FRAMEWORK PROPOSAL FOR BUILDING A CORPORATE DATA ARCHITECTURE:
A CASE STUDY IN A PHARMACEUTICAL COMPANY

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Abstract: Understanding the mechanisms through which companies realize the value of their knowledge resources such as data converted in information is a central interest of corporative strategic levels. This study contends that realizing the performance data architecture depends on expertise deployment processes and their complementarities in functional and analytical areas such as information technology and core business. More specifically, this study addresses a research question: How to develop Data Architecture (DA) supported by a pattern framework to implement corporate opportunities? In a competitive market, the companies are driven by information aligned with strategic business and this objective could be a differential for companies to stand out the market. At a time when market dynamics requires an agile and reliable process of developing business opportunities in profits, the lack of references between the company data and its business objectives were the concerns motivated this research. The proposition of a framework based on known data architecture concepts, is the key aspect the research, the findings might allow a solid creation of data architecture. The research was carried out through a case study in a pharmaceutical company with the participation of a focus group, to help to answer how to identify and minimize the difficulties encountered in the implementation of an IT business opportunity. For this, the information collected was structured with reference in business processes, to serve as a basis for the creation of a DA.
Keywords: Data Architecture. Business Process. Framework. Corporative Architecture.

PROPOSTA DE UM FRAMEWORK PARA A CONSTRUÇÃO DE UMA ARQUITETURA DE DADOS EMPRESARIAL:
UM ESTUDO DE CASO EM UMA EMPRESA FARMACÊUTICA

Resumo: Compreender os mecanismos pelos quais as empresas percebem o valor de seus recursos de conhecimento, como dados convertidos em informações, é um interesse central dos níveis estratégicos corporativos. Este estudo afirma que a realização da arquitetura de dados de desempenho depende dos processos de implantação de conhecimento e de suas complementaridades em áreas funcionais e analíticas, como tecnologia da informação e negócios principais. Mais especificamente, este estudo aborda uma questão de pesquisa: Como desenvolver a Arquitetura de Dados (AD) suportada por um framework de padrões para implementar oportunidades corporativas? Em um mercado competitivo, as empresas são orientadas por informações alinhadas aos negócios estratégicos e esse objetivo pode ser um diferencial para as empresas se destacarem no mercado. No momento em que a dinâmica do mercado exige um processo ágil e confiável de desenvolvimento de oportunidades de negócios em lucros, a falta de referências entre os dados da empresa e seus objetivos de negócios foram as preocupações que motivaram esta pesquisa. A proposição de um framework baseado em conceitos conhecidos de arquitetura de dados é o principal aspecto da pesquisa; os resultados podem permitir uma criação sólida da arquitetura de dados. A pesquisa foi realizada através de um estudo de caso em uma empresa farmacêutica com a participação de um grupo focal, para ajudar a responder como identificar e minimizar as dificuldades encontradas na implementação de uma oportunidade de negócios de TI. Para isso, as informações coletadas foram estruturadas com referência nos processos de negócios, para servir de base para a criação de um AD.
Palavras-chave: Arquitetura de dados. Processo de negócio. Framework. Arquitetura Corporativa.

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Introduction

Studies on Information and Communication Technologies (ICT) as well as Data Architecture (DA) represent a growing field. It is clear and goes without saying that in recent years there has been, utilizing ICT and DA recognition of the vital links between enterprises is one of the most challenging tasks, in a market of increasing competitiveness, companies are driven by information. In the corporates, have a set of elaborate physical and logical business processes in which information flow plays a capital role, and maybe a framework tool could be a useful help. The common way to comprehend procedures in an enterprise is to provide views of components within that enterprise, which is called data architecture, which represents only a single view of an enterprise, but Enterprise Data Architecture refers to a collection of the business process, which is assembled to form a comprehensive view of a full business enterprise.

The way an organization develops and organizes its strategic actions characterizes whether the management of its information is used to make support to strategic levels. Planning, formalizing and structuring the use of entrepreneurial intelligence aimed at the use of this strategic data can guarantee meaningful results. (FACHINELLI, 2014).

To efficiently manage strategic information, a company must initially be guided by a Data Organizational Architecture. For the creation of this architecture, there are several available frameworks such as The Open Group Architecture Framework (TOGAF), which divides the company into 4 levels that are business, application, technology and data.

