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RESEARCH ARTICLE

DEVELOPMENT OF A WEB APPLICATION WITH THE OBJECTIVE OF FACILITATING DATA MANAGEMENT FOR BUSINESS INTELLIGENCE

Jean Carlos Pinto Souza, Matheus Da Conceição Pinheiro, Carlos Rogério Morais Marinho, Jaqueline Silva De Souza Pinheiro and Odair Cristiano Abreu Da Silva

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Abstract

Everyday thousands of data is generated, but most are lost or stored improperly, when this happens, no longer as data is converted into information, it will not be useful, and may even generate losses rather than gains. To solve these problems, a Demand Management System (SGD) was developed for the internet. The web system comes with the objective of making this information available at any time, creating a system that will manage and collect data to facilitate the creation of Business Intelligence models.

Introduction:-

The speed of the process of transforming data into useful information to decide is fundamental for the survival of the business in the market (SACOMANO et al., 2018). Data is the new oil. Just as oil needs to be refined, data needs to be treated correctly to extract maximum potential.

It is correct to state that data and the right technological tool are the main responsible for generating innovative ideas. Today with just one click and anywhere you can see a multitude of opportunities.

With Development of a Web system, it is possible to have the information at any time, either on the mobile phone or on any device with internet access, a feature that brings numerous benefits. According to GEPERSISTEMAS (2022) the Web has several advantages: mobility, integration, flexibility, security, and updates.

Thus, the SGD was developed based on Web technology, replacing a previous system that used Excel spreadsheets as a management program, which caused several problems and generated the proposal of this article.

Excel spreadsheets work well for small datasets and for a reduced set of data operations. However, when projects become larger and require more sophisticated data operations, some are not available in Excel. (SILIPO, 2020) .In a given work situation an employee generated multiple Ids (identification field), causing the worksheet to generate multiple blank fields, at another time demands were created without their name. This makes it impossible to quickly and efficiently crawl and generate Insights.

With the numerous benefits presented is it profitable to invest in the development of a Web system for the management of dados? The goal of this project is to develop a Web system that will facilitate data management, thus demonstrating the gains for creating a Business Intelligence model. Consequently, maximizing productivity, facilitating data extraction, standardizing fields, developing a custom design and adaptable to different screens.

Corresponding Author:- Jean Carlos Pinto Souza

Business Intelligence (BI) is defined as a decision-making process supported by the integration and analysis of an organization's data resources. (ROMERO, Andrés, 2021). It can be said that BI is a tool with conditions to extract, organize and analyze a large volume of information from a database, making available only what is relevant to decisions, quickly and efficiently.

Theoretical Reference:-

This paper approaches in a practical and theoretical way the benefits generated by the integration of the web system to Business Intelligence. For this reason, to offer a better understanding of the article, concepts, tools and information that were used in its development will be presented.

1. Wewill pay for the proposal and concept of the work.
2. Sis focused on the problems and reasons for the creation of the current system.
3. Andxplica about the Web and its benefits.
4. It deals with data analysis and Business Intelligence.
5. Application development process.

Demands And Demand Management

Second (Infopedia, 2022) demand is requested; demand; request. A demand is a request for an activity that a parent must meet. Demand management is the management of the operations necessary to meet these demands efficiently, and with the quality desired by the client.

Demand in the proposal of the work are the activities performed by each employee. Each demand has unique characteristics, which implies the need to store this data, in turn it is important to determine the best forms of management.

It is clear, therefore, that demand management is of strategic value to an organization. "In this scenario, information needs to be handled appropriately through strategic information management." (Candide; Vale, 2018) Managing the demands of a company is essential to properly understand what is being done by each employee.

Data management is the practice of collecting, maintaining, and using data securely, efficiently, and cost-effectively. The goal of data management is to help people, organizations, and connected items optimize data usage within the boundaries of policy and regulation. (ORACLE,2022)

In this work the data will be generated from the Web system that was created for this purpose. To better understand the reason for good demand management, you will be shown what a system that has not been planned can cause and what this can generate for the organization responsible for this data

Management Issues In Excel

The delay in analyzing the data can lead to a delay in decision making. (COSTA; CAVALCANTI, 2014, online). As much as Excel is a great software for data analysis, it turns out that many problems arise to manage this data along that the system expands.

In 2003, a copy-and-paste error in Excel caused TransAlta to lose $24 million The Canadian company lost the equivalent of 10% of its profit after one of its employees de-ordered lines from an Excel spreadsheet on bids in bids (EQUALS, 2020).

