section, the description of the BI system deployment results and in the fifth and last one, the study final considerations.

## **2 Theoretical Framework**

### *2.1 IT and Business Alignment*

Luftman (2004, p. 100) conceptualizes the alignment between IT and business as “the application of Information Technology (IT) in a proper and timely manner in line with the strategies, objectives and needs of organizations”. In this sense, the author infers that the alignment process is dynamic and involves the correct harmonization of the business needs. He completes by highlighting how IT will be able to meet them at the right time.

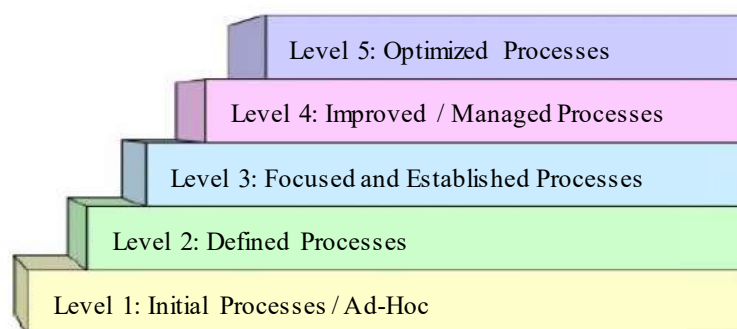
The alignment concept is derived from the strategic alignment and it has the strategy classic notions that address the set of decisions to reach the organization specific objectives as principle. Silveira (2017), when tracing back the strategic alignment concept, observed that it is applied to several knowledge areas and that it refers to the alignment of actions and practices that involve the company configuration, to the interaction and to the management of complex coalitions among persons, processes and technologies, resulting from the relationship among managers, employees,

suppliers, educational institutions, professional associations, infrastructure and much more. The strategic alignment, in turn, derives from the strategy concept that means, according to Johnson, Scholes and Whittington (2011, p. 25), the “guidance and the scope of an organization, in the long term, that achieves advantages in unstable environments via resource and competence configuration in order to meet the stakeholders' expectations”.

These concepts, also applied to IT, are references to the company actions and can become a competitive advantage regarding the competitors, suppliers, replacement products, market new entrants, as, according to Kenneth and Laudon (2011), such competitive advantages are most of the times obtained by using the information systems together with all the technological arsenal such as networks, database, Internet, among others.

Thus, the business area has to be aligned to its IT structure and to what it offers so that the companies can define their strategies. In addition, the IT area has to be able to understand the company demands and seek solutions that provide the best implementation of the strategies. In this perspective, Amarilli et al. (2017) observed that the IT alignment with company businesses is a widely studied topic, as it holds several researches that demonstrate the great relationship between alignment and corporate performance. In contrast, the authors observe the shortage of studies that translate the daily applied practices of companies.

There are authors who discuss ways of obtaining the correct alignment and how to reach it. Luftman (2004) found that important questions should be addressed: how can organizations assess alignment? How can organizations improve alignment? How can organizations reach a mature alignment? By facing such questionings, the author demonstrated a maturity assessment model of the IT alignment and of the businesses in five levels.



**Figure 1.** Strategic Alignment Maturity Levels  
Source: Luftman (2000, p. 10, *apud* Lima, 2008, p. 65).

Lima (2008) also studied each of the five alignment maturity levels that concentrate, in turn, in a set of six criteria: Communications Maturity, Competence Maturity / Value Measurement, Governance Maturity, Partnership Maturity, Scope and Architecture Maturity, Competence Maturity.

According to the author, it is possible to know the IT alignment maturity level, to understand how the company sees this area and how it will be able to contribute to the company success via this model. Luftman (2004, p.101) also affirms that “to identify an organization alignment maturity is an excellent vehicle to understand and to improve the relationship between businesses and IT”. In another study, Luftman, Lyytinen and Zvi (2017) demonstrated an assessment model of a success example, which demonstrated that, by sharing activities between the functional areas and IT, the studied companies obtained a better alignment. Among the actions, they observed that when the financing, marketing and HR areas carried out the planning and the coordination of goals with IT, they obtained a higher level of alignment and consequently a positive impact on the company performance.

Lima (2008) also found that in the assessment process to detect the strategic alignment maturity level of an organization, the author used the model by Luftman and observed that the gaps generated by the analysis of



the responses are converted into improvement opportunities that consolidate such alignment increasingly.