A reference model for an enterprise's DA should include Data element model, Conceptual data model, Database logic model, Database physical model. In general, a view model of DA that connects physical databases and application information systems has five data structures form a core, and around the core of the number of information technology support can be interconnected, interoperable, and non-redundant. All the information technology products, including data structure reference model of those, are drawn in a dashboard inside the enterprise.

There is a growing body of literature that recognizes the construction of this architecture model can help show how the process works in companies, the relationship between its areas and facilitate its evolution process in information management. The focus of this work is the data generated by information systems and their use in business.

Related work

According to Aiken and Gorman (2014), most IT (Information Technology) organizations adopt application-centric development practices, that is, they identify, determine and develop data and information after defining other specifications such as services provided or the software, on the other hand (SHI; JI, 2017) affirm right way would be to invest in data-centric development practices that will focus on gaining benefits and results for strategic assets.

To develop a foundation that favors the creation of a DA, one of the main references is the Data Management Body of Knowledge (DMBOK), an international association of independent, technical and professional suppliers dedicated to the evolution of concepts and practices of data management, its purpose is to promote the understanding, development and practice of data management and information in support of business strategies. This methodology growing and consolidating in the Brazilian market, trough congresses and practical cases (FACHINELLI, 2014).

Another important reference is Zachman framework, it's in 1987, an IBM researcher,

named John A. Zachman, proposed a framework for Information System Architecture, which is now called Zachman Framework (ZF). Zachman borrowed the term architecture from the building trades, discussed the types of drawings, and blueprints a building architect typically developed to create a new process. He then suggested parallels in software development. He stressed that an organization does not have a single architecture, but has, instead, a range of diagrams and documents representing distinct aspects or viewpoints and distinct stages. In the forward years since he wrote his original article, Zachman has worked to refine and elaborate his framework. ZF is a two-dimensional information matrix consisting of six rows and six columns. The vertical dimension (the rows) describes the perspectives of those who use the models or descriptions contained in the cells. The top row represents the most generic perspective of an organization, while lower rows are successively more real.

For Boulonne *et al.* (2010), an AD should comprise the origin of the data and its evolution to the achievement of the objectives for which they were created. Its creation needs to refer to how data is generated and stored, its integration between the information systems, to facilitate the decision-making process related to a specific subject.

Therefore, the creation of an AD for a company is a fundamental point for it to be able to manage the data generated, stored and used in its information systems. The company, so, will need to understand what information is being stored and why it is stored, with reference to the strategic business objectives it intends to achieve (TUPPER, 2011).

To understand how data is used in information systems, operational and analytical business processes need to be mapped and related to their objectives, so, a business process, is a set of related activities to accomplish a goal in a company. The execution of the business processes that the organizations use in their systems of information propitiates the attainment of its objectives, thus, for Getter (2007), the strategic visibility of an organization is related to the understanding of how a change in a business process affects the area of Information Technology (IT) and how systems development affects business processes. Either this relationship may favor or difficult the creation of a DA that shows clearly to the organization a vision focused on the use of strategic data and its relationship with business processes and systems.

This paper assumes that the mapping of business processes, categorized by their areas of use, may increase the company's knowledge about the use of data in its information systems and the relation of this data to business objectives. The referred mapping of business processes should support the implementation of business opportunities and serve as a reference for the creation of a DA and the creation of an area that controls data governance, with dynamic action, focusing on the integration between business and systems areas, with principal purpose about the use of data and its relationship with business.

Thus, the understandings of the business processes of each area, supported by a specific of data control with an extensive company overview, are the references of the proposed framework in this paper, will be the basis for the creation of a DA. The business process mapping will be the basis for the evolution of the company's data management since it will incorporate into the work routine of each employee activities related to means about the use of the data and its importance to reach defined objectives strategically.

The steady use of the DA framework can result in a gradual evolution in data management, as it will strengthen the concepts on how the use of data directly influences the decision-making process in relation to the implementation of business

opportunities for the company. Decisions regarding investment in the business, using the framework, will be supported by references and relationships between data and information and its strategic use, which may increase the chances that these decisions will become assertive and with a higher probability of positive results.