However, over time, new functionalities are being demanded by managers and then added, increasing the complexity and difficulty in maintaining such spreadsheets is great difficulty in defining an access control for different types of users (OLIVEIRA; NETO MILK; FERREIRA; CAVALCANTE, 2018).

In the old scenario, several problems were encountered when managing excel demands, examples:

1. Usability: Little ease in the use of the system, thus generating difficulty in the use and understanding of the system.
2. Data integrity: Anyone could make changes to the data, so it is impossible to have an effective analysis.
3. Escalation: Difficulty extending the system as functionality is added, and spreadsheet load time and size becomes increasing.
4. Null Fields: There is no handling of blank fields in Excel,

5. Security: Security issues have been identified, because they are spreadsheets, access is

Thus it is noticeable that Excel can still be used, in order to understand its limitations as a program that will assist in the creation of the Business Intelligence model, not as a manager system. With the creation of the Web system users will have a more user-friendly interface and the company more security.

Web

The web means a system of information linked through hypermedia (hyperlinks in the form of text, video, sound, and other digital animations) that allow the user to access a multitude of content through the internet (SIGNIFICADOS, 2022).

Through the web it is possible to use the most varied services, thus giving the user the freedom to choose what he really wants. From the simplest user who will use the Web just for the purpose of doing a survey, to the entrepreneur who wants to create your digital brand. The company Studiogt(2022) states that a web system is a program that uses a website as a mode of access and that this type of system has been increasingly used by companies, for its various benefits, such as:

1. Escalation: Ease to develop the system according to future functionalities.
2. Mobility: You will be able to access data and information remotely from any device (computer, notebook, mobile phone) connected to the internet.
3. Low cost: Reduced investment in sophisticated computers. The web system does not require high performance, only a medium configuration computer is enough to connect to the internet
4. Security: Data integrity and information security is ensured by restricted access from authorized users with previously defined profiles of what they can access or may not access.
5. Integration. Accurate and up-to-date information about what's happening in your business. Your employees, customers, suppliers and partners will be able to access the system and consult quality information about your processes, order status, inventory, registrations, sales, expenses and preferences, among other data relevant to the growth of your business.

With all these advantages, it is understood that the Demand Management Web application comes with the goal of addressing the vulnerabilities found in the Excel system, replacing it with a new web version.

Web applications, for example, provide tools that allow the system user to perform previously complex tasks in a short time. If you have a device with internet access you can connect to the system and do some work, regardless of where the user is (SANTOS, 2018). It is unlimited what can be accomplished through a web system and can also be limited according to the customer's wishes. Using a web system, the features are adapted according to the needs of each client.

Business Intelligence

Good data management will be the main factor in creating a secure Business Intelligence model, but before that it is important to have in mind basic concepts that will lead to a better understanding of BI.

For Nagar et al. (2016) BI tools are a means or mechanism for implementing the idea of business intelligence in a dataset to present a visual result. BI is defined as a set of tools, such as software, applications, or other ways that assist the organization in the decision-making process through data analysis.

Success in working with data consists of proper use, with the support of tools necessary to generate information and make predictive checks (Armstrong, 2019).

BI combines business analytics, data visualization, data infrastructure, and best practices to enable businesses to make informed decisions. This means taking a comprehensive view of your organization's data and using it to drive positive change, understand and eliminate inefficiencies, and quickly adapt to change.

In turn, Silva et al (2016) defines Business Intelligence or BI as a collection of technological resources that permeates the process of collecting, transforming, analyzing and distributing data with the production of information to support decision making.

Power BI

Power BI is a collection of software services, applications, and connectors that work together to transform your unrelated data sources into coherent, visually engaging, and interactive information (MICROSOFT, 2022)

Through the stored data it is possible to create a detailed and intuitive analysis using the Business Intelligence tool.

Figure 1 represents a report created through Power Bi, being adjustable and adaptable according to the need for indicators.

The indicators make it possible to truly know the situation that is to be modified, establish priorities, choose the beneficiaries, identify the objectives, and translate them into goals and, thus, better monitor the progress of the work, evaluate the processes, adopt the necessary redirects and verify the results and impacts obtained. (ESESP, 2018).

Figura 1:- Dashboard Power BI.

Source: Authors, 2022.