In this sense, Luftman et al (2017) also researched that a well-succeeded alignment between IT and the business generates a positive impact on the organization performance improvement because it promotes a better interaction of the activities that IT and business managers need in order to work together to coordinate goals and operations, both in IT and in other organizational functions (for instance: finances, marketing, HR). The authors observed that “The alignment status assessment of a company is a fundamental stage in the identification of necessary actions to improve the congruent relationship between businesses and IT and to ensure that IT is used to provide the businesses with value” (Luftman et al 2017, p. 12). Hence, the BI deployment is configured in an activity that demonstrates the search evidence for improvement in the IT use by organizations via alignment between the IT area and the business.

## 2.2 *BI Tools*

Information Technology and its respective information generation and transmission resources provide means to obtain the necessary information for the Controllershship (Rezende and Abreu 2013). As such, the Business Intelligence (BI) tools enhance the information system function by providing a systemic view of the business and they aid in the data uniform distribution among the users, that is, transform large quantities of data into quality information for the decision-making (Barbieri, 2011). Guarda et al (2016) add that the BI tools should offer market strategic information that are essential for the business success and for the organization internal information as well

Some authors affirm that BI acts as an “umbrella” that connects information from several environments, by using them in various ways according to the business need (Bezerra and Siebra 2015; Silva, Silva and Gomes 2016). Moreover, it also allows the identification of behavior patterns

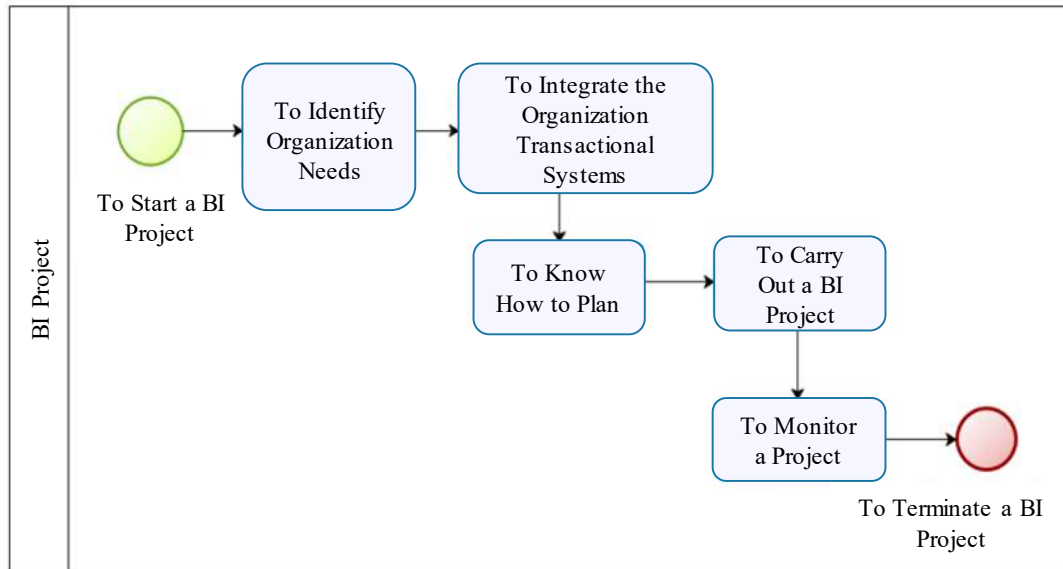


and event occurrences that aggregate value and knowledge to the companies and they enable the use of statistical, mathematical and artificial intelligence concepts (Silva, Silva and Gomes 2016; Moreira et al, 2016).

Among the benefits of its usage, studies show that the BI use contributes to activity control and follow-up and it provides a systemic view of the business by means of the performance indicators. As such, Reginato and Nascimento (2007) found that the BI use aided the Controllershship in order to provide reliable information, by providing the studied company with the result improvement.

Sharda, Delen and Turban (2019, p.15) emphasize another BI benefit: the result visualization via dashboard, which are “visual exhibitions that make a clear understanding of the data possible, besides incorporating deepening capacities and detailed review of the data with less effort and in less time”. In this sense, some studies attest the application of the dashboards for the visualization of the performance indicator dashboards (Serra Costa and Duarte 2010; Fraga, Erpen, Varvakis and Santos 2017; Strate and Pretto 2015).