The data element is the essence of the enterprise and is used as the semantic basis of the entity attribute in the conceptual data model. It supports the columns of the database model required by the business and is implemented in the database management system. It is used in the business information system, to achieve the enterprise resources required for the database object, and to support the completion of corporate tasks.

Motivation

This paper proposes a pattern framework for using in different segments of companies. It is challenging so there are several frameworks available and to explore the information available externally is proving to be sufficiently thought provoking and it allows for a more in-depth study. Investigating DA is a continuing concern within academics and corporate institutions.

According to Aiken and Gorman (2014), good data management practices must precede the innovative and effective use of organizational data. Because of the lack of focus on the foundations, the results obtained in the level of intelligence take time, have higher costs and present results below the expectation. Architectural deficiencies in data explain incidences of failures in their storage and in other specialized initiatives involving them. A suitable DA model is what enables the leverage of this data, directly impacting the indicators of either success or debacle of a company.

The challenge of managing data and information is linked to the definition of a DA model for the organization based on operational efficiencies. The process of developing DA should be inductive, based on existing true and online information, which can be done effectively and efficiently with the use of reverse engineering techniques (LADLEY, 2012).

The use of one structured method would present in detail the process of creating all data architecture views, company developers can create their own data architecture, or creating a DA its considers the process of creating data equivalence and the function through adapting entities with processes. Also, for creating, a DA considers the equivalence of data architecture with the organizational strategic plan by data analysis of the organizational strategic plan and information analysis of the goals at the programmer level.

Studies indicate that 10% of organizations adopt data strategies with reference to the DMBOK (2009) and approved by the Board of Directors in the United States of America (ECKERSON, 2011). Organizations recognize the importance of IT investment to compete in the marketplace and respond quickly to business opportunities. These organizations have been continuously transformed to adapt to the competitive dynamics of the market. Nevertheless, these transformations are made without considering the impact on the business processes and the data used, creating a heterogeneous application environment (CUKIER, 2010).

Evince its justifiable the need to develop a specific DA in the company, which favors its evolution in relation to data management, in this instance a framework. These references must be controlled by a specific area, which creates processes with key components that identify the data flow and its relationship to the business in a company context.

This context should encompass the construction and representation of the data, their origin and the relationships with the strategic objectives of the business, the integration between

information systems, and the data quality in each data-related objective represents for the company. The results of the development of this DA would include a dashboard of the more valuable information of the organization, with data areas, represented its specific visions and objectives, operational and analytical processes, bringing the use of the data (information) to a higher step, that favors the related decision-making process to the company data (PASCOT et al., 2011).

The current scenario shows that informal processes dominate DA related initiatives (FACHINELLI, 2014). Therefore, the paper´s contribution is to show an alternative to create a framework that is a reference for the implementation of business opportunities in IT and that serves as the basis for the creation of a DA.

Research Question and Objectives

The greater part of the literature on data architecture pays attention to technical DA aspects than organizational. The research was carried out through a case study in a pharmaceutical company by focus group to answer the question: How to develop DA supported by a pattern framework to implement corporate opportunities? This framework, based on the realization of a case study in a pharmaceutical company, proposes three objectives. The first one (a) is the definition and organization of the where data areas would be acquiring, assigning responsibility for each of them, following the activities they carry out and their importance to the business. The second (b) is the creation of a DGC, to perform the integration between the business and IT areas, with a spotlight on the evolution of the use of company data and consequently become it in information. The third (c) is the creation of a dashboard that relates the company's business processes, categorized by its data area, that identifies the origin and its operational business processes, with physical and logical references, and the relationship with the processes of analytical business used strategically to achieve market objectives.

The results of these initiatives would be documented by area of data, electing responsible for the business opportunity, its operational and analytical processes, related to the strategic objectives of the core business. This mapping is intended to be the basis for building a DA, to improve the management of information used in the company's information systems, to support the process of implementing business opportunities and to act as a structured reference to favor high management in the making decision process.

Research methods

A case-study approach was adopted to allow a deeper insight into corporate trends. It has been applied mixed methods research, Design Science Research (DSR) and Focus group in a qualitative and quantitative research when participants assigned scores.