Development

To get the result and get a Web system capable of meeting all the requirements it is necessary to use a series of tools, each responsible for its own fraction of functionality, the tools used for the development of these projects were:

1. **HTML5:** HTML is the default markup language for Web pages. With HTML you can create your own website. (W3SCHOOLS, 2022). HTML5 allows the development of web pages through tags, as combined form the structure of any site seen on the Internet.
2. **CSS3** CSS is the language that takes care of the appearance of a web page (DEVMEDIA, 2022). CSS is a tool used for web developers to modify and create the entire design of the created page.
3. **JAVASCRIPT** JavaScript (sometimes abbreviated to JS) is a lightweight, interpreted, object-based language with first-class functions, better known as the scripting language for Web pages, but also used in many other browserless environments." (DEVELOPER. MOZILLA, 2022).
4. **AJAX** According to Hostinger (2022), renowned website hosting company AJX is stands for Asynchronous JavaScript and XML, orJavaScript and Asynchronous XML, in good Portuguese. It is a set of web-facing development techniques that allow applications to work asynchronously.
5. **PHP:** A popular general-purpose scripting language that is especially suitable for web development. Fast, flexible and pragmatic, PHP powers everything from your blog to the world's most popular websites (PHP, 2022).

6. **Visual Studio Code:** Visual Studio Code is a free encoding editor that helps you get started quickly. Use it to code in any programming language without switching editor (VISUAL STUDIO CODE, 2022)."
7. **MYSQL:** A Structured Query Linguage (in Portuguese - Structured Query Language) or called by the abbreviation SQL, is known commercially as a standard "query language" used to manipulate relational databases (MYSQL, 2022). Responsible for storing and controlling data e.g., managing multiple clients in a Web system.

Methodology:-

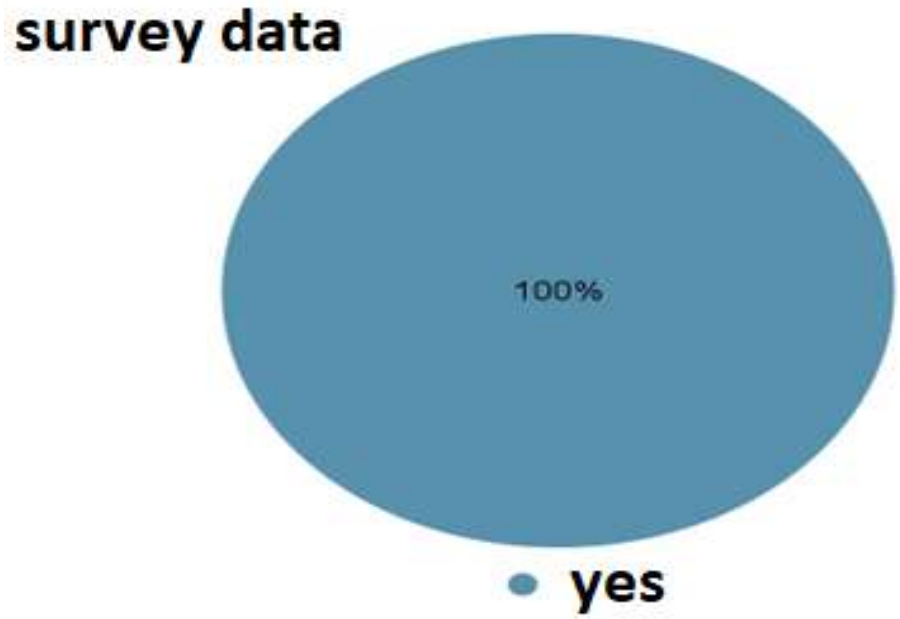
This work was based on a qualitative-quantitative study and exploratory research that According to Gil (2019) exploratory research have as the purpose of providing greater familiarity with the problem, with a view to making it more explicit or to build a hypothesis. Under-the-world research. The applied research was the development of a Web application for Demand management. Social networks were used to disseminate the forms. Google Forms was used to create the questionnaires. The steps followed were as follows.
Step 1: First Choose the correct web builder application.
Step 2: Choose the correct name of the application.
Step 3: Choose the appropriate test device.
Step 4: Install the app correctly.
Step 5: Add the features you want (Key Section)
Step 6: Test, test, and test before launch.

Results:-

This topic aims to present the results obtained. Fifteen people responded to the form to bring an overview of what is relevant in a system, below the results.

According to Figure 2, the graph was obtained for the question: Does Design make it easier to use the system?