Bezerra and Siebra (2015) emphasize that in order to ensure the benefits of using BI, its deployment should be accomplished in an organized way from its preparation to the data processing. The authors propose the BI construction in stages based on the Corporate Strategic Planning (CSP) and on the Information Strategic Planning (ISP). CSP will provide the performance indicators and the organizational goals and ISP will guide concerning the sources to obtain information for the BI construction. Figure 2 presents the stages proposed by the authors.



**Figure 2.** BI Deployment Project Model  
Source: Bezerra and Siebra (2015, p. 236).

The proposed stages, according to the authors, should start from the organization objective identification and from the respective indicators. Afterwards, the data source that compose such indicators of the systems used by the company are surveyed. Subsequently, action plans that will guide the BI deployment according to the defined objectives are created.

### 3 Methodological Procedures

As the primary objective of this study is to demonstrate a BI system deployment in a car dealership in the countryside of Minas Gerais, this research is characterized as a descriptive study. According to Gil (2010), its primary objective is to describe the characteristics of a population or phenomenon.

As to its nature, it is classified as empirical applied because it contributes to the presentation of a BI system deployment in an organization. According to Demo (2009), this type of research is characterized by the data production and analysis that represent the reality of the facts and how theory is applied in practice.

The research approach is mixed. In the quantitative approach, statistical tools were used to analyze the level of the strategic alignment maturity between IT and the business. The qualitative approach was used to identify improvement opportunities that provide a maturity level increase and to prove the usage of maturity assessment models by focusing on the alignment improvement between IT and the organization strategy.

The data collection consisted of a questionnaire applied to 17 managers of the company from January to March, 2016. This questionnaire was based on the model proposed by Lima (2008) with 60 questions that were distributed in six blocks by attribute and it was sent to all the managers of the company and the responses were tabulated by using spreadsheets.

To calculate the maturity level by attribute in general, the mode measure was used for each question. Additionally, documental research was carried out in order to compare the obtained results of the IT alignment level to the company objectives, by attribute and in general, collected in planning reports of each sector. The objective was to ascertain the improvement opportunities .

To demonstrate a BI system deployment from the alignment level diagnosis between IT and the car dealership business, the present study development used the methodology proposed by Lima (2008) in Stage 1: when data were surveyed to measure the maturity level by attribute and in general, as well as in Stage 2: when the obtained results were analyzed. In Stage 1, by comparing the maturity values obtained by criterion versus general value, the construction of the opportunity report of the alignment level increase improvement was generated.

Stage 3 corresponds to the demonstration of this research object, which presents the BI deployment plan as one of the improvement opportunities for the alignment level increase. In this stage, the BI deployment model proposed by Bezerra and Siebra (2015) was used. Table 1 describes each step of the methodology that was used, as follows.

**Table 1.** BI Deployment Stages

Stages	Description of Activities
<b>1 - IT Alignment Assessment</b>	
1 - Preparation and Diagnosis	To identify the organization profile, the decision-making levels and the team.
2 - Document Collection	To identify the strategy, the company organization, IT metric and responsibilities.
3 - Questionnaire Analysis and Result Presentation	Questionnaire application, data consolidation and the maturity level measure.
<b>2 - Survey of Improvement Opportunities</b>	
	To analyse the harmony among the maturity values obtained by attribute versus general value.
<b>3 - BI Deployment</b>	
1 - Indicator Definition and Data Source Description	To identify the company real needs.
2 - Database Structuring	To integrate all the transactional systems of the company.
3 - Elaboration of the Indicator Reports	Planning, implementation and control.
4 - BI Construction	

Source: adapted from Lima (2008).

The stage implementation described in the methodology was accomplished by the IT and the studied organization Controllershship teams that carried out the documentation and the records of each performed activity for the collected data analysis.