Multiple methods research, at its core, involves a research design that uses mixed methods (i.e., quantitative or qualitative research approaches) in a research inquiry (TASHAKKORI; TEDDLIE, 2008). They identified two major types of multiple methods research, mixed methods research, which is the focus of the current paper, and multimethod research (MINGERS, 2001). Although the terms mixed, methods and multimethod have been used interchangeably in social and behavioral sciences including IT, there are significant conceptual differences between the two. In multimethod research, researchers employ two or more research methods but may restrict the research to a single worldview, namely, in this paper to justify the choice it was used the concepts of mixed research.

The choice for the DSR in this paper, based in some concepts like the framework comprises

not only post evaluations but also pre-evaluations, that are widely seen as relevant to increase scientific rigor, also it proposes distinct activities and provide guidance on corresponding evaluation criteria and methods for each conception, development and validation phases, and event enables a structured assessment and comparison of how future developers could apply the proposed framework.

This paper proposes validation on IT area, and DSR in Information Systems (IS) aims at solving relevant classes of problems by building useful kinds of artifacts. By doing so, DSR creates artificial phenomena such as constructs, models, methods, instantiations or design theories. Besides building DA, evaluations ensure progress. The critical role of evaluation is widely recognized in DSR and represented in research frameworks (HEVNER, 2007), process models particularly in evaluation frameworks. As such, evaluation activities may occur before DA construction, or post, after DA construction.

This research uses DSR, which is based on the Design Science (DS) methodology, which aims to generate knowledge by solving organizational problems, creating frameworks, which is the proposition of this work. Lacerda *et al.* (2013), DS aims to produce systems that do not exist, that is, it has the purpose of creating or modifying the functioning of existing products, processes, systems and situations to achieve better results.

The DSR aims to prescribe, design and develop artifacts to support the solution of practical problems. The role of the researcher should be to construct and evaluate the proposed artifact. The type of knowledge added to the research should show how things should be in relation to the proposed problem Lacerda *et al.* (2013), considering a broad objective otherwise Wieringa (2009), considers that DSR should generate knowledge that has utility and application in solving problems, creating solutions or improving existing systems, and conducting the study involving DSR develops a regulatory cycle, which begins with investigating the problem, designs the solution to be created, then validates it according to scientific references, carries out the proposition of the solution and, finally, the solution created is evaluated by those interested directly in the subject.

Thus, a practical example of implementation of a business opportunity was chosen to be the reference of this research with the realization of an exploratory focus group process in a pharmaceutical company.

Focus Group

To warrant research reliability, the option for focus group overdue for it consolidates a data collection method. Data is collected in a semi-structured group moderated by a group leader (sometimes called a moderator or facilitator). Focus groups are generally used to collect data on a specific topic; this paper uses DA as goal. From focus group methods emerged with some characteristics fitting the research of a pattern framework to create DA, as the design of focus group research will vary in the extent to which they follow a structured protocol or permit discussion to emerge.

This paper uses a focus group has characteristics that should be highlighted, such as flexibility to discuss the proposed goal, greater interaction among participants, exchange of experiences so that each one's ideas and perceptions are challenged. The results achieved bring answers in depth and at a low cost. How difficult is, the question of recruiting several people at once, group was the option detected as the one indicated to the development of the process of creating or maintaining business opportunities related to the data of a company.

The guests were chosen strategically, considering their experience and importance for the process studied. The group was composed of five people who hold the following positions:

- Coordinator of Information Systems;
- Coordinator of Strategic Information Management;
- Competitive Intelligence Analyst;
- Business Analyst;
- Data Administrator.

The business opportunity was defined as the sale of medicines with original brands, in an initiative to compete with the sale of medicines classified as generic, at affordable prices to customers. Companies that sell their brand-name drugs decided to invest in the sale of these products, paying a bonus to pharmacies as an incentive to sell their products, to recover their percentage of sales in the market. The company studied would like to delve deeper into the matter to see if the receipt of what was agreed was being fulfilled. Based on this principle, the problem was the starting point for the beginning of the focus group.

The criteria about the number of participants per group, based on OMNI where the rule of thumb has been 4-10 homogeneous strangers, points out there may be reasons to have smaller or slightly larger groups.