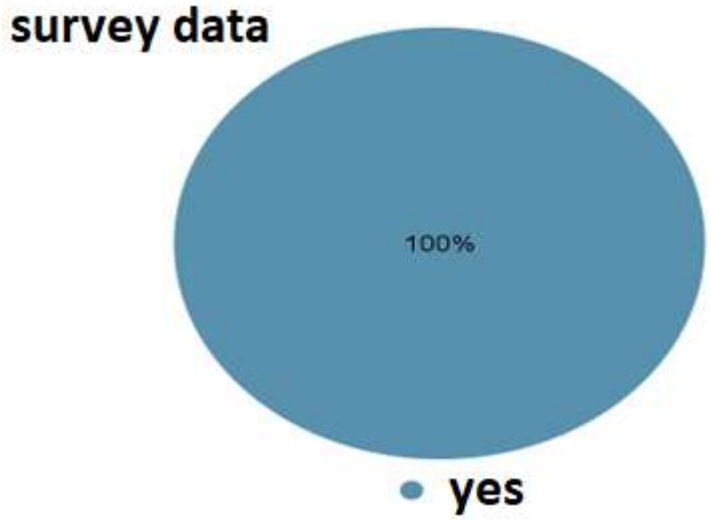
Figure 2:- Search form.



Source: Authors, 2022.

According to Figure 3, the chart was obtained for the question: Do you consider that spreadsheets used by more than one person may suffer from security problems?

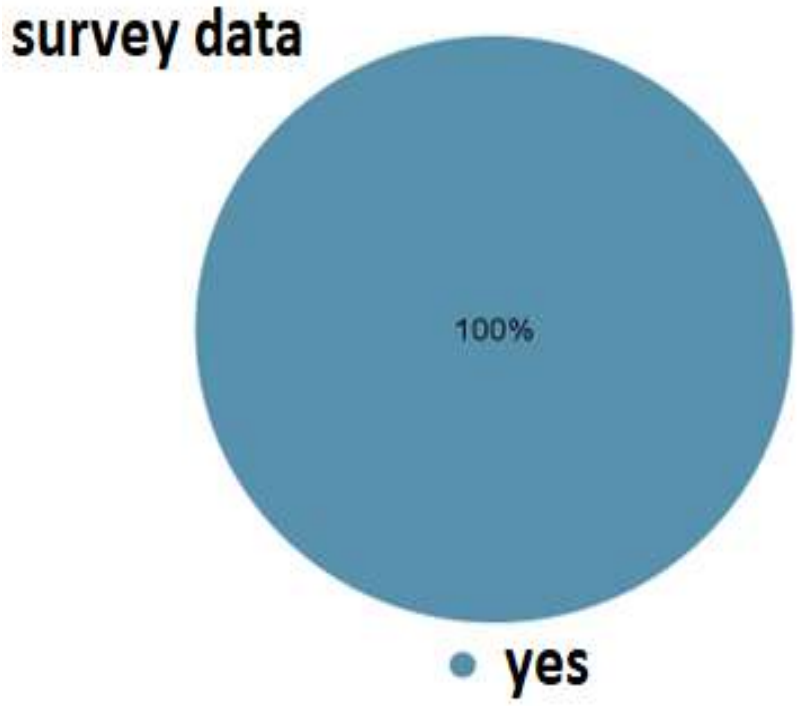
Figure 3:- Search form.



Source: Authors, 2022.

According to Figure 4, the graph was obtained for the question: Do you consider data, a necessary factor for creating new ideas?