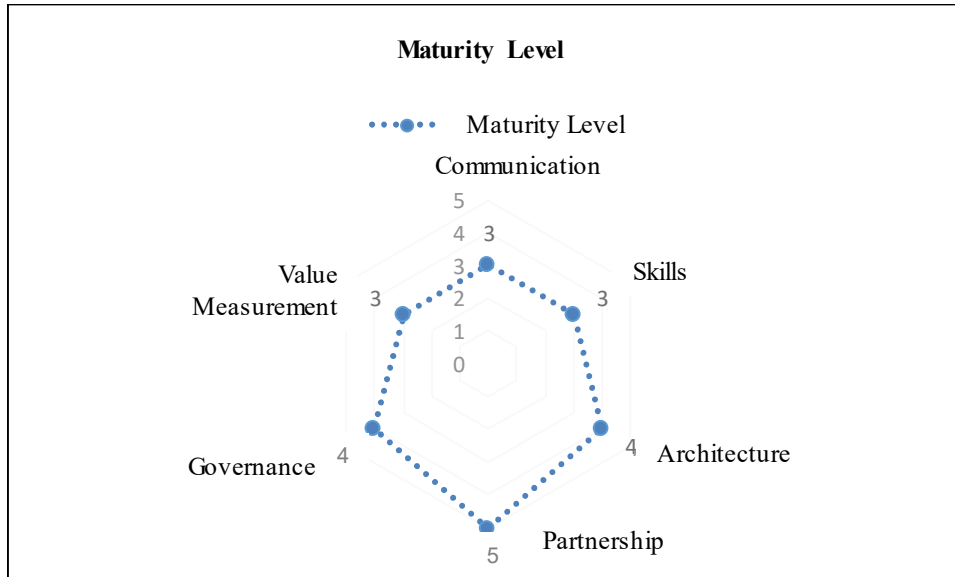
## 4 Presentation and Result Analysis

### 4.1 *Strategic Alignment Analysis between IT and the Business*

The general maturity level analysis demonstrated that the company is in level three (3) of strategic alignment between IT and the business, that is, the processes are established with good communication among the involved areas and in some attributes the metrics are already implemented with efficiency in levels four (4) and five (5).

As to the IT area partnership with the other areas of the company, this is in level five (5), demonstrating that the IT area is recognized and seen as a driving resource of the business processes with integrated technologies and qualified team.

The IT Governance attribute is already established in the company in maturity level four (4), which indicates, according to Lima (2008), the IT recognition in the organization strategic level.



**Figure 3.** Strategic Alignment Analysis Result between IT and the Business  
Source: the authors.

The skill, communication and value measurement attributes obtained the same result three (3). They indicate that the IT metrics present difficulties to support the organization areas strategically. Such results, according to Lima (2008), should be compared to the data collected from the same areas in order to identify the improvement opportunities of the maturity level.

#### 4.2 Survey of Improvement Opportunities

In the attributes that obtained lower or equal values to the alignment general value, the questions that impacted such result and that were analysed individually were emphasized. Lima (2008) proposes that the questions that obtained different values from the overall one should be compared to the desired ones by the organization and then conceive plans to obtain an increase in the alignment value. Table 2 demonstrates the observed values.

**Table 2.** Strategic Alignment Result Analysis Between the IT Area and the Business

Attributes	Current Value	Current Alignment Level	Desired Alignment Level	Desired Value	Improvement Opportunities
<b>COMMUNICATION</b>					
How do the IT area and its department share knowledge?	There are some non-formalized practices of sharing knowledge, such as workshops and training.	2	5	The organization shares knowledge both internally and externally with suppliers, customers and users.	BI - Performance Indicator Project
How is the joint action among the IT areas and its department perceived?	There is joint action, but it is limited to the tactical level.	2		In addition to the internal recognition of the relationship efficacy between the department and the IT area, there is also an external perception from suppliers, customers and users.	BI - Performance Indicator Project
<b>VALUE</b>					
In your opinion, your department indicators:	are reported only to the IT personnel allocated at the same functional level.	2	5	besides measuring the IT aggregate value, they are extended to external partners.	BI - Performance Indicator Project
<b>SKILLS</b>					
In your view, how is the IT area stimulated to act with commercial and innovative approach?	Some business areas boost IT to act with a commercial and innovative approach.	2	5	The encouragement to TI practice with a commercial and innovative approach is standardised and recognised by the organization as a whole.	BI - Performance Indicator Project

Source: the authors.