Barriers founds

The results of the achievement of the focus group mapped how the business opportunity was performed with the appropriate activities and responsibilities. After defining the main activities to solve the problem, the focus group participants identified the difficulties encountered in the process. They were:

- Lack of integration between the business areas and the IT, charged by business analysts. The implementation of business opportunities was performed with a focus on solving area problem, but the impact on others was not analyzed, which brought operational problems to the IT area.
- The absence of organization regarding matters relating to company data. The areas of prices, i.e., inventory, and supply, are not classified in a representative organizational chart.
- None responsible person to solve the problem proposed; the interested business areas shared expectations in solving the problem, each with its own propositions.
- No concrete and information to the prioritization of the problem. The lack of information showed the results could be achieved by the business opportunity, the work would have to be done and the impact that the problem solving could cause in other company systems was a factor of decision-making process difficult.
- No documentation of shared knowledge by the people in specific, in the accomplishment of the project. Separated area counted on its activities and experiences related, but without documentation that referred to the subject.
- Normlessness on the origin of the data with the business was pointed the rugged factor. Key users related to own system were heard, such as the developers, data administrator and the strategic information management team.
- Nonattendance of references of using data by specific business process, the life cycle of the operational and analytical data.
- Lack of information systems registers used in specific business process, databases, objects, business rules, affected users and other related processes. These items are important to guide the responsible business analyst in IT in surveying information related to the business process being studied.

A framework for data architecture

Recent evidence suggests that reference for creating a proposal framework is based in Otto

(2011, 2012). In the case study for the creation of a DA in a multinational company. According to the straits raised in the focus group, the framework shown in Figure 1, was elaborated with the objective of permitting the understanding about the generation and use of the data by company specific area, related to objectives for the business. A Data Governance Committee (DGC) would function as support and integration between business areas and systems, ensuring the adoption of best practices in the storage and use of data by the company.

Figure 1 - Proposed framework

Source: Adapted from Otto (2011, 2012)

Structure

Previous studies have failed to demonstrate significant differences in the pattern framework and profits. So, the simplicity in this framework try to make it easier. The framework flows from bottom to top direction, if a business opportunity has been identified and should be implemented, a data area responsible, would be associated with that opportunity. DGC (RIGHT SIDE IN THE FIGURE), with participants from the areas previously mentioned, would be the foothold for the implementation of the business opportunity.

The Data Source (LEFT COLUMMN IN THE FIGURE) is responsible for referencing how data are generated in the operating environment with its business processes, how it affects users, including data entities. The data references related to the data architecture, the information systems that generate the data, the databases and their objects, the data lifecycle used in the process, and the business rules that make up their functions.

Into Use of Data for Business (RIGHT COLUMN IN THE FIGURE), the analytical business processes are referenced. These processes use data generated in the operating environment, which are consolidated to meet a strategic requirement. Usually, these data are worked in strategic information. The specific areas analytical process would be mapped with the same information mapped to the operational processes.

Figure 2 shown a real example framework (PRICES IN THE FIGURE) for uses other analytical and operational process, with all information collected (PROMOTIONAL PRICES IN THE FIGURE) for a use case held in a pharmaceutical company (PROFIT FORECAST IN THE FIGURE).

Figure 2 – MBP opportunity

Source: Pepared by the authors (2018)

These data are the basis that this framework proposes for the development of fully mapped business opportunities (SALES IN THE FIGURE), with its operational and analytical objectives (COST-EFFECTIVENESS IN THE FIGURE). Then the systems area (COSMOS, CSMMOVLOJA, MTZSQL08 IN THE FIGURE) receives a consolidated document with the information raised (MTZSQL07, BIDASA IN THE FIGURE) from the practical example (MBP IN THE FIGURE), which would be the reference for the project implementation to serving the idealized business opportunity.

Considering the framework is adopted, each subject to the data could be mapped (DATABASE, IT IN THE FIGURE) identifying the reference areas, the origin and which analytical processes are generated to achieve the business objectives. Each specific area (SALES, PRICES, PROMOTIONAL PRICES IN THE FIGURE) of the company's business, mapped with the information referenced in the framework, would know which own business processes, operational and analytical, clearly the understanding of the importance of the data, with solid references and understand how representative is the area for results company.