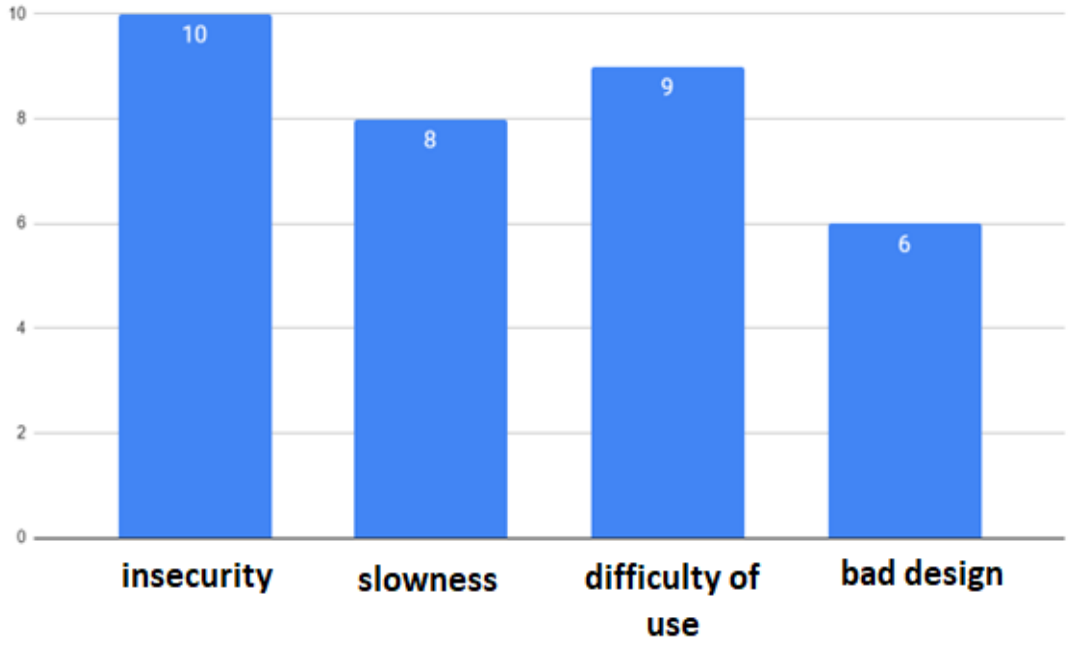
Figure 4:- Search form.



Source: Authors, 2022.

According to Figure 5, the graph was obtained for the question: For you what makes a system unsuitable?

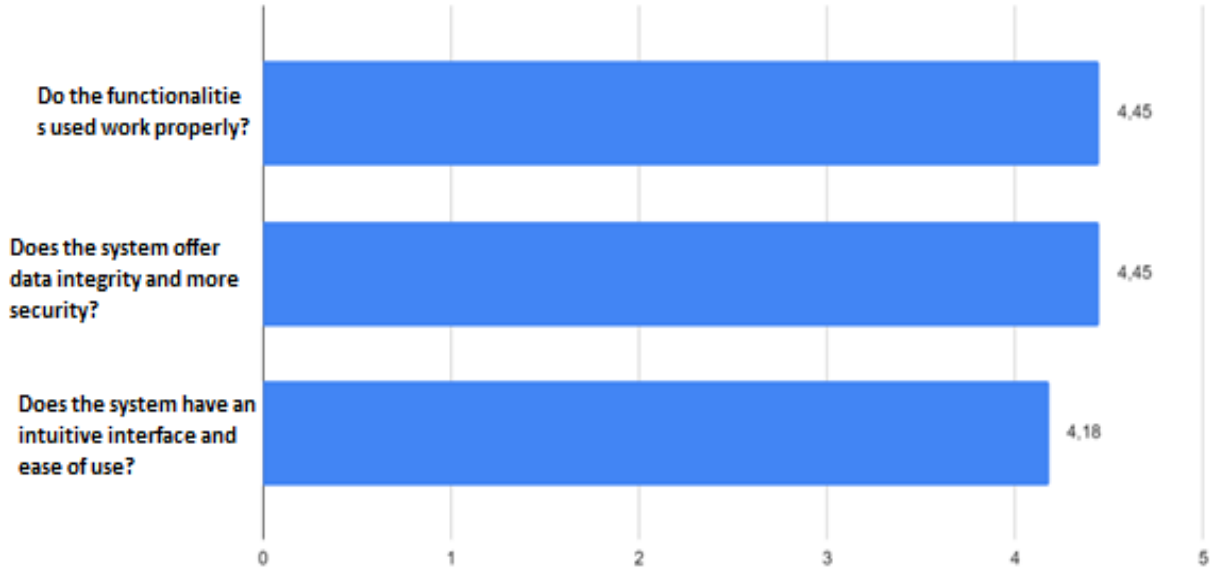
Figure 5:- Search graph.



Source: Authors, 2022.

Figure 6 represents the result obtained after using the system. In total, eleven people tested the system, was prompted for the user to sign in and create a demand. After that, the average of the result that is represented in the chart below was calculated.

Figure 6:- Results chart.



Source: Authors, 2022.

The questionwasasked: In relationtotheprevious system, what are themaindifferences for the new Web version? Below are some answersextractedfromthequestionnaire.