In the communication attribute, the current alignment level is three (3). Based on the responses that presented value two (2), a greater IT area knowledge sharing regarding the indicator usage of the operational sectors is proposed for the maturity level improvement, as the respondents perceived that such information is restricted to the IT area. According to the model by Lima (2008), the organization needs to share information both internally and externally in order to reach level five (5), besides promoting a better relationship between the IT area and the other sectors of the organization. The value attribute as a current alignment level result is three (3) with only one score two question (2), which deals with the sector performance indicator access, which is perceived only at functional level. In order to increase the IT level, it is proposed that IT acts so that it promotes the other sector managers' access to the indicators both from each area and from the organization.

The skill attribute obtained three (3) as alignment score, but the question that deals with the innovative management from IT obtained score two (2), which suggests an improvement concerning the IT area innovative performance, in addition to a commercial view which supports the management with innovative projects that allow the access to the necessary information for the decision-making.

Based on the attribute analysis and on the comparison with the data collected from each sector planning reports, the need to create a BI tool, corroborating what was observed by Lima (2008) when the gaps generated with the result analysis of the alignment level calculation represent process optimization opportunities by using the IT resources efficiently, was observed. Luftman et al (2017) also observed that the alignment level assessment results can be used to articulate more effective action plans in the areas that ensure that IT is better implemented in order to aggregate value to the business.



In this study, the objective is to demonstrate a BI platform deployment, which was one of the improvement opportunities found by the alignment analysis.

### 4.3 BI Deployment

In this stage, the documental analysis of the results obtained from the alignment analysis between IT and the business was conducted and it was observed that the information access by using IT resources was not used by the business areas on a consolidated and agile basis, which makes the decision-making process difficult. It was also found that these areas required information to construct their strategies too, which were by then based on their routines, when the information was scattered in their systems and restricted to expertise and to the market knowledge.

The BI deployment started with the indicator and database definition. In order to ensure the information reliability and integrity, the company board determined that the Controllershship act together with the IT area in each sector indicator construction.

In order to define the indicators, interviews with the company board members in which it was observed that the organization already had indicators according to the company strategic objectives, grouped by sector and company, were conducted. Table 3 presents the sectors and the indicators.

**Table 3.** Indicator relationship by sector

Sector	Indicators
Sales	
- New Vehicles	Billing, F&I return, license plate/transfer, gross profit, fixed
- Used Vehicles	expenses, semi-fixed expenses, inventory.
- Direct Sale	
After-Sales	
- Parts	Billing, gross profit, fixed expenses, semi-fixed expenses,
- Services	inventory, open SO, SO pending sale, spare parts SO.

Source: the authors.

Afterwards, the Controllershship mapped the data origin for the indicator construction and observed that the controls were accomplished by using electronic worksheets scattered in several areas of the company. It was also found that there were no reports with the daily newsletters for the accomplished transaction follow-up (sales, purchases, inventories) and the established goals, as the information was sent via accounting closing process (Income Statement) that took them some days so that the information was consolidated. The worksheet data were basically from the company management system, but scattered on several screens, thus jeopardizing the information visualization.

In this process, several routines were optimized and some aspects for improvement were identified, both in information offer and in the reliable and timely information availability.

From the indicator data source identification, the IT area built reports with the management system database fields used by the company. The Controllershship conducted the data validation and the information formatting according to each area need. Table 4 presents the database model of the parts area.

This stage showed, according to Reginato and Nascimento (2007), the importance of the Controllershship action together with the IT area regarding the information reliability via the database validation used for the indicator consolidation.

The generated reports included information from several databases and made it possible for the IT area to know the whole database structure in order to build the BI. Table 5 shows an excerpt of the final report of the parts sector.