Also, to take-up, this framework could aggrandize the performance between the business areas and the IT area. As raised in the focus group, the business area manages the data entities, the processes and results, and identifies the business opportunity, so the IT area performs the work of implementing the solution. Each area with different responsibilities, but integrated and supported by DGC, so that the results can be achieved, meeting the expectations of the company. Using the information dashboard generated by the framework, the company's strategic area will have greater visibility regarding business opportunities, its complexity and impact, and could make strategic decisions based on accurate facts. Then it would be possible to manage the governance of the data and uses its information systems.

Validation Process

The research company has tradition in the pharmaceutical market of Belo Horizonte, Brazil, with thousands of employees and a hundred stores. The stores are in the metropolitan area and it is among the ten companies that make the most in the

pharmaceutical market in Brazil, reaching R$ 1.5 billion, when occurred this research according to Brazilian Association of Pharmacies and Drugstores - Associação Brasileira de Farmácias e Drogarias (ABRAFARMA) in 2015 (BRAZIL, 2015).

Following the concepts discussed by Mingers (2001) and Tashakkori and Teddlie (2008), it was elaborated and applied survey with the objective of gathering the opinion of the volunteers, trying to maintain the maximum of isonomy in the answers and interpretation of the answers. The objective was to validate the proposed solution and manage to minimize the difficulties detected by the focus group during the process.

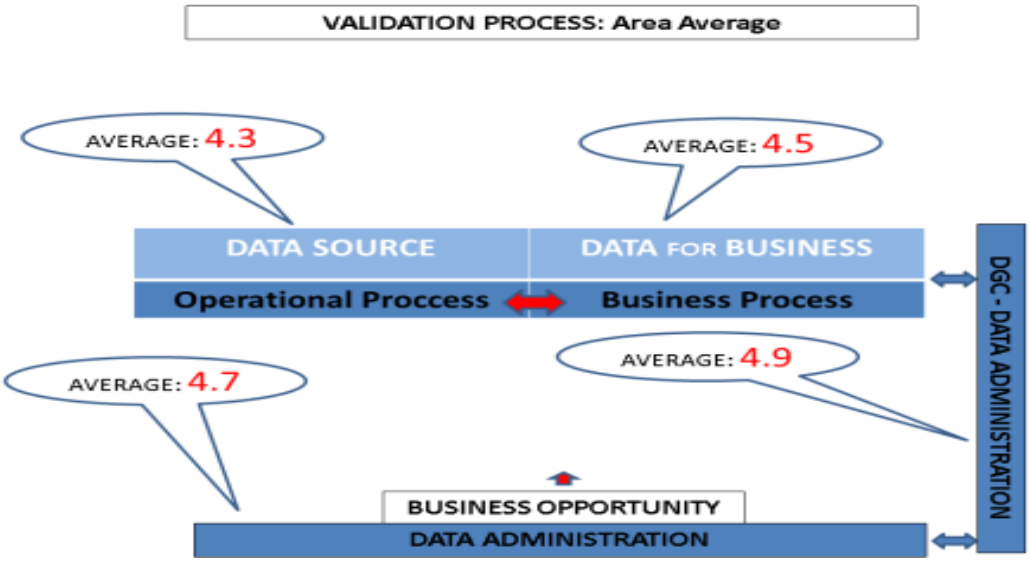
So, the survey was made with the proposals of the framework and its relation to the difficulties detected in the implementation of the business opportunity studied in the practical example of this work.

The validation was splatted into three classes related to previously three objectives, (a) definition and organization data areas assigning responsibility, (b) the creation of a DGC, (c) creation of a dashboard company's business processes. The business opportunity is related to a data entity, with a responsible and then fully mapped according to their business processes.

According to the proposed actions, participants in the focus group assigned scores from 1 to 5, with 5 being the total suitability of the framework in solving the difficulties raised by the participants.

Auxiliary inquiries were developed, like: Do you think data division subjects according to its objectives can solve the difficulties encountered in organizing the company's data areas? Do you understand responsible definition for each data area, could control specific data area, avoiding conflicts regarding the implementation of business opportunities? To support the main question problem: How to develop DA supported by a pattern framework to implement corporate opportunities? The result of the framework evaluation is described in Figure 3.