1. More versatileandeasierto use.
2. System securityandinteractivity.

3. Yes, it's a mucheasierwaytocreateandverifydemands.
4. Easeof Access.
5. The presented system is more practicalandagile.
6. It'seasierto visualize! It avoids data inclusionerrors in the worksheet, allowsbetter individual control, easeof data inclusion.
7. Convenience in beingabletoaccess via cellphone.
8. More organized system, Excel was more complicatedto use.

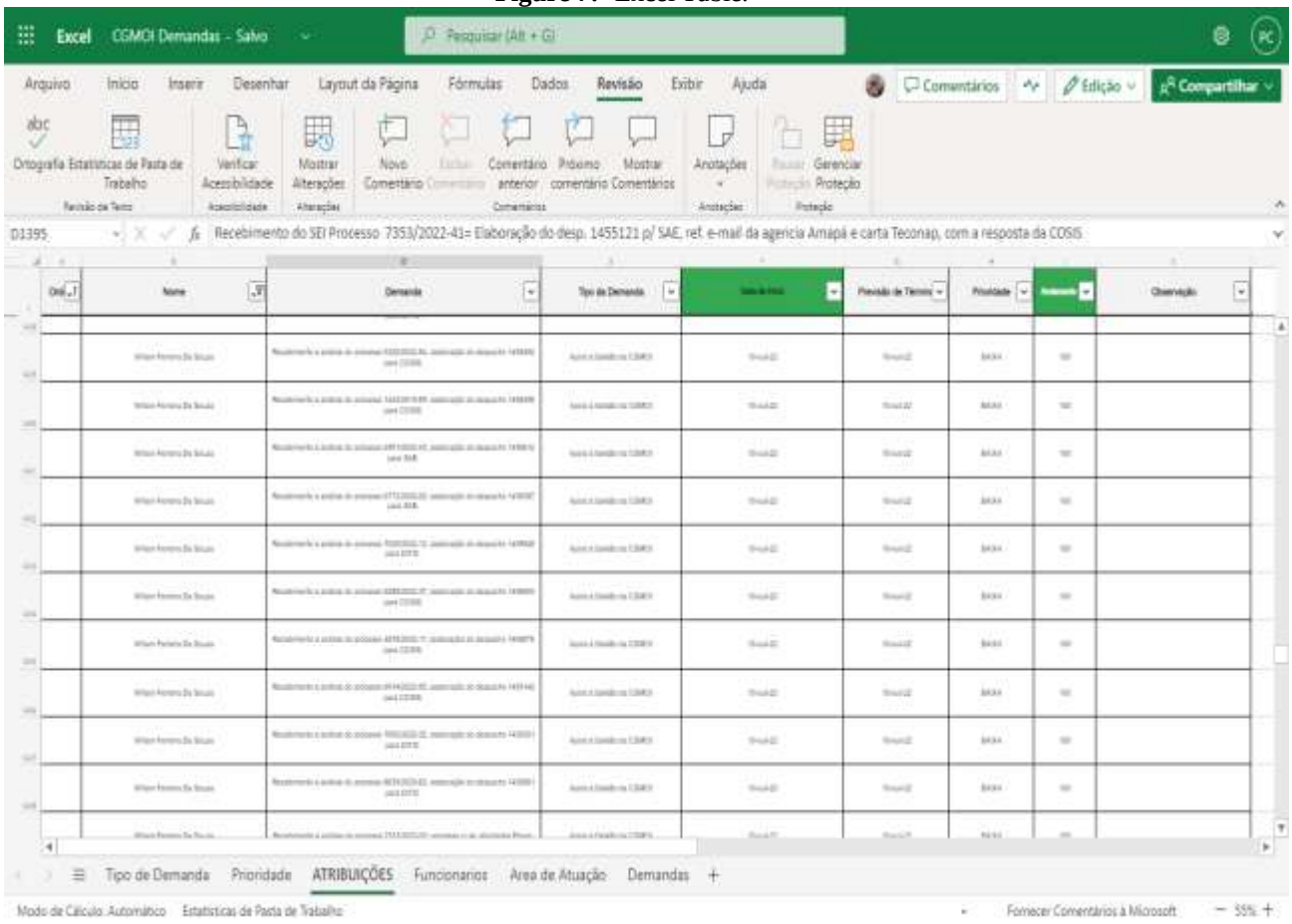
Discussion:-

Aftersurveyingtheresultsandanalyzingtheanswers, it isclearthat it waspossibletoachievetheobjectives, thefunctionalitiesusedbytheuserscouldbecarried out effectively. The graphical interface helps in usingthe system, spreadsheetsbringinsecurity, which makes a system unsuitable for use, data are responsible for generating new ideasand a well-developed system helps in theprocess, highlightingthecharacteristic points below:

- More versatility in usingthe system
- System securityandintegrity
- More agilityandpracticality
- Preventserrors in entering data
- Easeof data inclusion
- More control
- Mobility
- Organization

Figure 7 exemplifiestheproblemsraisedthroughoutthearticle, poorintuitivenessandlackofintegrity.

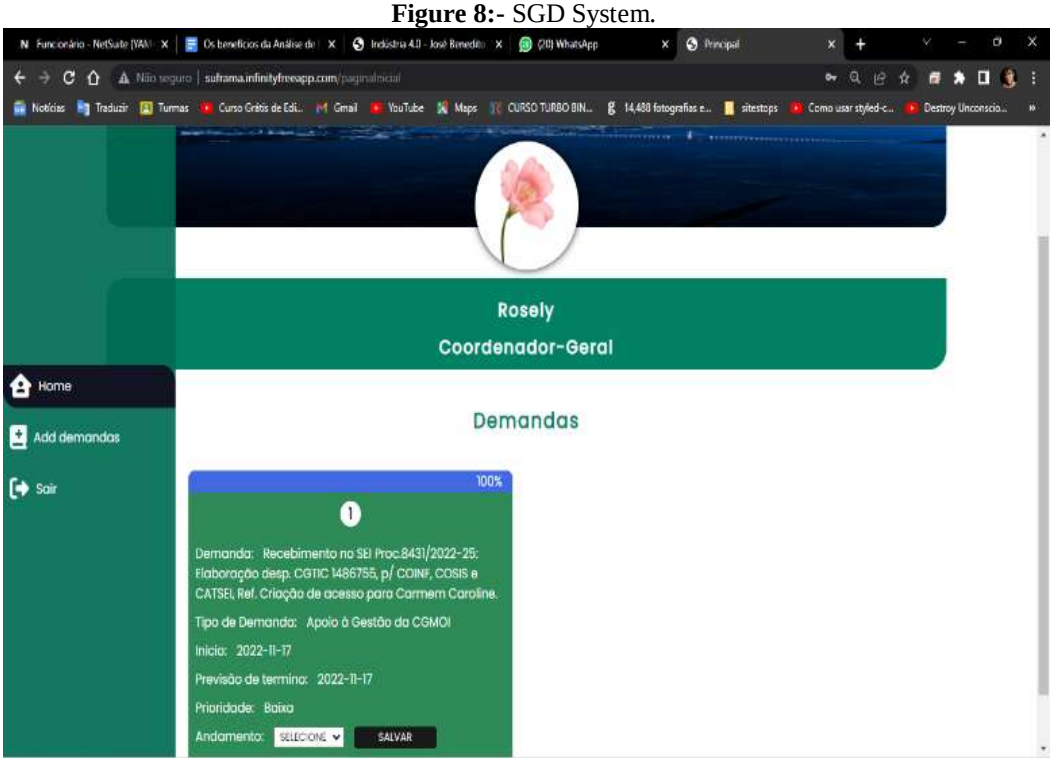
Figure 7:- Excel Table.



Source: Authors, 2022.

Figure 8 shows thecreationof a demand, in anorganizedandsimplewaytounderstand.

Figure 8:- SGD System.



Source: Authors, 2022.

Conclusion:-

It ispossibletoconcludethattreatingthe data properlycangenerate more potential for building a Business Intelligence model, thusreducingtherisksofmisinterpretationofthe data. The Data Management System (SGD) showedall its effectivenessbyfacilitatingthecreationofDemands, making it easierto use theapplicationand data security, allowingtheusertohaveaccessonlytotheir login area, preservingtheintegrityoftheinformation .Thisworkdevelopsthe interface andcodeof a Business Intelligenceapplication, usinggeolocation as a tool toguidetheuser. Therewasanabsenceofanapplicationwith similar characteristics, focusedon Business. The cityused as theobjectofstudy for thisworkwas Manaus. A methodologydevelopedbasedonthemethodologicalproposalof Garrett andHarston&Pyla, focusingontheuserexperience, wasused.

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