**Table 4.** Database for the Indicator Dashboard Elaboration

<b>Gross Sales</b>	<b>Item</b>	<b>Description</b>
Estimates / Pending Invoices	Sales	Parts Sales Cost
	Margin	% Sales Margin = Sales / Accounting Cost
	Gross profit	Sales Cost
	Refunds	Quantity of Sales Refunds
	Qt. of Orders	Quantity of Estimates and Pre-Invoices
	Qt. of Items	Quantity of Items
	Cost	Parts Sales Cost
Mechanic's (Service Order)	Parts Cost	
	Services Cost	
Irregularities Pendencies		Amount reported when generating the report
Warranty Pendencies		Amount reported when generating the report
<b>Stock</b>	<b>Item</b>	<b>Description</b>
180-day obsolete parts	Quantity	Quantity of items
	Replacement	Replacement Cost
	Accounting	Accounting Cost
	Sales	Sales Cost
	Quantity	Quantity of items
	Replacement	Replacement Cost
	Accounting	Accounting Cost
	Sales	Sales Cost
	Parts reservation (items)	Quantity
Cost		Sales Cost
Stock turnover (Sales / Average Stock)	Cost	Sale accounting cost / (initial inventory – Accounting month Final inventory)
Inventory Turnover (Sales / Stock)	Cost	Sale accounting cost / (Current Inventory - Accounting Cost)
<b>Campaigns and Goals</b>	<b>Item</b>	<b>Description</b>
Sales Campaigns	Campaign A	Amount reported when generating the report
	Campaign B	Amount reported when generating the report
Purchase Goals	Purchase B	Amount reported when generating the report
	Bonus	Amount reported when generating the report
<b>Special customers blocked with sales in the period</b>	<b>Item</b>	<b>Description</b>
	Invoice total	Value of sales invoices made to blocked customers in the reported period
<b>Expenses (Incom. Statem.)</b>	<b>Item</b>	<b>Description</b>
	Monthly Expense Amount	Accounting Expense Amount

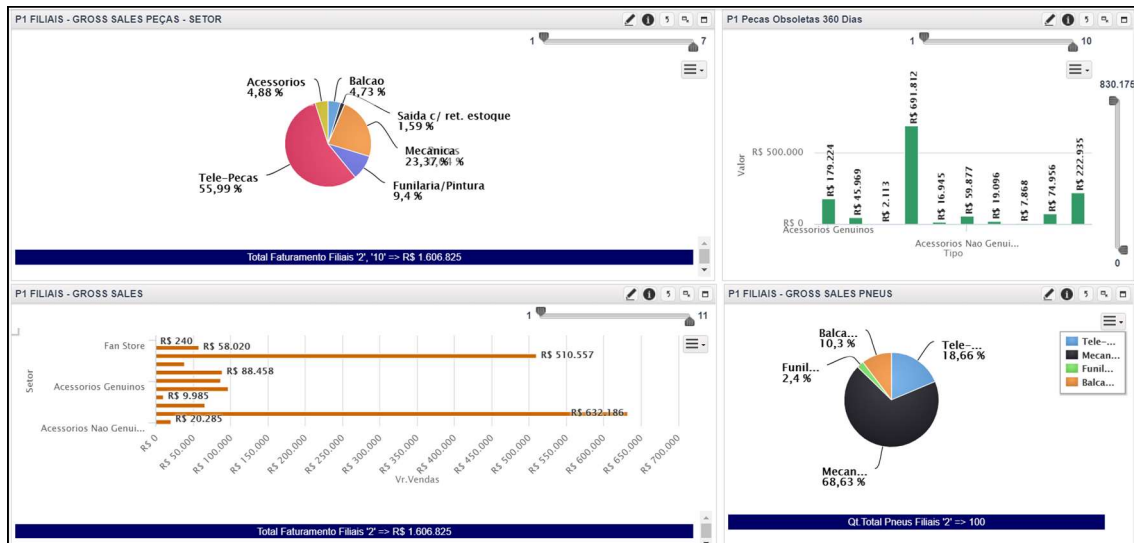
Source: the authors.