Figure 3 - Average Validation Process



Source: Pepared by the authors (2018)

The propositions contained in the framework resulting from this research reached an arithmetic average of 4.7 points out of 5.0, reflecting the assertiveness of the objectives proposed to support the creation of a DA and the mapping of the information that supports the company implementation opportunities and its strategic use.

Results

The main objective of this research was to propose and validate a framework, referenced by the DA concepts, to support the process of implementing business opportunities in the IT area of a pharmaceutical company. One interesting finding achieved with the use of the proposal framework could be the foundation for the creation of an efficient in the operational and effective in strategic area DA.

To achieve the objectives in this research proposed methodological process used was the DSR, with three specific objectives. These results confirm the association between profits and information management.

- Achieved successfully, was to raise the requirements for the proposed framework, through a case study, with conducting a focus group in a pharmaceutical company. A practical example, promotional prices, was implemented in the IT area. The participants selected in the focus group were directly related to opportunity identified the difficulties encountered, creating the conditions to build the framework.
- Achieved successfully, was to propose a framework to support business implementation opportunities, referenced by the DA concepts found in the literature review, associated with requirements raised during the work with focus group. This goal was achieved with the proposition of a framework adapted from Otto (2012), supported by practices DMBOK (2009), approaching the DA concepts of practical methodology used worldwide in data management.
- Achieved successfully, final objective was to validate the proposal framework according to the case study in the focus group. The requirements defined in the framework were fulfilled, and the documentation on related business processes was satisfactorily generated. Focus group participants were heard to refer to the framework adherence in the implementation of the business opportunity.

The framework was divided into three initiatives, namely, the organization and control of the data, the creation of a DGC on order to support the areas involved in operational business processes and relationship with business and strategic processes. According to these divisions, the focus group participants gave their judgment regarding the compliance framework to minimize the difficulties raised by them to implement a business opportunity.

The results are approbatively, it showed adhesion between proposed framework and its usefulness to support the implementation process, with an overall average of 4.7 points in 5.0 possible. This result closes the cycle proposed by the DSR method, namely proposal framework should be validated by those who will use it. Afterwards, this research, supported by a DGC with data entities defined according to the company profile was validated as adhering to the objective of supporting the process of implementing business opportunities. It was characterized to adopt initiatives that aim to improve the processes based on the DA concepts may increase the level of knowledge of a company and its relationship with the successful business.

Conclusions

These results are consistent with the theoretical framework found, for the initiative to try to gain knowledge about the data used by a company could understand clearly the processes value, this premise was n compliance citations Ladley (2012) and Tupper (2011). The knowledge acquired in the business processes accordance Getter (2007) about the relationship of integration between information systems and strategic visibility of an organization to define the direction of the business. Thus, the increased knowledge about the data used in the company's information systems may generate subsidies for assertive decisions could be taken by senior management regarding the evolution of the data used by the company and its relationship with the business objectives.

Through this research, the proposed framework validated, objectives reached out and results accomplished, it is confirmed the company needs thoughtfulness initiatives to DA, and maybe the framework could be a valid alternative. Investing in manage knowledge about the data is fundamental to the dynamic market. Also, about the usual facts, the company may be acquired rules of procedure how to use the data, once again resorting to Otto (2012) and Shanks (1997) point out in their research that the initiative results in creating a DA is to increase the understanding of the data that is used and shared in the company.

Likewise, Otto (2012), Fachinelli (2014) and DMBOK (2009), the creation a DGC is an initiative to enable the company strategic asset, it could produce strategic coming results. By adopting this framework, to support the construction of a DA, increased knowledge about the data in pharmaceutical company could be stimulated with the prospect that positive results are achieved. This inducement could cause the company to acquire knowledge about the relationship, routine activities and business goals.

It is possible that these results are limited to the construct of user opinion on which this research is focused presents some limits, it is possible to cast doubt on the idea according to which user satisfaction would be a substitutive measure of IS performance. Feelings, like satisfaction, lead to intentions of behavior, that themselves lead to actions Certain authors, like Avison and Baskerville (2001), criticize the models relating to user satisfaction for considering the construct of satisfaction as the only dependent variable of success and performance of IS. Yet, no empirical research has succeeded in showing the satisfaction.

Further investigations are required to confirm and validate these findings, putting emphasis on different companies and other opportunities in the same company to check and compare the results, making possible improvement on framework.

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