**Table 5.** Indicator Dashboard – Parts

Indicators Panel							
Period: 01/01/20x8 to 01/31/20x8							
Gross Sales			Inventory				
	Sales	Margin		Qt.	Replacem.	Account.	Sales
<b>Screen-Parts</b>	<b>191,906.97</b>	<b>100.0%</b>	Part X	26	209,800.05	179,588.08	380,088.18
Part X	11,176.48	5.3%	Access. Type X	71	206,628.40	216,338.57	362,902.22
Lub. Type X	35,226.36	14.5%	Access. Type Y	17	13,850.96	13,596.86	29,342.52
Lub. Type Y	44,731.98	16.1%	Lub. Type X	2	362.84	362.77	1,008.00
Parts Type X	24,195.55	14.2%	Lub. Type Y	17	5,176,389.59	1,501,633.84	24,555,787.04
Parts Type Y	76,576.60	50.0%	Parts Type X	449	3,050,450.88	1,069,965.03	5,953,019.83
<b>Sub-Total</b>	<b>191,906.97</b>		Parts Type XY	665	5,447,993.54	3,054,302.93	10,404,026.56
			Parts Type Y	6	3,862.84	3,862.83	7,747.25
			Tyres/Tubes	18	140,415.49	136,323.54	205,860.34
<b>Accessories</b>	<b>15,427.10</b>	<b>5.1%</b>					
Access. Type X	12,734.40	87.0%	Part X	81	11,335.08	10,118.09	20,894.53
Access. Type Y	2,586.32	12.6%	Access. Type X	194	11,780.14	10,542.74	21,313.35
Parts Type X	106.38	0.3%	Access. Type Y	166	602.17	602.23	2,594.31
<b>Body Rep./Paint.</b>	<b>328.20</b>	<b>0.2%</b>	Store	1	0.00	0.00	0.00
Lub. Type X	113.23	36.8%	Kits	59	0.00	0.00	0.00
Lub. Type Y	111.14	34.4%	Lub. Type X	5	0.00	0.00	0.00
Parts Type X	34.85	9.7%	Lub. Type Y	15	57,064.91	14,670.40	43,357.04
Parts Type XY	12.93	3.7%	Mat. Type X	1	3.36	3.39	12.00
Parts Type Y	56.05	15.4%	Other Prod.	12	157.80	157.83	437.31
<b>Engine</b>	<b>209,571.80</b>	<b>94.6%</b>	Parts Type X	1,357	106,984.33	78,899.67	185,352.15
Part X	29,848.60	13.8%	Parts Type XY	306	35,991.21	28,214.99	65,339.04
Access. Type Y	71.46	0.1%	Parts Type Y	614	10,300.62	10,044.12	27,855.25
Loja	97.31	0.0%	Tyres/Tubes	21	16,324.39	16,075.90	25,375.52
Lub. Type X	27,125.78	16.3%		4,103	14,500,298.60	6,345,303.83	42,292,312.65
Lub. Type Y	26,438.72	17.3%					
Others	7.26	0.0%					
Parts Type X	51,310.88	18.5%					
Parts Type XY	34,277.09	15.2%					
Parts Type Y	26,226.13	15.8%					
Tyres/Tubes	14,168.57	3.1%					

Source: the authors.

In order to build the BI, the company adopted a solution with graphical resources by using dashboards (Figure 4) and that also allows data access by area in real time in a personalized way. BI platform also includes access solutions by apps that ensure greater mobility.



**Figure 4.** Dashboard Parts

Fonte: the authors.

BI met the initial project expectations as to its deployment in the studied company, because it allowed the performance indicator visualization in a graphic and intuitive way on a single screen, thus enabling the best usage of the organization IT resources for the alignment level improvement between IT and the business.

Such finding was also verified by Strate and Pretto (2015) who highlighted the importance of the quick visualization of business key aspects by using dashboards. Fraga, Erpen, Varvakis and Santos (2017) found flexibility and agility in the decision-making process with the use of dashboards.

## 5 Final Remarks

In the current environment, the information technology (IT) role is fundamental so that organizations grow and survive in the market. Nonetheless, they should seek ways so that the technology enables their successes.

This study showed a BI system deployment from the alignment level diagnosis between IT and the business. It was verified that the alignment level analysis provided a better view of the organization current level and

the improvement opportunities, enabling the IT resources to be used effectively by the organization. The obtained results corroborate the ones found by other authors who also found that the organization success will be able to be achieved via the alignment between IT and the business (Affeldt et al 2006; Joia and Souza 2009; Amarilli et al 2017).

It was also found that the Controllershship support in the indicator definition ensured the information integrity and reliability, according to the needs of the organization managers. This action, according to Luftman, Lyytinen and Zv1 (2017), confirms the importance of integration among the company functional areas and IT in order to promote a greater alignment with the business.

As a theoretical contribution, this study is expected to enhance the studies regarding the BI deployment in companies with the adoption of the maturity level diagnosis between IT and the business. As a contribution for the market, this study will provide a disclosure of a BI deployment case in car dealership companies in the countryside of Minas Gerais.

As a suggestion for future studies, we point out that the maturity analysis methodology is applied after the BI deployment in order to highlight the maturity level increase.

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